

Service Design in the ER

by

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BSc (Nsg), University of British Columbia, 1995

MSc (Mgt), University of Lethbridge, 2002

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of the Requirements for the Degree of

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Abstract

The Service Profit Chain is a simple conceptual framework linking employee satisfaction and loyalty, customer satisfaction and loyalty, and financial performance. Although widely used by practitioners, the Service Profit Chain's series of hypothesized relationships between employee, customer, and financial outcomes has seldom been tested using data that span all components of the model. Using a modified version of the Service Profit Chain, this study explores service design in the ER.

In essence, the Service Outcome Chain asserts that certain structural elements, through their impact on process, have the potential to positively influence outcomes in the ER. The Service Outcome Chain proposes that for quality service to be delivered to the end-user (patients), service providers (nurses, physicians) must receive the support of those who serve them (management, training, the design of jobs and the design of the physical setting). Organizations that create the proper set of structural conditions for employee work also provide a basis for the development of a positive service climate. A positive service climate influences service quality and the end results of patient satisfaction with service and patient empowerment.

In this study, using data from frontline service providers and service recipients in the ER, principle chain relationships are explored. A mixed methods approach is applied to examine the relationships identified in the Service Outcome Chain. A survey of emergency

nurses is conducted followed by case studies of two ERs where survey, interview and photographic methods are applied. Insights into the relationship between the structural, process and outcome elements of service design are gained. In addition, findings about the how managerial practices and physical design significantly influence service climate and service quality are revealed. Some of the strongest results of this study point to the role of physical design and service climate in setting the stage for a quality service strategy in the ER.

In sum, this research provides the first theoretical and empirical examination of the Service Profit Chain or a modified version of it, applied to public sector health care in general and ERs in particular. It also provides the first empirical examination of physical design, service climate and patient empowerment in the ER. The importance of these three elements has been highlighted by this research.

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Dedication

I would like to dedicate this dissertation to my parents who always believed that we could do anything. Thank you.



CHAPTER 1

Introduction and Context for the Study

The health care system is unique in the product it provides - personal health services. Although health care is described as the “world’s largest service” (Kenagy, Berwick & Shore, 1999) and is arguably the most personal and important service that people consume, there is wide variation in the quality of service provided (Berry & Bendapudi, 2007; McGlynn et al., 2003; Wennberg & Fisher, 2006). The characteristics that shape service beyond the technical competence, is poorly understood and insufficiently explored in the literature (Boudreaux et al., 2006; Cleary & Edgman-Levitan, 1997; Fottler, Ford, & Heaton, 2002; Hendrie, 2006).

In health care, the patients’ main concern is for a positive clinical outcome. The process by which that outcome is achieved is crucial, but often neglected to the detriment of both the patient and the organization (Fottler, Ford, & Heaton, 2002). Patients and health care providers rely on technical results as evidence of high quality, but quality has another dimension, ‘service’. Service refers to the myriad characteristics that shape the experience of health care for patients and their families other than the technical quality of diagnostic and therapeutic procedures. Correct medications, suture placements, and the efficient reduction of a shoulder dislocation are issues of technical quality. Promptly responding to the patient’s needs and answering questions to the patient’s satisfaction in a clear, friendly, culturally relevant, and easily understood manner is service quality.

Most patients do not feel qualified to judge technical quality but assess their health care by other dimensions that reflect what they personally value (Kenagy et al., 1999; Larson, Nelson, Gustafson, & Batalden, 1996). Patients believe most interventions are safe and assume they will receive technical expertise but measure service quality based on what they can see, feel and understand. In health care, service quality is facilitated by interactions that improve therapeutic outcomes and assure people they are receiving quality care.

The Boston Globe newspaper (Rowland, 2005) addressed this issue in an article entitled ‘Lessons in Hospital Courtesy,’ looking at what Massachusetts General Hospital can learn from the Ritz-Carlton Hotel. A representative from the Ritz Carlton went into the hospital to assess the service strategy. The Ritz Carlton focused on how this medical institution interacted with their patients and visitors. The result was poor performance in basic hospitality courtesies such as acknowledging and greeting patients with a warm welcome the

minute they walk in the door. Another example is conversing with patients in face to face dialogue rather than in passing or from 20 feet away. Examples such as this add evidence to the guiding principles that the most successful health service organizations treat their patients like guests and offer them not just successful clinical outcomes but positive, superior total service experiences (Fottler, et al., 2002; Hendrie, 2006). The dissatisfaction that we often hear of with the quality of services provided in health care (CBC, 2004, 2006a, 2006b) suggests that the industry has much to learn from some of the benchmark service organizations in the hospitality sector. Service quality is an area that is poorly understood, insufficiently explored and deserves a much higher presence in health care.

The challenges facing health care (e.g. overcrowding, staffing shortages, long wait times and inadequate facilities) combined with the potential for improvement and the researcher's experience as an emergency nurse stimulated her interest in applying a service management perspective to exploring service design in the ER.

This research explores various elements of service design in the ER using a modified version of the Service Profit Chain (Heskett et al., 1997). The 'Service Outcome Chain,' is a framework that may be viewed as a methodology for setting the service strategy and guiding the design and management of service. The framework views service design from a structural, process and outcome perspective. Within each of these dimensions, there are certain elements that are suggested as being fundamental to the goal of achieving service quality, patient satisfaction with service and patient empowerment in health care. The framework also ensures that the needs of both staff and patients are simultaneously supported through every link of the chain.

In this study, principle chain relationships are explored using data collected from frontline service providers and patients in ERs throughout the province of British Columbia (BC). A mixed methods approach (survey, case studies, interviews, photography) was applied to examine the relationships identified in the Service Outcome Chain. Insight into defining the elements of service design and their impact on service outcomes was gained. The link between the structure and outcomes of service was revealed, which informs us of how we can design for improved outcomes through a focus on service. In addition, the significance of physical design as a structural element, service climate as process element, and service quality and patient empowerment as outcomes of quality service design were revealed. The findings identified ways to improve the quality of service in the ER.

Many of the challenges facing Canada's health care system and the corresponding impact on service quality cannot be fully understood without some understanding of the context in which these challenges occur, if only because these challenges have a direct impact on the various parts of the system including the ER. The following two sections provide a look inside of Canada's health care system and the ER. It is important to note that much of the content in this review of context comes from particular interest groups such as the Canadian Association of Emergency Physicians and the British Columbia Nurse's Union. Although the objectivity of these groups may be questionable and there is the potential for source bias, their opinions are important in discussions pertaining to context and service as these are the people that are on the frontline delivering service.

1.1 A Look Inside of Canada's Health Care System

Canada has a predominantly publicly financed and administered health care system. The Canadian health insurance system is achieved through 13 interlocking provincial and territorial health insurance plans, and is designed to ensure that all eligible residents of Canada have reasonable access to medically necessary hospital and physician services on a prepaid basis, without direct charges at the point of service. The roles and responsibilities for Canada's health care system are shared between the federal and provincial/territorial governments. The provincial and territorial governments have primary jurisdiction in the administration and delivery of health care services. The federal government, under the 'Canada Health Act,' sets out the criteria and conditions that must be satisfied by the provincial and territorial health insurance plans for them to qualify for their full share of the cash contribution available.

Cost is an enormous driver of health care and the Canadian health care system has undergone many changes and forms of restructuring over the past 15 years in attempt to improve the efficiency, effectiveness and quality of health care services (Boudreaux, Cruz, & Baumann, 2006; Kenagy et al., 1999; Montague, 2004; Shortell & Kaluzny, 2006). Given economic, political and social pressures, there has been a fundamental shift in the way that health care is viewed and delivered (Aiken, Clarke, Sloane, Sochalski, Busse, et al., 2001). "Redesigning, restructuring, reengineering and reforming activities are touted as common strategies invoked to reduce costs while maintaining service" (Thorpe & Loo, 2003, p. 322). In the ten-year period between 1987 and 1997, provincial and territorial government spending on hospitals as a percentage of total health care expenditures declined from 46.0 percent to 33.6 percent. As a result, significant restructuring has taken place in the form of bed closures,

regionalization, workforce reductions, work and primary care reorganization. The political and economic decisions made during those years are still reverberating throughout the system.

In terms of health spending, Maxwell, Jackson, & Legowski (2002) reported that between the years 2000 and 2020, total health care spending in Canada is predicted to grow by 56 percent from \$2,626 per person to over \$4,100 annually. Total spending would rise from \$81 billion to \$147 billion during those years. However by 2006, those numbers were already surpassed. In its annual report on health spending, the Canadian Institute for Health Information (CIHI) reported that in 2006 total health spending reached \$150.3 billion (\$4,606 per person annually). The report estimated \$160.1 billion would be spent on health care in Canada in 2007. This is the eleventh consecutive year in which health care spending outpaced inflation and population growth (CIHI, 2007). This may be due, in part, to new public investments in health services resulting from federal/ provincial/territorial health accords signed in recent years. For example, Canadians have seen recent government initiatives to increase services in wait time priority areas, investments to attract and retain health providers and an increase in spending on buildings and equipment.

There is great variation in health care spending on Canadians. According to this report, per capita health care spending in 2005 by provincial and territorial governments was highest for infants under the age of one (\$7,437) and people 65 years of age and older (\$9,502). In contrast, health care spending on Canadians between the ages of one and 64 averaged an estimated \$1,735 per person. Among seniors, there is also great variation. For those aged 65 to 69, the average per capita spending was \$5,142 in 2005. For those aged 85 to 89, per person spending reached \$20,731. Canadians aged 65 and over account for an estimated 44% of total provincial and territorial government health care spending. The reason for this variation is the increased care needs of these two population groups.

Hospitals continue to make up the largest component of Canada's health care spending. The CIHI reports that in 2007, hospitals accounted for 28.4% of total health care spending (\$45.5 billion), down from 31.5% in 1997 and 44.7% in 1975. Since 1997, drugs have consumed the second-largest share of health dollars. In 2007, spending on drugs (including both prescribed and non-prescribed medications) accounted for 16.8% of health care spending (\$26.9 billion), up from 14.5% a decade ago and 8.8% in 1975. Physicians represent Canada's third-largest share of health expenditure, accounting for 13.4% of total spending in 2007 (\$21.5 billion). These three spending categories represent well over half

(~60%) of total health expenditures. An additional twenty percent (20%) goes to other health care professionals such as nurses (~11%), capital expenditures (~4%) and administrators (~4%).

Over the years, patterns in resource allocation and care within hospitals have also shifted (CIHI, 2006). Inpatient-nursing services continue to account for the largest single share of hospital spending (30% in 2002/2003) however between the years 1982 to 2003, their relative share of hospital spending declined as did the share of spending on hospital support and administration. Spending in other areas such as ambulatory care, diagnostic and therapeutic services, ERs, operating rooms and community services, has increased more quickly. Much of the reason behind the change in spending is due to demographic changes. The aging population and increases in chronic diseases and co-morbidities are causing significant strains on the health system. In addition, a shortage of general physicians has left four million Canadians without a regular doctor (Campbell, 2008). This figure suggests that local clinics, community health centres, and ERs are carrying a considerable load of the primary care burden.

Although spending on physician services has grown by 5.5% on average per year over the past decade (unadjusted for inflation), the relative share of physician spending as a proportion of total health spending has fallen over time from 15.1% in 1975 to 12.8% in 2005 (in 2005 spending on physician services was \$18.1 billion, in 2007 that number increased to \$21.5 billion) (CIHI, 2005, 2006, 2007). A survey by the College of Family Physicians of Canada (2001) predicts a shortage of 6,000 family physicians by 2011. Physician supply in Canada has suffered a 5% decline since 1993 (CIHI, 2002) bringing the ratio of physicians to population down to the level it was 15 years ago (one physician for every 1,063 people). Results from the 2007 National Physician Survey (CMA, 2008) reveal that Canadian physicians are experiencing a health system under stress, with patients who have complex health needs, ERs that are overloaded, and insufficient physician numbers due to the shortfall of broad-based generalists who are essential for the care of older populations.

As for nurses, the term “Three R’s” is often used in reference to the nursing situation across Canada - the ‘recruitment’, ‘retention’ and ‘retirement’ of nurses. Canada’s nurses are getting older. The average age of registered nurses in 2005 was 44.6 years, up from 41.4 in 1994. The Canadian Nurses Association (2002) projects that there will be a shortage of 78,000 registered nurses in 2011 and 113,000 by 2016, 30% of the current nursing labour force.

As the cost of health professionals accounts for a significant proportion of health care dollars, funding cuts have led to a marked imbalance in supply and demand. This in turn has largely impacted the quality of the work environment, the quality of care provided, and the overall satisfaction of health professionals (CNAC, 2002; Shamian et al., 2002; Shamian & Griffen, 2003). The consequence of these funding cuts is obvious in the high rates of absenteeism, illness and injury among health care providers. It comes as no surprise that the Health Canada Advisory Committee on Human Health Resources (2002) reports that in any given week more than 13,000 registered nurses (7.4% of the Canadian nursing workforce) are absent because of injury, illness, burnout or disability. The rate of absenteeism among registered nurses is 80% higher than the Canadian average (8.1% compared with an average of 4.5% for 47 other occupations) and is the equivalent of 9,000 full-time nursing positions (Montague, 2004; Sullivan, Kerr, & Ibrahim, 1999). To add to this, nurses are increasingly being faced with scheduled overtime, mandatory overtime, mandatory on-call work, refusal of holidays or time off for education or personal leave, and being assigned to work in areas outside of their specialty. Further, nurses in Canada work almost a quarter of a million hours of overtime per week, the equivalent of 7,000 full-time jobs per year. It is estimated that the cost of overtime, absentee wages and replacement for registered nurse absentees is between \$962 million and \$1.5 billion annually (Fooks, Duvalko, Baranek, Lamother, & Rondeau, 2002; Shamian et al., 2002).

There are numerous studies that illustrate the relationship between nurse staffing and patient outcomes (Aiken et al., 2001; O'Brien Pallas et al., 2004; Rodney & Varcoe 2001; Schindul-Rothschild 1996; Storch, 2005) including factors of work overload and nurse's physical health, emotional exhaustion, absenteeism, job satisfaction and turnover (O'Brien-Pallas et al., 2004; Rodney & Varcoe, 2001; Shamian & Griffin, 2003). For the past 15 years, the call has been to ask health care providers to constantly do more with less, however the 'do more with less' practice is taking its toll on providers and affecting quality of care and patient outcomes. Pressing issues in health care are being recognized as is the need to renew and repair the work environment and not so much the profession themselves.

With the hope that the reader will acquire a better understanding of what it is like to both provide and receive health care on the frontline of Canada's health care system, the following section provides an overview of the situation as it stands in hospital ERs.

1.2 A Look Inside the ER

The role of the ER

The term 'ER' is generally used to describe facilities that range from high level departments with emergency medicine specialists and trainees employed round the clock through to rooms in small rural and remote hospitals staffed by on-call local general practitioners and generalist nursing staff. The ER is the dedicated area in a hospital that is "organized and administered to provide a high standard of emergency care to those in the community who perceive the need for or are in need of acute, urgent, or emergent care including hospital admission" (NSW, 2001, p. 12). The ER serves its community by providing rapid diagnosis and treatment for most medical emergencies, as well as resuscitation and stabilization of patients with critical injuries and illnesses. That role has expanded however as the ER strives to provide timely care to all patients regardless of the reason for seeking care (CIHI, 2005).

Unlike how other health care services are organized, the ER has unique characteristics. For example, the majority of visits to the ER are unexpected and unscheduled and involve immediate assessment. At times, decisions about treatment need to be made very quickly and actions need to be taken immediately. While not all ERs are organized in the same way, most have an intake or triage area where patients who arrive on their own register and then wait to receive treatment. During this time they are assessed and triaged by a qualified health professional, then assigned a severity score according to the Canadian Triage and Acuity Scale (CTAS) which has associated clinical recommendations (see Appendix 1.1 and 1.2). If patients arrive by ambulance, the registration may differ slightly but the assessment of the patient's condition remains the same. The Canadian Institute for Health Information (2005) reports that more than half (57%) of patient visits to Canadian ERs in 2003/2004 were for less urgent or non-urgent conditions. Only 0.5% of patients were considered severely ill, meaning they needed life saving interventions. The statistics show that 14% of patients were triaged as being non-urgent (CTAS V). These patients may present to the department with such things as a sore throat or a two day cold. Forty three percent (43%) of patients were triaged as being less-urgent (CTAS IV). These patients may present to the department with complaints of chronic back pain or a mild allergic reaction. Thirty five percent (35%) of patients were triaged as requiring urgent care (CTAS III), and 8% of patients were triaged as requiring emergent care (CTAS II). Less than 1% of patients required resuscitative or immediate care

(CTAS 1). Patients triaged as this level usually present to the department with major trauma, shock or experiencing severe respiratory distress.

The users of the ER

ERs are one of those most visible and highly utilized symbols of the health care system. Every year, Canadians make over 14 million visits to hospital ERs, resulting in over one million admissions to acute care hospitals (CIHI, 2005). A study by Statistics Canada (2003) reported that some 3.3 million people or one out of every eight Canadians age 15 or older were treated for their most recent injury or had their most recent contact with a health care provider in an ER. Although adults accounted for the largest proportion of ER visits (61% of patients visiting the ED were between 16 and 64 years of age), rates of ER use were higher for the very young and the very old. The data indicates that males made more visits to ERs than females (52% versus 48%). Household income was also a factor, those in the lowest income group were more likely to have visited the ER for their most recent treatment than those in the highest income group (18% versus 13%); and those in rural areas were more likely to have used ER services than those in urban areas (15% versus 13%). The study also supports the results of other research that shows people who frequent ERs for treatment are often heavy users of other medical services.

The challenges in the ER

A string of high profile incidents has turned the spotlight on the services provided in ERs. Commonly referred to as the “canary in the coalmine” (CAEP, 2002) stories abound in the media concerning overcrowding and deteriorating levels of service, patient safety and patient satisfaction while visiting the ER. We hear of diverted ambulances; long wait times; stressed, overburdened staff; patients lying in stretchers in the hallways; patients waiting in ambulances because of bed shortages; regrettably worsened medical conditions and the occasional loss of life. The problem is exacerbated by the shortage of emergency providers (physicians and nurses) as well as limitations on patient flow from the intensive care and surgical units. The Canadian Medical Association (CMA, 2004) reports of a “crisis in hospital ERs,” however some question whether it is a crisis of resources or a crisis of management (Gray, 2000). The Canadian Medical Association attributes the crisis to the shortage of hospital beds noting that in the past decade there has been a 40% decrease in hospital bed capacity in Canada which has led to overcrowding in the ER.

ER overcrowding can be defined as a situation in which the demand for emergency services exceeds the ability of physicians and nurses to provide quality care within a reasonable time frame (CAEP, 2003). Though first described in the 1980s (Bond et al., 2007), it was rarely reported prior to the health care restructuring and regionalization of the Canadian health care system. Since the height of the restructuring in the mid to late 1990s, ER overcrowding has become widely recognized as the most significant problem facing emergency health care providers (CAEP, 2003; Bond et al., 2007). As a consequence of economic pressures, hospital bed closures and shifts away from acute care, ERs across Canada have experienced an increase in the number of patients visiting and held in the ERs with the result that ER overcrowding is now one of the many 'wait time' challenges facing the Canadian health care system alongside waits for surgery, cardiac procedures, hip and joint replacement surgeries, cataract surgery and diagnostic procedures.

Across the country, ERs have taken on an expanded role. These departments have become the 'gatekeeper,' the 'back door,' and the 'bottleneck' to the health system, which is not appropriate, efficient or cost-effective (CAEP, 20082; Canadian Press, 2008; CBC, 2006a). Closing beds translates into a reduction in the system's acute care capacity, more patients are being housed on stretchers and treated in corridors in the ER when in reality they need to be admitted and placed on a ward. As these departments are backlogged with inpatients, staff are being forced to serve as both generalists and specialists having to provide not only more care but more complex care with fewer available resources than ever before. While some claim that patients end up clogging the ER for days because of lack of beds, others claim the problem is that there just are not enough 'staffed hospital beds' to move patients out of the department, emphasizing money would be better spent on the recruitment and retention of nurses (BCNU, 2006; CBC, 2006c).

In a 2007 National Physician Survey, 80% of physicians surveyed claim that patients with chronic disease are placing the biggest demand on their time. Physicians are seeing more patients with multiple health problems (e.g. diabetes, cancer, heart disease and mental health issues) than ever before - another factor that contributes to ER overcrowding. The president of The Royal College of Physicians and Surgeons of Canada claims that "Canada needs a coordinated, pan-Canadian approach to educate, train, recruit and retain a sufficient number of physicians to meet the needs of an aging population with multiple health problems." Generalists and specialists like family physicians, internists, paediatricians and general

surgeons are already facing shortages, and the survey suggests the staffing crunch will worsen as a large number of practitioners in these areas plan to retire within the next two years.

The Canadian Association of Emergency Physicians (2002) claims another contributing factor to the problem of ER overcrowding is the long wait times for specialists (e.g. surgical consults). Poor access to elective hospital beds have forced family physicians to refer their sick patients directly to the ER to speed up access to such services. Diagnostic test delays drive many more to the ER, some because of medical deterioration, others to 'jump the queue.' Social policy as well as health policy also affects the situation. Patients that are homeless or with diminished supports turn to the ER for whatever comfort or relief the department can provide. Physicians claim that "when a crack develops in the system, the patients who fall through end up in the ER" (p.3).

Others such as the Canadian Institute for Health Information (CIHI, 2005) claim the problems are related to increasing numbers of patient visits for less-urgent or non-urgent conditions. However Richardson & Hwang (2001), the Canadian Association for Emergency Physicians (2008) and the American Association of Emergency Physicians (2002) all report non-urgent patients do not contribute substantially to overcrowding. Although they comprise a significant proportion of patients who come to the ER, they do not occupy acute care stretchers, they require little or no nursing care, and they typically have brief treatment times. These non-urgent patients consume a small fraction of resources, generate minimal incremental costs, and do not displace sick patients who need emergency care; general theme being that non-urgent ER use simply leads to overcrowding in the waiting room not overcrowding in the treatment areas.

A joint statement between the Canadian Association of Emergency Physicians and the National Emergency Nurses Affiliation (CAEP, 2003) reports that ER overcrowding is a symptom of system failure and solutions will require more community care options for the elderly and chronically ill, better access to diagnostic, surgical and acute care services, and improved hospital efficiency. The problem of access may be more important than the volume of patients in ER overcrowding.

Hospital administrators may go to great lengths to keep vital systems functioning, they may cut staffing in the operating room or reduce critical care beds but they would never shut down their intensive care unit or operating rooms. However, there is no hesitation to close entire ERs by filling every stretcher with admitted patients from other services. The solution

chosen is often to hold all patients in the ER. This leaves emergency physicians and nurses with no stretchers, no functioning department and essentially no place to provide care. Emergency patients are relegated to hallways and waiting rooms where they cannot be treated humanely or adequately. Hospitals cannot provide the basic needs for emergency care and as a result the ER cannot fulfill its mission to the community. In 2006, emergency physicians from the Vancouver General Hospital issued a warning letter to patients due to problems experienced in providing safe and timely emergency care (CBC, 2006a, 2006b). The letter read as follows:

We feel obligated to publicly declare our non-confidence in the ability of Vancouver General Hospital's ER to provide safe, timely and appropriate medical care. We believe that the current approach to deal with overcrowding in this ER results in poor and undignified care, both for admitted patients and for new patients. As professionals we continue to try and deliver the best care possible under the current circumstances. For this reason, we treat patients in the waiting room, hallway or triage area. We are outraged with the deplorable situation you are likely to find yourself in.

Recently there has been a renewed interest in patient safety and the effect of medical error in the health system. Numerous international studies have shown that on retrospective chart review, the rate of medical error resulting in an adverse patient outcome is from three to 16% with at least half of these events potentially preventable (CAEP, 2008; Schull, Slaughter & Redelmeier, 2002). An overcrowded ER is an environment with enormous potential for medical error because of the intensity of decision making, inadequate facilities - especially when patients are cared for in hallways and waiting rooms, and the increased stress on health care providers. For example, a recent report by nine emergency physicians complained of patients who had died in the hallways while waiting for treatment (CBC, 2006a). In another case, an internal investigation was conducted into the death of a 65-year old man who came to the ER complaining of chest pain. The patient waited five hours in the waiting area before his chest pain worsened. His family then informed staff and the patient proceeded to wait another three hours before being seen by a physician. The physician later confirmed the patient had a myocardial infarction while waiting. The patient died two weeks later of heart-related complications (CBC, 2004). At a hospital in Montreal, 80 patients were competing for 34 stretchers in the ER. Of 46 patients waiting in the corridors, 12 had been there for more than 24 hours. The director claimed the lack of manpower was the cause of the delay (CMA, 2000).

One of the more visible signs of ER overcrowding is the problem of ambulance diversion, which has been documented to have negative effects on quality of patient care (CAEP, 2008). An often overlooked aspect of all of this is the fact that the ER was designed to provide immediate life saving care as well as assessment, diagnosis, and treatment of medical and surgical urgencies and emergencies. It was not intended to function as an inpatient care unit. For example, patients may wait in the waiting room for anywhere from one to 16 hours and once admitted into the department, they lie on hard stretchers not on beds, they are held in large open rooms to facilitate access for the emergency team and equipment when needed, the bright fluorescent lights are on 24/7, the noise is continuous and normal sleep is impossible. Patients generally lay in full view of medical personnel, other patients, and in many cases the public. There may be only one washroom for every 10 to 30 patients. Comfort, dignity, privacy and confidentiality are foreign concepts especially when additional patients are crammed into the waiting rooms, corridors and placed between existing stretchers. These physical conditions affect quality of care.

A final outcome of ER overcrowding is its effect on health care professionals. A survey of emergency room nurses in the Fraser Health Authority (BCNU, 2006) indicated that 83% of nurses surveyed felt that patient safety has worsened and patients are not receiving the kind of quality care they deserve in the ER. Eighty-nine percent (89%) of the nurses felt they were unable to meet their standards of nursing practice and the increased workload has led many nurses to feeling unsafe in providing care as evidenced by the number of nurses leaving their jobs, the increased overtime, sick time and workplace injuries.

From a management perspective, a recent national survey (Bond et al., 2007) conducted of 243 ER directors collected data on the frequency, impact, and factors associated with overcrowding. The overall results of the survey show overcrowding in the ER as increasingly common, often severe, and negatively impacting the delivery of quality care across the country. The lack of appropriate space for acute care patients, an increase in length of stay for admitted patients, and the increasing acuity and complexity of cases are perceived by ER directors to be the greatest contributors to overcrowding. Second, ER directors believe overcrowding impacts negatively on patient care, patient outcomes, staff workload and satisfaction. Eighty two percent (82%) of the directors surveyed perceived ER overcrowding to have a major impact on increasing stress among nurses, which has led to problems with the recruitment and retention of staff. ER directors are in a unique position to report this since the

large majority of ER staff articulate their concerns to the directors. Third, ER directors believe that current policies to reduce or control ER overcrowding are, for the most part, ineffective. The findings suggest future research investigate the impacts of overcrowding on patient care.

Despite a range of initiatives and management strategies, the situation facing ERs is worsening and remains one of the most serious issues facing health care in Canada today (ACEP, 2002; Lynn, 1997). Through a focus on service, this research will provide the foundation for establishing a set of service management design principles applicable to health care and the ER in particular. After a review of the literature from both inside and outside of health care, it is believed this study will lead to the following two premises: i) First, if service management had a greater presence in our practices and institutions, it would facilitate an improved work environment and improved user outcomes while reducing cost and create an advantage for those who are expert in its application; ii) Second, many other industries in the service sector have taken the concept of service management to a high level. These techniques are readily transferable to health care. This research will assist in the development of a new service model that promotes the delivery of exceptional service in health care ultimately improving outcomes and addressing some of the challenges currently facing the system.

1.3 Research Objectives

Using a modified version of the Service Profit Chain (Heskett et al., 1997), the primary objective of this research is to explore various elements of service design in health care, specifically the ER. The Service Profit Chain is a simple conceptual framework that links internal service quality to employee satisfaction and loyalty, to patient satisfaction and loyalty, to financial performance. Although widely used by practitioners, the Service Profit Chain's series of hypothesized relationships between employee, client and financial outcomes has not been rigorously tested using data that span all components of the model (Heskett et al., 1994, 1997; Loveman, 1998; Pritchard & Silvestro, 2005). In this study, principle chain relationships are explored using data collected from frontline service providers and patients in ERs throughout BC. Specifically this study will address two general research questions: One question is related to defining the elements of service design in the ER, elements that are necessary for achieving service quality. A second question relates to determining the link between the structure and outcomes of service and determining how, as practitioners, we can design for improved outcomes through a focus on service.

1.4 Methodology Overview

This research was conducted using a mixed methods approach. First, the researcher conducted a large-scale quantitative survey of emergency nurses throughout BC. The survey explored their perceptions of various elements of service design in the department where they work. In addition, the survey gauged nurse's perception of service quality and patient satisfaction with service by having them respond to questions from the vantage point of the patient. Following the larger quantitative survey, two case studies were conducted at ERs within one health authority in the province of BC. The purpose of the two case studies was to enrich the findings from the larger quantitative survey. The case studies used quantitative surveys, semi-structured interviews and photography to collect data from frontline service providers and patients. This approach provided for findings that could be generalized throughout the province in addition provide an intimate look at the design of service in the ER.

1.5 Dissertation Overview

This dissertation is presented in a multi-paper format. There are eleven chapters in total, four of which are individual research papers that assess the research questions from varying perspectives. Chapter Two is a key overview of the literature and the underlying theoretical framework, better known as the Service Profit Chain (Heskett et al., 1997). Chapter Three presents the conceptual framework for the research entitled the Service Outcome Chain, which is a modified version of the Service Profit Chain. Chapter Four examines *The Predictors and Consequences of Service Climate* in the ER from the perspective of emergency nurses ($n = 180$). Chapter Five is a look at *Service Design - Structure, Process and Outcomes: A Case of Two ERs*. This paper includes the viewpoint from a variety of health care providers ($n = 98$) that were assessed during the two case studies. Chapter Six assesses *Service Design and Patient Empowerment* from the perspective of approximately 200 ED patients ($n = 198$) also surveyed during the case studies. Chapter Seven *Assesses a Measure for Physical Design*. The paper focuses solely on the built environment and its implications for service. Chapter Eight summarizes a discussion of the findings. Chapter Nine presents the conclusion and a discussion of the contributions, implications, limitations of the research along with directions for future research. Chapter Ten is the References followed by the Appendices which form Chapter Eleven.



CHAPTER 2

Review of the Literature

The following section presents a review of the literature in an attempt to merge the fields of health care, organization theory and design, service management and architecture. The merging of these fields has implications for service design in health care. It is hoped the lessons learned will inform future decision making with regard to service design initiatives.

2.1 Health Care

2.1.1 Health Care or Health Service?

The delivery of health care is arguably the most personal and important service that people consume, yet many studies document wide variation in the quality of service provided (Berry & Bendapudi, 2007; McGlynn et al., 2003; Wennberg & Fisher, 2006) and in the patients' ability to evaluate quality of service (Adam & Biros, 2002). But the question stands, do health professionals actually provide 'care' or 'service'? Are patients evaluating 'quality of care' or 'quality of service'? Are the terms 'care' and 'service' synonymous?

There are strong opinions among the health professions as to whether they provide 'care' or provide 'service.' For example, the following comments were made by two nurses surveyed in this research: "I don't provide service, I provide care" and "the word service is entirely meaningless to me, I'm sure your business school loves it."

A starting point in trying to understand the similarities and differences between providing care and providing service is to first distinguish between 'care' and 'service,' and the delivery of a 'good' versus a 'service.' A general internet search of the word 'care' describes it as being concerned, attending to or being responsible for someone or something. 'Service' on the other hand, is described as an act of helpful activity, the performance of duties and the provision of accommodation or activities required by the public for maintenance or repair. To quote Leonard Berry (1980) "a good is defined as an object, a device, a thing. A service is a deed, a performance, an effort. It is whether the essence of what is being bought is tangible or intangible that determines its classification as a good or service" (p. 24).

The notion of providing any kind of service has been viewed from multiple perspectives. Lovelock & Wirtz (2004) define service as an "activity that creates value and provides benefits for clients at specific times and places by bringing about a desired change in or on behalf of the recipient of the service" (p. 8). Given that the essence of service is very much contained in the delivery (see Berry, 1980; Bowen, 1986; Bowen & Schneider, 1988;

Daft, 2004; Fitzsimmons & Fitzsimmons, 2006; Grover, 1987; Schneider, Bowen, Ehrhart, & Holcombe, 2000), the underlying theme is that services are abstract and often consist of knowledge and ideas rather than physical assets. However, physical assets can support the service delivery effort. Services cannot be stockpiled, and are consumed at the point of production. In practice, service involves the client or customer as active participants or co-producers in the production process. Lastly, the majority of service products are non-standardized, which results in output variability and considerable uncertainty in the service production and delivery system.

Berry & Bendapudi (2007) present an informative account of the characteristics and similarities shared between the services in health care and those in other industry (see also Kenagy et al., 1999; Larson, Nelson, Gustafson, Batalden, 1996). Health care services are in essence 'intangible' in that they are used and not possessed - the core benefit of the assessment, diagnosis, treatment and education of the patient derives primarily from the knowledge and performance of others. In some health systems, patients (and third party payers) incur an expense rather than acquire a tangible good. Treatment itself frequently combines tangible goods (e.g. medication) supported by intangible services (e.g. the process of administering a medication). Health care services are labour, skill and knowledge intensive. This, in itself contributes to considerable variability in performance from one provider to another. The variability is not just in service style and communication, but also in knowledge and competence.

Some of the dissimilarities between health care and other services are that in health care the services are highly complex and technical. The provider usually knows more than the patient in regard to the service being produced and delivered; in fact patients are often at a knowledge disadvantage. Health care is a credence service in that the technical and clinical quality of the service is often difficult for the patient to judge even after the service is performed. Ultimately, a certain degree of trust must exist. In addition, because health care services are provided for people rather than people's property, the person, in most cases, must be physically present in order to receive service. An exception to this is in situations where telephone, e-mail, written or other methods of communication can actually serve as methods for providing service. An example is in situations where an urban specialist serves as a consultant for a rural physician. In this situation, although there may be a physical distance

between the service provider (the urban specialist) and the service recipient (the rural physician), there maintains an implicit contract between the two.

Other dissimilarities are that in health care some patients not only visit the 'service manufacturing plant or factory, but also live in it (e.g. long term care or rehabilitation facilities). No other service requires people to bear as much physically, mentally, emotionally and expose their vulnerability as in health care. To receive the best possible care, patients not only have to disrobe but they may also have to discuss highly personal matters that have been revealed to few others. Health care services are inherently personal but not private. In addition, the patients are sick. They are most likely experiencing a range of emotions and they are often reluctant to go for help which may stem from their sense of loss of control over outcomes. They relinquish their privacy, expose their vulnerabilities and place themselves at risk. As an industry that is meant to heal, mistakes can happen and it can also harm (e.g. hospital acquired infections, medication errors, surgical errors, patient falls).

From the perspective of the service provider, some of the dissimilarities that exist between health care and other services are that health care providers must service their patient's physical, mental and emotional needs in a humane manner regardless of the often less-than-ideal circumstances. They must respond on demand to medical issues ranging from the minor ailment (e.g. the common cold) to the life threatening condition (e.g. cardiac arrest) all the while considering the 'whole person' needs of the individual. On a comparative note, if the local store makes a mistake the product can be returned and the consequences are unlikely to be catastrophic, however if a nurse or a physician makes a mistake, the patient may suffer severe, life-threatening consequences.

While many health care professionals will argue that they provide 'care' and not 'service,' others are more open to viewing their profession as a 'service profession.' In review of the literature that defines and characterizes service, although the service provided in health care is inherently more personal than perhaps in any other industry, it may be viewed as much the same. For example, the services provided in the banking, spa, hotel, fitness/personal training industries are similar in that the service provider and the service recipient (the client) work together to perform a series of transactions for the benefit of the client.

Only recently have health care researchers, management scholars and administrators begun to consider the 'service' aspect of health care (Fottler, Ford, & Heaton, 2002; Hendrie, 2006; Rowland, 2005). Much of what is known in this area is still based on case studies and

anecdotal information. While the patient's main concern is for a positive clinical outcome, the process by which that outcome is achieved is an important but often neglected part of discussions on service in health care. This leaves to question the way in which the 'service' aspect of health care can be brought forward to assume a higher presence and used as a strategy for improving outcomes.

2.2 Organization Theory and Design

2.2.1 Organizational Design

A way to bring forward the 'service' aspect of health care and apply it as a strategy for improved outcomes is through organizational design. Organizational design is a means of giving a prescriptive and comprehensive focus to organizations (Galbraith, 1987, 1995). It is prescriptive in that it is aimed at assisting leaders to make organizing choices. It is comprehensive in its prescriptions in that the organization is viewed as more than just a structure. It is also viewed as a process that cuts across structural lines, incentive systems and people development practices. It includes the measurement of performance and the search for organizational characteristics associated with high performance.

The comprehensiveness of its approach distinguishes organizational design from organizational development (OD), organizational behaviour (OB) and organization theory (OT). Over time, the theory of organization has become divided into OB and OT. While OB is oriented to small-scale phenomena such as individual and group behaviour, OT focuses on structure and the environment. The two provide a micro/macro approach to the study of organizations. Researchers however suggest that real life problems are not either OB or OT rather they are a combination of the two.

Organizational design marshals all relevant knowledge needed to make organizing choices. It is the simultaneous choice of structure and process (Chase & Tansik, 1983; Galbraith, 1987) and has become viewed as the rational, deliberate and planned series of activities in which leaders create organizational arrangements supportive of the mission, strategy and goals of the organization (Hall, 1987). It refers to the way in which "the building blocks of organization are arranged or rearranged to improve effectiveness and adaptive capacity" (Leatt, Baker, & Kimberly, 2006, p. 316). A key concept that resulted from this view is the notion that all of the organizational components must fit together. In other words, organization consists of many elements to be chosen that must fit with one another and the strategy of the organization.

The literature supports a contingency theory of organizational design, which is based on identifying the relevant or contingent factors that determine the most effective design approach for particular situations (Burns & Stalker, 1961; Lawrence & Lorsch, 1967). The major sets of contingency variables that have been researched over the years concern an organization's environment, its technology and size (Daft, 2004; Dewer & Hage, 1978; Hatch, 1997). Lawrence & Lorsch (1967) generate contingencies around the organization's tasks. They base their work on the premise that as the task varies, so too should the appropriate form of organization. They view the uncertainty, predictability and understanding of the task as the key attributes upon which organizational forms are contingent. For example, loose, informal structures and people with high tolerance for ambiguity fit well with tasks of high uncertainty. Galbraith (1977) sets forth the theoretical basis for the link between uncertainty, the interdependence of tasks and variation of organizational forms. The fundamental idea is that the more uncertain the task, the more information that must be transmitted among the people who are performing it. Therefore variations in organizational forms are variations in the capacity of organizations to process information. Moreover as tasks become more complex, it becomes more difficult to devise formal measures and rewards for performance. Therefore, organizations must turn more to intrinsic rather than extrinsic sources of satisfaction. Relative to health care, in the ER setting, the high levels of uncertainty, the low levels of predictability, and the complex and interdependent nature of tasks underscores the need for the department to be structured in a way that facilitates autonomy, collaboration, flexibility, adaptability, accessibility and the rapid exchange of information.

Once the contingencies have been identified, the direction setting process begins. This is implemented through decisions about purpose, strategy and how the organization will be designed in alignment with organizational goals. Different strategy leads to different structures, management systems and culture. This idea rests on the concept that the organization has a centre of gravity or a driving force (Galbraith, 1987). For an organization to perform at a particular centre of gravity, the organization must be designed to perform around that centre of gravity. A centre of gravity shift requires a dismantling of the current power structure, rejection of old parts of the culture and the establishment of new management systems. In short, all of the structure and systems in place must fit well in support of the strategy of the organization. With a good fit comes high performance and organization effectiveness.

2.2.2 Organizational Culture and Climate

The design and culture of an organization plays a significant role in the success of strategy. If a strategy centers on 'service,' what actually happens during the service encounter, or that 'moment of truth,' is difficult if not impossible to monitor and predict unless a strong culture and climate capable of conveying socially constructed service values exists. If providing 'high quality service' is the driving force or the strategic anchor of the organization, a strong service culture and corresponding climate must exist.

This brings forward the difference between organizational culture and organizational climate. On the surface the distinction between culture and climate may be clear. At a deeper level, these seemingly clear distinctions begin to disappear (Ashforth, 1985; Denison, 1996).

Overview of culture and climate

Culture refers to "an evolved context that is rooted in history, collectively held and sufficiently complex to resist many attempts of direct manipulation" (Denison, 1996, p. 644). Climate in contrast, refers to a situation and its link to thoughts, feelings, attitude and behaviours of organizational members (Dastmalchian, 1986, 2008; Dastmalchian, Blyton, & Adamson, 1989, 1991; Denison, 1996; Payne & Pugh, 1976). Ashforth (1985) describes climate as the 'character' or 'personality' of an organization's internal work environment which is recognized as a strong influence on employees' cognitions, affect and behaviours. As Schwartz & Davis (1981) suggest "whatever culture is, it is *not* climate" (p. 32). Perhaps best explained by Dastmalchian et al. (1989, 1991) "organizational climate normally starts from the individual level and is aggregated upward to the organizational level whilst culture is normally attributed to the aggregate level and then moved downward to the level of the individual" (p. 34). The authors discuss how the influence of climate on culture is easier to conceive of than the influence of culture on climate. Although climate and culture can co-exist, climate is likely to have a profound and continuing effect on culture. For example, different climates contribute to the development of different habits, customs and beliefs. The impact of culture on an organizations' climate however has traditionally been more problematic to identify. In fact, Ashforth (1985) suggests that "no one has systematically related climate perceptions to cultural assumptions and values" (p. 842) ... and a strong culture does not necessarily promote excellence or organizational effectiveness, it can only promote a congruent climate.

One of the most enduring differences between culture and climate stems from their theoretical foundations. The climate research grew out of Lewinian field theory (Lewin, 1951)

and the culture research grew out the social construction framework (Berger & Luckmann, 1966). Culture researchers were more concerned with the evolution of social systems over time (Pettigrew, 1979; Schein, 1985, 1990), whereas climate researchers were generally less concerned with evolution but more concerned with the impact organizational systems had on groups and individuals (Joyce & Slocum, 1982, 1984). Culture researchers argued for a deep understanding of underlying assumptions, individual meaning (Pondy, Frost & Morgan, 1983; Morgan, 1986) and the insider's viewpoint of the organization. Climate researchers in contrast, typically placed greater importance on member's perception of observable practices and procedures that are closer to the surface of organizational life (James & Jones, 1974).

In part because of the growing influence of the culture perspective in the 1980s, climate researchers became more concerned with the formation of climate. Schneider & Reichers (1983) and Schneider (1987) explored this issue through what they term the "structuralist" or objectivist perspective and the "selection-attraction-attrition" or subjectivist perspective. According to the objectivist perspective, the existing organizational structure (the degree of centralization, specialization and formalization) is seen as the foundation that shapes and constrains the atmosphere such that "similar contexts give rise to similar perceptions" (Schneider & Reichers, 1983, p. 26). According to the subjectivist perspective, organizational selection practices combined with individual's attraction to the organization give rise to a fairly homogenous sample with similar climate perceptions. The third perspective, otherwise known as the "interactionist" perspective (Schneider & Reichers, 1983) blends the objectivism and the subjectivism of these approaches suggesting that climate perceptions are socially constructed. They are the result of individual's efforts to understand the organization and their roles within it. This view holds that meaning is not a given but evolves from the interactions of people. People define their environments thus understanding is socially constructed or negotiated interpersonally.

An example of this is with new members to an organization and their unfamiliarity with the organization. The new member must learn the logistics of the organization, the general role expectations of peers, tacit norms governing behaviours and appearance, status and power structures, reward and communication systems, and organizational policies and practices. They must understand the organization so that they can act within it. This unfamiliarity predisposes new members to social influence. Through social interaction, observation, actions and reactions, new members begin to make sense of the workplace,

establish their roles within different work groups, and establish their social identity within the organization. They become socialized into the paradigm of the work environment.

Despite ongoing debates as to the theoretical status and measurement of organizational climate (James & Jones, 1974; Schneider, 2000) and how climate differs from the concept of culture (Denison, 1996; Payne, 2000), there is a general consensus as to the definition and general underlying assumptions on organizational climate.

Schneider (1998, 1990) defines climate as the shared perceptions of organizational members concerning practices, behaviours and procedures that are rewarded and supported in a work setting. Others have viewed it as a set of concepts to better understand the context of the organization that represent the norms, attitudes, feelings and behaviours prevalent in the workplace (Denison, 1996; Litwin & Stringer, 1968; Pugh & Payne, 1976). In addition, climate is seen as a joint property of both the individual and organization, it is both a micro and a macro construct. As such, it is an intervening systems variable that serves to integrate and intervene (Schneider & Reichers, 1983). The research has emphasized the intervening nature of the concept of organizational climate in that climate is affected by a set of input or structural variables on the one hand, and influences the outcomes and performance variables on the other (Dastmalchian, 1986; Payne & Pugh, 1976).

Ashforth (1985) writes that it is pointless to argue whether structure, process or individuals are the cause of climate because if 'meaning' arises not out of things but out of interactions of people attempting to understand those things, then one must regard the 'meaningful episode' as the cause of climate. He describes an episode as a discrete, bounded interaction with a beginning, a theme and a conclusion, almost like a play. Meaning is inherent in the episode or play that unfolds, not so much in the setting or in the actors.

Given the view of 'culture' as shared assumptions and values, and 'climate' as perceptions and inferences that help to define what is psychologically important and 'meaningful', it may be surmised that culture fundamentally supports climate. Ashforth (1985) and Denison (1996) claim that it is not a large conceptual step from shared assumptions (culture) to shared perceptions (climate) and it would appear that the culture and climate literatures actually address a common phenomena - the creation and influence of social contexts in organization.

Given the focus of this research, it is important to attend to the culture of health care as it can inform the climate in two ways: First, by directly helping individuals to define what is

important and make sense of their experience. Second, indirectly through its very impact on the 'objective' work environment, which are the material things that form perceptions of climate (e.g. symbolic management). Such objects or settings may be the norm precisely because of the underlying cultural assumptions and values. In this sense, climate is akin to what Schein (1984) terms a "cultural artefact," which is more or less a visible manifestation of culture. Because the work environment is "inherently ambiguous and at times overdetermined" (Ashforth, 1985, p. 842), it is important to understand the general culture of the ER in order to understand the climate. Thus it may be futile to understand or alter a climate without first considering the culture that may have given rise to it and likely sustains it.

Gronroos (1990) defines a strong service culture, as one where an appreciation for good service exists and where giving good service to internal as well as to external customers is considered a natural way of life and one of the most important norms by everyone. Successful service organizations have strong service cultures (cultures that are deep, widely shared, consistent and coherent) but strong service cultures only exist if the dominant group is firmly entrenched and has had the time and acumen to institutionalize such a culture (Ashforth, 1985; Schein, 1984; Schneider et al., 2002). A strong service culture can promote a congruent service climate.

Although the culture and climate literatures have been seen as relatively enduring, much of the focus has been on identifying antecedents within organizations that promote a positive culture and climate. A challenge remains to strengthen the literature linking the two to outcome achievement. The following section ties in the service management literature by discussing the concept and role of service climate. This section is followed by a discussion on the underlying theoretical framework for this research and the role of physical design.

2.3 Service Management

2.3.1 Service Climate

A majority of studies drawing on this concept of climate have used a generalized approach without relating the notion of climate to a particular set of organizational activities or issues. Schneider's (1975) review of the literature on organizational climate concluded with the thought that the generic concept of organizational climate is 'amorphous and inconclusive.' As Schneider & Reichers (1983) point out "to speak of organizational climate per se without attaching it to a referent is meaningless" (p.21). Schneider was one of the first to argue that climate dimensions should have a strategic focus - that is, one should not assess

overall climate but “a climate for something”. This “something” might involve issues such as a climate for safety (Hofman & Stetzer, 1996; Zohar, 2000), a climate for empowerment (Seibert, Silver, & Randolph, 2004), a climate for well-being (Burke, Borucki & Hurley, 1992; Schneider & Bowen, 1993), a climate for justice (Liao & Rupp, 2005), a climate for service (Schneider, 1990; Schneider & Bowen, 1995, Schneider et al., 1998) or an industrial relations climate (Dastmalchian et al, 1989, 1991). The basic principle behind this is that in its generic form, the organizational climate construct has so many potential facets that problems associated with such measures may emerge (Schneider et al., 2000) therefore a strategic focus is needed. As in the case of personality and attitude literatures, Schneider et al. (2000) suggest that unless the predictor variable is conceptually and operationally linked to the criterion variable, the probability of a relationship between them is low. The same logic applies to climate. That is, unless the concept and measure of climate is based on ‘something’ of interest, the relationship between it and other key organizational variables can be expected to be modest at best.

Schneider et al. (1998) defined ‘climate for service’ as “employee perceptions of the practices, procedures and behaviours that get rewarded, supported and expected with regard to customer service and customer service quality” (p. 151). In the research on service climate, much of the work has been to identify antecedents within organization that promote a positive service climate which in turn, creates service oriented behaviours by employees toward clients. These antecedents emphasize the idea that the total patterns of important organizational activities must be in place for a service climate to exist. All functions must be aligned to support the quality service effort. In the absence of these, a service climate cannot exist. As stated by Schneider et al. (1998), “For service excellence to be delivered to end-user customers, service deliverers must receive the support of those who serve them” (p.151). Organizations that create the proper set of foundation conditions for employee work also provide a basis for the development of a strong service climate. Schneider and his colleagues suggest that a climate for service can only be built in an organization in which, for example, the training programs provide people with the competencies required to perform their work and the management exemplifies strong service values. This argument is based on the idea that employees will deliver excellent service to customers when the organization provides them with the resources necessary to deliver excellent service and when the organization treats them as it would want them to treat customers (Schneider & Bowen, 1985, 1993; Schneider et al.,

1998). Also key is that those in management exemplify strong service values. When employees perceive that service is important and they have the necessary supports to deliver quality service, service climate will be strong. If employees perceive that service is unimportant and the necessary supports are not in place, a strong service climate will not exist.

One stream of research in organizational studies that has focused on both the internal functioning of service organizations and its relationship to external functioning (e.g. service quality and customer satisfaction) is referred to as 'linkage research' in which the climate experiences reported by employees were validated by the experiences of the customers they served (Heskett et al., 1994, 1997; Oliver, 1997; Pugh et al., 2002; Schneider et al., 2000; Schneider et al., 2005; Wiley, 1996). It is the customer experience that translates into customer satisfaction and other individual and organizational outcomes (Heskett et al., 1997; Schneider, Salvaggio & Subirats, 2002). This hypothesis has received considerable support in a number of studies of diverse service organizations including banks (Schneider, White, & Paul, 1998), retail stores (Wiley, 1996) and insurance companies (Schneider, Ashworth, Higgs, & Carr, 1996).

In a consumer service setting such as in health care and the ER, different patients interact with the system at different times, on different occasions, under different circumstances and with different service providers. Given this state of affairs, the less consistency and agreement there is within the service setting (i.e. a weak service climate exists), the more diverse will be the experience of patients. In contrast, when the service climate is strong and consistent, one would expect that consistency will characterize the service experience. On the basis of this logic, Schneider et al. (2002) suggest that climate strength moderates the relationship between service climate and service outcomes such as patient satisfaction with service. The stronger the climate for service, the higher the quality of service and the greater patient satisfaction with service.

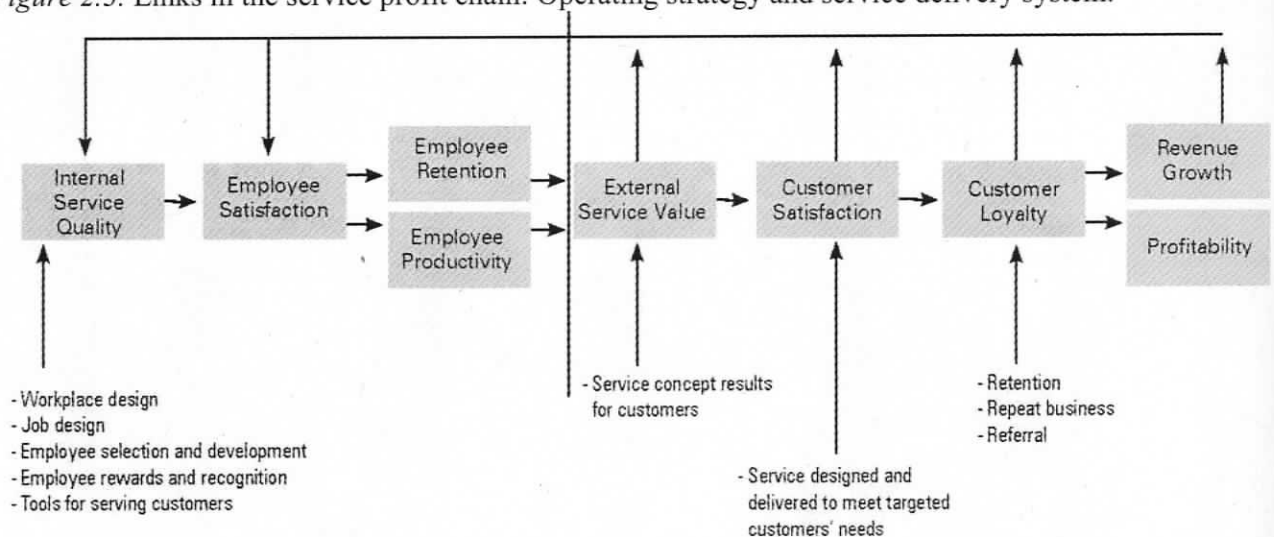
2.3.2 The Service Profit Chain

The Service Profit Chain, a term coined by the Service Management Interest Group at Harvard Business School (Heskett et al., 1994, 1997) is a well-established means for implementing a linked and strategic service vision and strategy (e.g. Bates, Bates, & Johnston, 2003; Gelade & Young, 2005; Kamakura, Mittal, Rosa, & Mazzon, 2002; Lau, 2000; Loveman, 1998; Maranto & Reynoso, 2003; Pritchard & Silvestro, 2005; Pugh et al., 2002; Silvestro & Cross, 2000). This chain provides an integrative framework for understanding how

an organization's operational investments translate into service operations, which are in turn related to customer perceptions and behaviours, and how these translate into profits.

Simply stated, the Service Profit Chain asserts that a quality internal work environment leads to satisfied, motivated and loyal employees that produce high levels of external service quality. Superior service quality leads to satisfied and loyal customers who tend to purchase more, increasing the revenue and profits of the organization. The links in the Service Profit Chain are illustrated in Figure 2.3.

Figure 2.3. Links in the service profit chain: Operating strategy and service delivery system.



The Service Profit Chain is also identified by a special kind of leadership. The leaders of exemplary service organizations emphasize the importance of each employee and customer. At the heart of financial success lies the value of services delivered to customers, value is achieved primarily through frontline employees who are satisfied, loyal and productive, in part because of the high degree of capability they possess to deliver results to customers.

In their book 'The Service Profit Chain' (Heskett et al., 1997), the authors assert that a number of outstanding service organizations stay on top by 'managing the Service Profit Chain.' The authors base this claim on five years of research that included Southwest Airlines, Fairfield Inns, Ritz-Carlton Hotels, Merry Maids, American Express Travel Services, Banc One, Taco Bell and British Airways to name a few. In looking at these companies, the authors were able to establish a set of quantifiable relationships directly linking profit and growth to customer loyalty and satisfaction (e.g. Zeithaml, Berry, & Parasuraman, 1996). It was found

that profitability was related to customer loyalty and service quality (e.g. Rust & Zahornik, 1993) as well as to employee loyalty, satisfaction and productivity (e.g. Lau, 2000). The strongest relationships discovered during this research, along with the research of others, were those linking customer loyalty and profits (e.g. Hallowell, 1996), customer satisfaction and profits (e.g. Nelson, Rose, Rust, Zahornik, et al., 1992), customer satisfaction and loyalty (e.g. Boulding, Kalra, Staelin, & Zeithaml, 1993; Hallowell, 1996), employee loyalty and customer loyalty, and employee satisfaction and customer satisfaction (e.g. Schlesinger & Heskett, 1991a; Schlesinger & Zornitsky, 1991; Schneider & Bowen, 1985; Schneider, Parkington & Buxton, 1980). These relationships were found to be mutually reinforcing.

The Service Profit Chain is an integration of research from several academic fields including marketing, human resources and services operations, and its application as a management tool has generated considerable interest. The evidence underlying the Service Profit Chain however has remained limited to case studies and empirical tests of parts of the model. The main impediment to more comprehensive empirical testing has been the absence of large sample data that span all or even most components of the chain.

Loveman (1998) was one of the few researchers that conducted a study using panel data from retail banks that measured nearly all components of the model and at the same level of analysis. The results of simple econometric tests generally supported the constituent Service Profit Chain hypotheses that customer loyalty drives profitability and growth, customer satisfaction drives customer loyalty, values drives customer satisfaction, employee productivity drives value, employee loyalty drives productivity, employee satisfaction drives loyalty, internal quality drives employee satisfaction, and leadership underlies the chain's success. However, the analysis had several limitations, most notably the absence of a multi-equation model to simultaneously test all of the Service Profit Chain hypotheses. Further and more sophisticated analyses were recommended.

Pritchard & Silvestro (2005) applied the Service Profit Chain to a single retail service with a view to develop a better understanding of the linkages between employee perceptions and performance, customer perceptions and behaviours, and financial performance. Although analysis of the performance relationships revealed many interesting correlations, the data lent little support for some of the expected linkages. In particular, the 'satisfaction mirror' effect between employee satisfaction and loyalty, and customer satisfaction and loyalty, and the link between customer loyalty and financial performance. Their study in particular points to the

value for managers in developing a context specific model, rather than a 'managerial straight-jacket' for organizations. These researchers encourage both managers and academics alike to ask themselves what the Service Profit Chain should look like for their particular organization. Their findings encourage the development of a context specific model (e.g. Gelade & Young, 2005) that demonstrates the specific pattern of linkages (industry specific variables) and stimulates better understanding of strategy, service delivery and business performance.

Relating the links in the chain

The Service Profit Chain focuses management thinking on two important ideas: i) Organizations that wish to be successful in financial terms should not focus on profits. Instead, the focus should be concentrated on organizational inputs (employees and the resources they require to perform their jobs well). ii) In this model, there is a discernable manageable sequence of variables that form a chain reaction to produce the end result. The philosophy behind this approach: 'if we care for our people, then they will care for our customers who in turn will show their loyalty by using our company more which will generate income' (Heskett et al., 1994, 1997). A closer look at each link reveals the flow of the Service Profit Chain:

Internal quality improves employee satisfaction. The human resource or internal portion of the Service Profit Chain has been documented in research by Schlesinger & Heskett (1991a, 1991b). Based on both practical experience and scholarly work, Schlesinger & Heskett hypothesized that many service firms unwittingly create what they termed a 'cycle of failure' for their managers, frontline employees, and businesses by paying little attention to issues of employee selection, training, support and job design. The result, high rates of employee turnover that resulted in large undocumented costs for their businesses. Managerial interventions designed to reverse this cycle of self-reinforcing bad outcomes involve careful selections and the delivery of high levels of internal service quality to employees, which the researchers argue result in employee loyalty, enhanced customer loyalty and improvements in financial performance.

Heskett et al. (1994) referred to 'internal quality' as the quality of the work environment that contributes to employee satisfaction (Lau, 2000). This has also been known as 'quality of work life' (Hian & Einstein, 1990). Internal quality is recognized as a multi-dimensional construct and involves designing the internal work environment to support the employee and their ability to achieve results for the customer. The key concepts discussed in the literature include job security, reward systems, higher pay, training, growth and

development opportunities, and participative groups among others. Anything that makes the employee feel valued, that makes work easier or more interesting or makes the work environment safer, cleaner, healthier or more comfortable will contribute to internal quality. Internal quality it is about designing for 'capability' (Heskett et al., 1994, 1994). The philosophy behind capability is that satisfied employees are loyal and productive employees.

Employee satisfaction improves loyalty. It has been well established in the literature that dissatisfied employees have greater intentions to leave the company for other opportunities than satisfied employees, a potential turnover rate three times higher than that of satisfied employees (Heskett et al., 1997; Lau, 2000; Schlesinger & Zornitsy, 1991). It is obvious that a happy and satisfied employee will be a more loyal employee. It is human nature to respond positively to attentive managers who care about their people and who work to make things better in the work environment. This personal loyalty transfers to the organization if the employee feels that the values of the corporate culture are worthwhile and beneficial to his or her interests.

Employee loyalty improves productivity. Through their long tenure, loyal employees tend to develop personal relationships with their customers and have the 'benefit of the years' behind them. These relationships serve as the foundation for a reinforcing cycle of positive interactions between service employees and customers (Reicheld, 1993, 1996). Loyal employees will 'go the extra mile' for the organization. In addition, organizations with loyal employees have a much lower turnover rate. In personalized service organizations, low employee turnover is linked closely to high levels of customer satisfaction (Fitzsimmons & Fitzsimmons, 2006).

Employee productivity yields greater value. Service value is an important concept in the service industry. It can simply be described as a ratio of perceived service results and quality relative to price and customer acquisition costs (Heskett et al., 1997). Although a truly quantifiable service value is often hard to estimate, most customers can perceive a service value by comparison or past experience. Productive employees can accomplish the service tasks efficiently and accurately because they know their work and their customers well. Employee productivity is key to higher quality service and lower cost (Lau, 2000).

Value drives customer satisfaction. Central to the Service Profit Chain is the value equation which emphasizes that results can be measured in both economic terms as well as the degree to which process quality exceeds customer expectations. Heskett et al. (1994, 1997)

claim that customers essentially purchase results not products or services per se. The researchers claim that the quality of results influences customer satisfaction and loyalty. Many people equate value with quality for achieving customer satisfaction. However, service value can be a better indicator than service quality for customer satisfaction. It is possible that service quality can be judged low but customers are still satisfied (Parasuraman, Zeithaml & Berry, 1988). This might be the case when the service price falls within the customer's budget or the service has already been priced according to low quality.

Customer satisfaction leads to customer loyalty. Satisfied customers are important, both as a goal and an asset for successful organizations. When customers believe they have received a high service value from one service provider, they are more likely to become loyal and regular customers, increase the scale or scope of the relationship, and make recommendations to others for that service provider (Hallowell, 1996). Jones & Sasser (1995) found that customers that are 'very satisfied' with a service or product are six times more likely to repurchase than those who are 'just satisfied.' Evidence of a positive link between customer satisfaction and loyalty is found in Anderson & Sullivan (1993), Hallowell (1996), Rust & Zahornik (1993) and Zeithaml et al. (1996). However, Heskett et al. (1997) note that out of all of the links in the chain, this one has proven to be the least reliable, suggesting there is not a constant relationship between customer satisfaction and loyalty. Short-term measures of the relationship have been disrupted by such things as competitive price reductions that may entice customers away from outstanding service organizations regardless of the level of satisfaction they may have with a service.

Customer loyalty drives profitability and growth. The ultimate achievement in any business that depends on sales for its survival and profitability is to transform as many customers as possible into loyal customers. Managers of successful service organizations suggest that customer loyalty or retention is a more important determinant of profit than financial measures (Anderson, Fornell & Lehmann, 1994; Rust & Zahornik, 1993). Reicheld & Sasser (1990) estimate that a 5% increase in customer loyalty can produce profit increases from 25% to 85%. They conclude that quality of market share measured in terms of customer loyalty deserves as much attention as quantity of share (Reicheld 1993, 1996). Customer loyalty can be measured by the depth of relationships or the number of services used by each customer. Heskett et al. (1997) emphasize the importance of evaluating the lifetime value of a

customer and retaining customers in a continuing, active relationship through retention, related sales and referrals.

The Service Profit Chain provides a solid foundation for designing and managing an organizations' service strategy and thus serves as the underlying theoretical framework for this research. In application to public sector health care, the challenge with the Service Profit Chain is that it is a private sector model with desired goals related to financial motivation. The public sector, where service provision is largely based on fiscal prudence, has no comparable model (Davis, 2006; Hedley, 1998). Hence for the purposes of this research, a modified version of the chain has been developed, adapted to suit public sector health care. This follows the call made by Gelade & Young (2005) for researchers and practitioners to develop a 'context specific model' that demonstrates the specific pattern of linkages (industry specific variables) and stimulates better understanding of strategy, service delivery and business performance. At the heart of this approach is the patient, in the sense that organizations must maximize the capability of the frontline in efforts to provide high quality service to patients.

In essence, the researcher is applying a modified version of Heskett et al.'s (1997) Service Profit Chain to health care to show that certain structural and process elements of service have the potential to positively influence individual and organizational outcomes in health care. Prior to explanation of the modified version of the chain, the role of physical design will be discussed. Physical design serves as a structural element of the chain and is highlighted here as it is an area largely unrecognized in organization studies and for the most part unattended to in health care. The role of physical design is essential to a service strategy and is perhaps the area of this research where the greatest contribution to knowledge and practice is made.

2.4 Architecture

2.4.1 Physical Design

An extension to the etiology of service climate is the role of physical design. This role is not well understood with regard to organization studies in general (Pfeffer, 1982) and certainly not with regard to organizational climate and service climate (Ashforth, 1985; Davis, 1984). After more than a century of formal studies on organization, despite the physical reality of organizations and the efforts of Homan (1950), Steel (1973), Becker (1981), Pfeffer (1982), Sundstrom (1986) and Hatch (1997), there has been relatively little systematic work linking physical design to organization theory.

In academia, organization theorists frequently discuss the design, development and change of organizations without much consideration of the physical setting. In practice, organizations rarely tie physical design to their business strategies or performance (Chan, Beckman, & Lawrence, 2007; Heerwagen, 2002). Practitioners will spend hundreds of thousands of dollars on new personnel training programs in the process of genuinely attempting to restructure the way in which work is organized. Even so, the potential for the most pervasive resource in the work environment - the physical setting, to contribute to these efforts is largely ignored. Perhaps this is because the work of designing physical structures has been placed in the hands of engineers, architects and interior designers and thus outside the scope of organizational research. Nevertheless, the influence and impact of physical design is both important and pervasive. What limited literature does exist strongly suggests that physical design is crucial in affecting numerous aspects of organizational functioning (Becker, 1981; Hatch, 1997; Pfeffer, 1982; Sundstrom, 1986). Furthermore, the physical design of organizations places constraints on and defines the context in which work processes (Becker, 1981), services (Bitner, 1992), perceptions (Bitner, 1992) and social interactions (Ashforth, 1985) occur.

There is a renewed interest in physical design stimulated by sources coming from outside traditional organizational domains such as service management (Bitner, 1992), health care (Ulrich, 2004), architecture (Hamilton & Sherman, 2005) and marketing (Berry, Parker, Coile, Hamilton, O'Neil, & Sadler, 2004). The following discussion on physical design is framed in response to the following questions: What is the physical setting?; what is physical design?; what are the causes in variation of physical design?; what are the consequences of physical design?; and, what is the role of physical design in influencing a service climate in health care?

What is the physical setting?

As viewed by Becker (1981), the physical setting is a socially constructed environmental support system and communication medium. Its form and management are shaped by conceptions of the environment, of work and workers, and of productivity. Pfeffer (1982) describes the physical setting as an organization's physical entity that serves a variety of roles. This physical entity usually resides in some sort of building or facility and its day-to-day functions are typically conducted in an office, warehouse, or factory of sort that includes a

variety of furniture, equipment, signage, amenities and people. Such physical entities vary in their purpose, design and in the activities, arrangements and relationships that take place.

What is physical design?

The design of the physical setting constitutes a complex mix of objective, physical elements that can be built into, managed and evaluated by the organization. These elements are often used to influence behaviour (e.g. acoustics, lighting, ventilation, thermal comfort, interior design, aesthetics and layout). In a review of the literature, different theorists have identified different elements of physical design in different ways. For example, Steele (1973) defined the internal physical environment in terms of what he felt were its six main functions: shelter and security, social contact, symbolic identification, task instrumentality, pleasure and growth. Becker (1981) offered no overall framework but rather suggested some “alternative ways of thinking about the design, management and evaluation of physical settings” (1981, p.v). The fundamental premise of his work is that the nature of the physical setting of organizations and the processes through which they are created can have a significant impact on the quality of work and the effectiveness of programs instituted by the organization. Pfeffer (1982) classified the physical characteristics of organization in terms of six dimensions: size of the physical space, quality, flexibility, arrangement, privacy and location. Bitner (1992), in her conceptual framework known as “servicescapes” identified three composite dimensions: ambient conditions, spatial layout/functionality and signs/symbols/artifacts. This framework suggests that both customers and employees perceive a variety of objective environmental factors and that both groups may respond cognitively, emotionally and physiologically to the environment. Those internal responses influence the behaviour of individuals in the servicescape and affect social interactions between and among groups. Lastly, Hatch (1997) viewed physical design from a relationship perspective where the geography or location is viewed in relation to communication, recruitment and transportation. The layout of the building is viewed in relation to interaction, coordination, conflict and control. The design/decor of the building is viewed in relation to status, image and identity.

What causes the variation in physical design?

Understanding the role of the physical setting is an important first step in determining design. Although there has been some research investigating the consequences of physical design, there is limited research exploring the antecedents of physical design (Becker, 1981; Pfeffer, 1982).

The design of the physical setting may assume a variety of strategic roles. First, the physical setting can assume a *communicator* role (Bitner, 1992; Hatch, 1997; Solomon, 1985) by conveying a total image and suggesting the purpose and relative quality of the organization. The physical setting is rich in cues about organizational capabilities and quality and can be influential in communicating messages about the identity of the organization and its members.

Second, the physical setting can assume a *symbolic* role (Becker, 1981; Bitner, 1992; Hatch, 1997; Rafaeli & Worline, 2000; Steele, 1973). The chosen signs, symbols and artifacts that make up the physical setting, and their placement in the setting, are central to the personal, social and cultural aspects of experience in that physical setting. Objects and organizational landscapes are indicators of social and cultural meaning rather than simply arbitrary signs. They have the ability to form first impressions, to communicate new concepts, to reposition a service and to differentiate an organization. Gagliardi (1992, 1996) proposes that the tangible, sensory aspects of the organization make up its aesthetic experience which is the basis for all other types of experience. In this view, physical objects are concrete manifestations of the psychological dynamics of organizational life.

Third, the physical setting can assume a *facilitator* role (Ashforth, 1985; Bitner, 1992; Hatch, 1997) by either facilitating (or hindering) the ability of occupants to carry out their respective activities. Physical settings provide context for activity (and behaviour) and have influence to support some forms of activity and constrain others. The floor plan, size of physical space, the design and layout of walls, partitions, furnishings and equipment can have a large impact on the ability of users to complete their tasks and achieve their goals. These factors can also help to define boundaries and minimize interaction where needed. Typically, the physical setting facilitates a group orientation and within group communication, often at the expense of between group communication (Ashforth, 1985). This contributes to the evolution of multiple climates as observed between multiple departments and work groups.

Once the roles have been clarified, the next step is to consider the factors that influence design. Together, the role of design and the factors that influence design cause the variation that is seen in physical design. There are five factors in particular that influence physical design, they include: competition for market share; technology and innovation; efficiency and cost-effectiveness; regulatory compliance; and power, influence and social control (AIA,

2001; Becker, 1981; Carpenter, 2004; Carr, 2005; Nelson, West, & Goodman, 2005; Pfeffer, 1982; Salkever, 1980). In the context of hospitals, these factors can be explained by:

- *Market share/competition.* In the United States, the hospital market is highly competitive and health care executives must invest in new designs to remain admirable to patients, affiliated physicians who influence patient referral, and payers. Competition among hospitals reportedly is influenced more by the availability and sophistication of services and facilities than by price.
- *Technology and innovation.* Research by the National Institute of Building Sciences shows that hospitals are increasingly housing more sophisticated diagnostic and treatment technologies. Hospitals continue to adapt to the flow of new technology into inpatient and outpatient departments, including the cost implications of replacing old technology with new technology and the necessary supporting infrastructure.
- *Efficiency and cost-effectiveness.* Hospitals are being redesigned in an effort to be more efficient and cost-effective. Efficient hospitals can shorten lengths of stay and improve patient flow in outpatient settings, thereby freeing beds for new patients, improving productivity and increasing hospital savings and revenue.
- *Regulatory compliance.* Hospitals must be renovated and updated regularly in order to maintain patient and staff safety consistent with new hospital guidelines and regulations. For instance, the 2001 version of the Guidelines for the Design and Construction of Hospital and Health Care Facilities (AIA, 2001) produced by the Health Guidelines Revisions Committee had more than 1500 changes from the previous edition, which necessitated changes on the part of hospital design.
- *Power, influence and control.* Power, influence and control are simultaneously and symbolically represented as aspects of design. Thus it seems reasonable to argue that “decisions about the nature and use of space and equipment in organizations are political ones” (Becker, 1981, p. 58). The design of hospitals is largely based on political decision making. It is both interesting and reasonable to search for the causes of physical design in the factors of power,

influence and control. These factors have been used in the allocation of resources (e.g. financial) and in the changing patterns of control and organization of work in hospitals.

As presented, the literature on the factors that influence design is largely American based. Published research on hospital design, specific to Canada, is limited. In consideration of the variations in the physical design of hospitals, it is important to also consider the relative impact of the environment on these factors beyond market share.

What are the consequences of physical design?

There have been more studies of the consequences of physical design than of the causes of variation in physical design. Literature assessing the influence of 'specific' physical design features on occupants can be found in the fields of environmental psychology, marketing and health care. Pfeffer (1982) claims that in general, three types of dependent variables have been treated as effects of physical design: the amount of interaction that occurs in the physical setting (e.g. teamwork, group cohesion, friendship with coworkers); the affection reaction to the job and organization (e.g. job stress, satisfaction); and the affective reaction and orientation to those with whom one interacts (e.g. interpersonal skills; competitive versus cooperative attitude).

One can infer from the environmental psychology literature that occupants respond to the dimensions of physical design cognitively (Rapoport, 1982), emotionally (Mehrabian & Russell 1974; Russell & Pratt 1980), and physiologically (Oborn 1987; Riley & Cochran 1984), and it is those responses that influence behaviour. Research in environmental psychology has also considered the influence of physical design on social interactions, communication patterns, and group cohesion (Barker 1968; Bennett & Bennett 1970). Hence, the perceptions of physical design do not directly cause people to behave in certain ways, but they do influence behaviour (Bitner, 1992; Rapoport 1982; Russell & Ward 1982). Understanding the internal responses of people to physical design leads to new insights for designing and managing the physical setting. Therefore, the first step in 'purposeful design' (Bitner, 1992) is to identify desirable behaviours and the strategic goals the organization hopes to advance through the physical design.

Most of the research in marketing draws from environmental psychology theories which examine the impact of physical design on customers (Donovan & Rossiter 1982; Kotler 1973; Parish, Berry, & Lam, 2008; Wall & Berry 2007). These customer-centered studies have

considered the effects of music (Milliman 1986), colors (Bellizzi & Hite 1992) and olfactory cues (Bone & Ellen 1999; Spangenberg, Crowley & Henderson 1996) among other variables. Some marketing researchers have assessed the influence of design features on employee and customer attitudes and behaviour (e.g. Baker, Berry, & Parasuraman, 1998; Bitner, 1990, 1992; Bitner, Booms, & Mohr 1994; Lewis & Entwistle 1990; Price, Arnould, & Tierney 1995).

What is the role of physical design in influencing a service climate in health care?

Due to the simultaneous production and consumption of services, the buildings in which patients receive service are inherently part of the service experience, an important and contributing factor in creating a strong and positive service climate. Berry, Parker, Coile, Hamilton, O'Neill, & Sadler (2004) have researched 'how patients evaluate a service as proximate, diffuse, complex, personal and important as health care?' They found that patients are especially attentive to what they can see and understand so that they can interpret what they cannot see and understand. The nature and significance of health care turns its patients into inspectors looking for clues to reassure themselves of the organization's quality and competence.

The physical design of the service setting in terms of the buildings, equipment, furnishings, signage, colours, art, landscape, linen and other sensory stimuli offer an outpouring of clues about the organization, and these clues have a disproportionate impact on the patient's evaluation of service (Berry & Bendapudi, 2003; Berry et al., 2004; Hartman, 2001). In effect, the physical design of a service organization such as a hospital, offers significant evidence regarding the value placed on service.

Health care facility design is also important for improving health outcomes, not only for patients but also for staff. A growing body of research indicates that improved design can help bring about dramatic increases in safety and quality - particularly reductions in infection, falls, errors, transfers, nurse turnover and stress, and increases in job satisfaction (Marberry, 2006; Ulrich & Zimring, 2004). Major hospitals and health care systems are embracing 'evidence based design' as they seek to enhance the quality of health care.

Evidence based design is the deliberate attempt to base building design decisions on the best available evidence. Ulrich & Zimring (2004) conducted the largest meta-analysis to date on evidence based design as it pertains to health care. These authors reviewed over 600 published reports that linked the physical environment to outcomes in terms of reduced patient

stress, reduced staff stress, and improved safety and quality. For example in 1984, Ulrich & Simons conducted a landmark study that stimulated the development of the field of evidence based design. In this study, the authors evaluated surgical patients randomly assigned to rooms on the same corridor that were identical except for the window view. Half the patients overlooked trees, and half viewed a brick wall. Patients with views of nature went home three-quarters of a day sooner, had a \$500 lower cost per case, used fewer analgesics, had fewer minor complications such as nausea, and exhibited better emotional well being.

Health care facility design is also important in employee commitment to the organization. Design has been shown to be effective in the recruitment and retention of staff (CABE, 2004; Coile, 2002). In most cases employees do spend more time in the facilities than do patients. Hospitals are not only stressful for patients they are also demanding and stressful environments for staff - physically, mentally and emotionally. Without words, the design of the physical setting tells a great deal about management's concern for staff. Few, if any, service industries are experiencing the skilled labour shortage as seen in health care. Few, if any, service professions are more prone to on the job 'burnout' than are health care providers. Evidence shows that health care facility design offers strong reinforcement of an organizations' value for its employees.

2.4.2 Building a Business Case for Physical Design

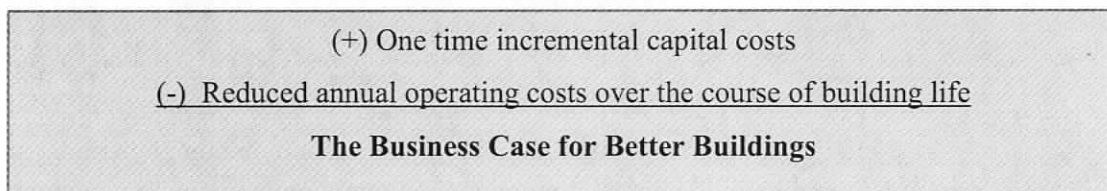
There is a case for designing and building better health care facilities, a case that includes financial benefits which ties into the Service Profit Chain (Heskett et al., 1994, 1997). It is possible to quantify those benefits by examining the financial results achieved by progressive health care organizations that have built or renovated facilities. Through measured performance, better buildings improve the organization's financial results.

In a study by the Health Care Financial Management Association (2003), data indicated that applying evidence based design initiatives to a 56-bed cardiology comprehensive critical care unit resulted in the a number of improvements along with corresponding impact to the organization's bottom line. For example, patient transport dropped by 90%, patient/family dissatisfaction ratings decreased from 6.7 to 2.7%, patient days per bed increased from 320 to 345, and patient falls decreased 75% because of the unit's decentralized design which provided staff with better observation of patients. This particular facility made the case that a very slight increase in capital spending to build a 'healing design' on the order of only 5%, provided a return on investment in under a year. For example, where

the average cost of a non-litigated patient fall is \$10,000, if the organization can reduce patient falls through better facility design, those savings directly impact the bottom line. Good design, that is evidence based design, shows significant savings over the life cycle of the building, as well as improving the quality of life for all occupants.

In the article entitled 'The Business Case for Better Buildings', Berry et al. (2004) present a rigorous economic analysis based on a hypothetical but realistic scenario of a new 300 bed 'Fable Hospital.' Fable's design incorporates a wide array of evidence based design innovations and upgrades intended to improve outcomes (e.g. noise reducing measures, variable acuity rooms, HEPA filters for air quality). The evidence indicated that the one-time incremental costs of designing and building optimal facilities are quickly repaid through operational savings and increased revenue. This results in substantial, measurable and sustainable financial benefits. Figure 2.4a illustrates the formula for building a business case for better buildings.

Figure 2.4a. Building a business case for better buildings.



A key term relevant to health care performance and evaluation is 'health outcome,' which broadly refers to an indicator or measure of health care quality or performance. Outcomes data have major importance in health care because they provide the most sound and credible basis for evaluating whether a particular medical treatment, service, intervention or design is effective and cost-efficient. In the end, the most important and credible evidence for assessing whether or not a health care building is well designed relates to whether it improves outcomes. In this research, the argument could be made that designing more user-centred, service oriented health care facilities promotes high quality service which influences both patient outcomes (e.g. satisfaction with service, shorter length of stay, reduced patient costs per stay, etc.) and staff outcomes (e.g. job satisfaction, reduced turnover, reduced workplace injuries and medical error, etc.). These improved outcomes have cost implications for the larger health care system.

Figure 2.4b illustrates the financial outcomes of a well designed hospital in terms of annual savings and revenue. These outcomes were calculated for the Fable Hospital (Berry et al., 2004). In applying the formula from Figure 2.4a, these figures provide some indication of the savings and revenue that can be made over the life cycle of the building. The figures show the annual operations benefits that can be acquired through increased savings and revenue over the course of one year. The evidence indicates that the one-time incremental costs of designing and building optimal facilities can be quickly repaid through operational savings and increased revenue and result in substantial, measurable, and sustainable financial benefits. These benefits must be calculated over the life cycle of the building.

Figure 2.4b. Expenditures, savings, and revenue for the Fable Hospital.

<u>Expenditures</u>	
• Evidence based design upgrades (5% added to the construction budget of \$249 million)	<u>\$12,000,000.00</u>
Total expenditures:	\$12,000,000.00
<u>Annual Savings/Reduced Costs</u>	
• Patient transfers reduced	\$3,893,200.00
• Infections reduced	\$80,640.00
• Patient falls reduced	\$2,452,800.00
• Drug costs reduced	\$1,216,666.00
• Nurse turnover reduced	<u>\$164,000.00</u>
Total savings:	\$7,807,306.00
<u>Annual Revenues/Increased Revenues</u>	
• Increased market share	\$2,168,100.00
• Philanthropy increase	<u>\$1,500,000.00</u>
Total revenue:	\$3,668,100.00
<u>Annual Summary</u>	
Total expenditures:	(+) \$12,000,000.00
Total savings and revenue:	(-) \$11,475,406.00
Annual operations benefits:	(=) <u>\$524,594.00</u>
“The Business Case for Better Buildings”	

2.5 Key Findings from the Literature

A summary of the key findings from the review of the literature are as follows:

2.5.1 Health Care

In Canada, cost is an enormous driver of the health care system, which has undergone many changes and forms of restructuring over the past 15 years. Given economic, political and social pressures, there has been a fundamental shift in the way that health care is viewed and delivered. Redesigning, restructuring, reengineering and reforming activities are touted as common strategies invoked to reduce costs while maintaining service. Restructuring has taken place in the form of regionalization, bed closures, workforce reductions, work and primary care reorganization. Patterns in resource allocation have shifted. Much of the reason behind the change in spending is due to demographics changes and the increased demand for services in some areas. The aging population and increases in chronic diseases and co-morbidities are causing significant strain on the health system. A shortage of health care providers causes additional strain. These strains have forced local clinics, community health centres and ERs to carry a considerable load of the primary care burden. Though it is well known that political and economic decisions made during the 1990s are still reverberating throughout the system, how these changes have actually affected the 'service' aspect of health care has yet to be determined.

2.5.2 The ER

The ER is one of those most visible and highly utilized symbols of the health care system and a department that provides sheer evidence of a strained and somewhat fractured health care system. Every year, Canadians make over 14 million visits to hospital ERs, resulting in over one million admissions to acute care hospitals (CIHI, 2005). A study by Statistics Canada (2003) reported that some 3.3 million people were treated for their most recent injury or had their most recent contact with a health care provider in the ER. A string of high profile incidents has turned the spotlight on the services provided in ERs. Stories abound in the media concerning overcrowding and deteriorating levels of service, patient safety and patient satisfaction. We hear of diverted ambulances; long wait times; stressed, overburdened staff; patients lying in stretchers in the hallways for days; patients waiting in ambulances because of bed shortages; regrettably worsened medical conditions and the occasional loss of life. The Canadian Medical Association (CMA, 2004) reports of a "crisis in hospital ERs," however some question whether it is a crisis of resources or a crisis of management.

Since the height of the restructuring in the mid 1990s, ERs across the country have experienced an increase in the number of patient visits and admitted patients being held in the ER until a bed becomes available on a ward. Overcrowding has become widely recognized as the most significant problem facing ERs. This problem is exacerbated by a shortage of health providers in the ER and inadequate facilities. Together these factors can have a negative impact on service quality.

2.5.3 Organizational Design

Organizational design is a means of giving a prescriptive and comprehensive focus to organizations (Galbraith, 1987, 1995). It is the simultaneous choice of structure and process (Chase & Tansik, 1983; Galbraith, 1987) and has become viewed as the rational, deliberate and planned series of activities in which leaders create organizational arrangements supportive of the mission, strategy and goals of the organization (Hall, 1987). It refers to the way in which the building blocks of organization are arranged or rearranged to improve organizational effectiveness. Organizational design is a means to ensure service quality in health care.

2.5.4 Organizational Culture and Climate

If strategy centres on service quality, then organizational design and culture play a significant role in the success of service strategy. Given the view of culture as shared assumptions and values and climate as perceptions and inferences that help to define what is psychologically important and 'meaningful,' it may be surmised that culture fundamentally supports climate. Culture can inform climate in two ways. First, by directly helping individuals define what is important and make sense of their experience. Second, indirectly through its very impact on the 'objective' work environment. This consists of the material things that form perceptions of climate (e.g. symbolic management, the design of the physical setting). Such objects or settings may be the norm precisely because of the underlying cultural assumptions and values. In this sense, climate is akin to what Schein (1984) terms a 'cultural artefact,' which is more or less a visible manifestation of culture. It is important to understand the culture of the organization in order to understand climate. Thus it may be futile to understand or alter a climate without first considering the culture that may have given rise to it and likely sustains it.

2.5.5 Service Climate

As Schneider & Reichers (1983) have pointed out “to speak of organizational climate per se without attaching it to a referent is meaningless” (p.21). The authors suggest that climate should have a strategic focus and that one should not assess overall climate but “a climate for something.” This research proposes that a climate for service is lacking in the ER setting. Schneider et al. (1998) defined ‘climate for service’ as “employee perceptions of the practices, procedures and behaviours that get rewarded, supported and expected with regard to customer service and customer service quality” (p. 151).

In the research on service climate, much of the work has been to identify antecedents within organization that promote a positive service climate. These antecedents emphasize the idea that the total patterns of important organizational activities must be in place for a service climate to exist. Organizations that create the proper set of foundation conditions for employee work also provide a basis for the development of a strong service climate. This argument is based on the idea that employees will deliver quality service to customers when the organization provides them with the resources necessary to do so and when the organization treats them as it would want them to treat customers (Schneider & Bowen, 1985, 1993; Schneider et al., 1998). Also key is having managers that exemplify strong service values. When employees perceive that service is important and they have the necessary supports to deliver quality service, service climate will be strong. If employees perceive that service is unimportant and the necessary supports are not in place, a weak service climate will exist.

2.5.6 Physical Design

An extension to the literature on the antecedents of service climate is the role of physical design. This role is not well understood with regard to organization studies in general (Pfeffer, 1982) and certainly not with regard to organizational climate and service climate (Ashforth, 1985; Davis, 1984). After more than a century of formal studies on organization, there has been relatively little systematic work linking physical design into organization theory. The physical setting may best be described as a socially constructed environmental support system and communication medium. Its form and management are shaped by vision, strategy, conceptions of the environment, of work and of workers.

The design of the physical setting constitutes a complex mix of objective, physical elements that can be built into, managed and evaluated (e.g. ambient conditions, interior design, interior design, spatial layout/functionality and aesthetics/signs/symbols/artifacts).

These elements are often used to influence behaviour. There have been more studies of the consequences of physical design than of the causes of variation in physical design. The literature claims that in general, four types of dependent variables have been treated as effects of physical design: the amount of interaction that occurs in the physical setting (e.g. group cohesion), the affection reaction to the job and the organization (e.g. job satisfaction), the affective reaction and orientation to those with whom one interacts (e.g. interpersonal skills, attitude), and health outcomes (e.g. hospital related falls). A growing body of research indicates that improved design can help bring about dramatic increases in safety and quality - particularly reductions in infection, falls, errors, nurse turnover, and increases in job satisfaction (Marberry, 2006; Ulrich & Zimring, 2004).

Understanding the consequences and internal responses of people to physical design leads to new insights for designing and managing the physical setting. Therefore, in setting strategy, it is important to identify desirable behaviours and the strategic goals the organization hopes to advance through the physical design. For example, in creating a climate for service in health care, the influence of physical design should be realized and emphasized. Due to the simultaneous production and consumption of services, the buildings in which patients receive service are inherently part of the service experience and an important and contributing factor in creating a positive service climate. How patients evaluate a service as proximate, diffuse, complex, personal and important as health care is by being especially attentive to what they can see and understand so that they can interpret what they cannot see and understand. The nature and significance of health care turns its patients into inspectors looking for clues to reassure themselves of the organization's quality, competence and concern for people.

2.5.7 The Service Profit Chain

The Service Profit Chain is a simple conceptual framework that links internal service quality to employee satisfaction and loyalty, to customer satisfaction and loyalty, to financial performance. It is a well-established means for implementing a linked and strategic service vision and strategy. Although widely used by practitioners, the Service Profit Chain's series of hypothesized relationships between employee, client and financial outcomes has not been rigorously tested using data that span all components of the model (Heskett et al., 1997; Loveman, 1998; Pritchard & Silvestro, 2005).

After a review of the literature, the Service Profit Chain was chosen to serve as the underlying theoretical framework for this research. The reason for choosing this framework is that it is a well-established foundation for strategizing service. It has the ability to assess multiple elements and linkages considered important to service strategy; it also has the ability to be practically applied in service design. The following section describes what is meant by 'service design' and notes some deficiencies in the literature. It is hoped the application of the framework to this emerging area of study will help to reduce some of the deficiencies.



CHAPTER 3

Conceptual Framework

3.1 Designing for Service

Although the literature on designing for service or 'service design' resides somewhat in its infancy (Martin & Horne, 1993; Berry & Lampo, 2000), an overall methodology for designing new services or re-designing existing services is lacking (Gummesson, 1994), and direction for integrating service innovations into existing service systems is limited (Tax & Stuart, 1997). What is clear throughout the literature is that offering 'superior total service experiences' demands designing systems and processes around the idea of rendering a quality service experience to the user (Maschi & Venkatraman, 2006 ; Zeithaml, Berry & Parasuraman, 1990). What is not clear is a methodology for doing so.

Rendering a 'superior total service experience' depends largely on what happens during the 'service encounter'. Fitzsimmons & Fitzsimmons (2006) define the service encounter as the 'moment of truth,' where the interaction between the service provider and the customer defines service quality in the mind of the customer. These moments of truth are the product of fundamentally strategic issues that have to be understood and addressed by top management (Heskett et al., 1994, 1997; Pugh, Dietz, Wiley, & Brooks, 2002).

In designing for service and the moments of truth, the key driver of all design decisions at all levels of strategic planning is the 'service concept' (Goldstein, Johnston, Duffy & Rao, 2002). The service concept brings strategic intent into service design planning. There are different definitions used to explain the term. Heskett (1986) defines service concept as the way in which the organization would like to have its services perceived by its customers, employees, shareholders and lenders. Edvardsson and colleagues (1996, 2000) refer to the service concept as the prototype for service and define it as the detailed description of what is to be done for the customer and how this is to be achieved. Johnston & Clark (2001) define service concept as the way in which the service is delivered, the customer's direct experience of the service, the benefits and results of the service for the customer, and the value of the service (the perceived benefit versus the actual cost of the service). Deconstructing a service into the 'what', 'why' and 'how' allows management and 'service designers' to identify the various attributes inherent in the service concept, and in essence, outline the service strategy. The literature suggests that a comprehensive service strategy should be led by the service concept, driven by strategic intent (e.g. the organizations' market position relative to

competitors and the type of customer relationship to pursue), and encompass the roles of the people, technology, physical facilities, equipment and the specific processes by which service is created and delivered (Goldstein et al., 2002; Heskett, 1986; Pugh et al., 2002).

Schlesinger & Heskett (1991b) identified the concept of 'poor service by design' stating that "service failures are not failures, they have been designed into the system by the choices senior management has made ... and have created, and continue to run, a self-reinforcing system that establishes an inevitable cycle of failure" (p. 73). These scholars explain that the cycle of failure begins with a set of assumptions and operating practices derived from old industrial models that virtually guarantee the degradation of the services the business exists to provide. Simply stated, all things being equal, the old industrial model claims that "it is better to rely on technology, machines and systems than on human beings."

Tax & Stuart (1997) made note of two deficiencies in the services literature. One deficiency is in the linking of business strategy to service design. A second deficiency is in the lack of consideration for measuring the performance of service design. Performance measures should be readily applied in any service organization and should vary widely from financial measures (e.g. revenues, cost, profit, return on investment) to operational measures (e.g. number of transactions per day, average time per transaction) to marketing measures of performance (e.g. customer satisfaction). The choice of measures should be based on the decided service concept and should subsequently drive structure and infrastructure investments to support the goals of the organization.

Tax & Stuart (1997) emphasize the importance of case studies to gain insight into the design challenges of service organizations and to develop frameworks for organizing and assessing service design. Ultimately in any organization, achieving organizational success is based on looking for relationships or linkages (Wiley, 1996) that facilitate performance excellence and develop measures to assess performance (Heskett et al., 1994, 1997; Pugh et al., 2002). Designing and supporting the elements and their relationships in the service delivery system are keys to achieving organizational success.

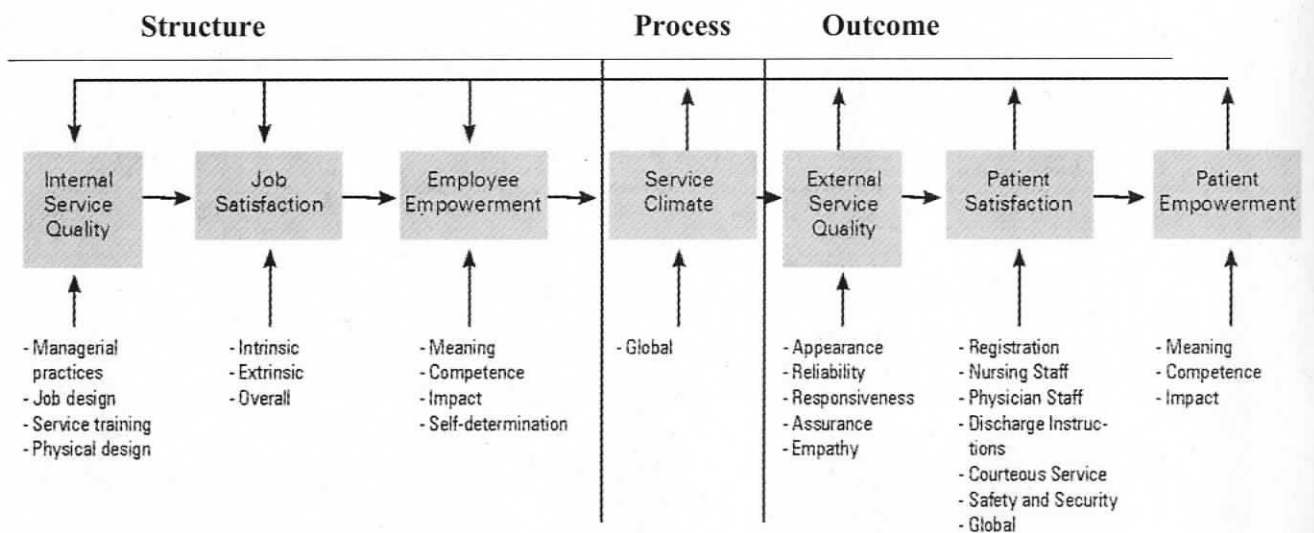
The following section describes the conceptual framework for this study. This framework is a modified version of the Service Profit Chain (Heskett et al., 1997) adapted to suit public sector health care. It is entitled the 'Service Outcome Chain.' This framework follows the call made by Gelade & Young (2005) for researchers and practitioners to develop a 'context specific model' that demonstrates a specific pattern of linkages between industry

specific variables. The context specific model provides a means for better understanding strategy, service delivery, design and performance specific to health care and the ER. At the heart of this approach are the staff and the patients in the sense that health care organizations must maximize the capability of the frontline in efforts to consistently provide high quality service to patients no matter what conditions may present.

3.2 The Service Outcome Chain

The Service Outcome Chain is largely a translation of the language and basic concepts of business excellence to similarly important concepts in health care, the public sector, and service management. The major practical benefits derived from applying this approach are that it fosters cross sector cooperation and the sharing of best practices information. It supports the needs and preferences of both health care providers and patients simultaneously and it views the design of health services from a relationship (structural, process and outcome) perspective. These are three classes of measures that are not independent measures of performance but rather linked to an underlying framework (Donabedian, 1966; Kramer & Schmalenberg, 2005; Wiley, 1996).

Figure 3.2. Links in the service outcome chain.



The Service Outcome Chain (Figure 3.2) asserts that attention to certain structural elements of service design (e.g. leadership/managerial practices, service training, job design and physical design) are important for creating the proper set of foundation conditions for employees to provide high levels of quality service to patients. High levels of internal service

quality are achieved when the organization provides employees with the resources necessary to deliver quality service and when the organization treats them as it would want them to treat patients (Schneider & Bowen, 1985, 1993; Schneider et al., 1998).

High levels of internal service quality lead to satisfied and motivated/empowered employees. These three elements of service design (internal service quality, job satisfaction and employee empowerment) form the antecedents that promote a positive service climate. Service climate (Schneider et al., 1998) is the process element of service design whereby the quality of the work experience designed for employees is reciprocated in the quality of the service experience provided for patients. External service quality is an outcome element of service design and a consequence or subsequent of service climate that can lead to satisfied and empowered patients. Patients who perceive themselves as having received high levels of service quality will be more satisfied and empowered as a result of the service experience. An empowered patient realizes the impact they have on their health and well being and takes responsibility, to the best of their ability, for restoring and maintaining their health and well being. Empowered patients have potential implications for the larger health care system in terms of reductions in cost and demand for health services. Reductions in these areas may lead to improved access to service for users.

The application of the Service Outcome Chain highlights the structural, process and outcome elements of designing for service in health care. The combination of these elements emphasizes the idea that a total pattern of important organizational activities must be in place for a service climate to exist. When a service climate exists, high levels of service quality can be achieved. However for this to occur, all of the elements in the chain must be aligned in support of the service quality effort. In the absence of this, a service climate cannot exist and high levels of service quality will be difficult to achieve.

3.3 Relating the Links in the Chain

The Service Outcome Chain focuses management thinking on two ideas: i) Public health organizations that wish to be successful in financial terms should not focus as heavily on short term cost savings and reductions. Rather a key premise of the Service Outcome Chain approach is to expand our view and adopt a long term perspective on costs and performance. Health care operations and whole life performance should be emphasized rather than immediate cost savings and short term performance. For example, as approximately 65% of a hospital's annual operating expenses are soft costs (e.g. staffing costs) and the cost of

overtime, absentee wages and replacement for registered nurse absentees alone is estimated to be between \$962 million and \$1.5 billion annually in Canada (Fooks, et al., 2002), it is important to focus on improving the structure and quality of the internal work/service environment for staff in ways that reduce some of these soft operating costs; ii) Secondly, at the heart of financial success for health organizations lies the value of services delivered to patients. Value is achieved primarily through frontline employees (e.g. nurses, physicians, allied health providers) who are satisfied, loyal and productive, in part because of the high degree of capability they possess to deliver results to patients. In other words, there is a discernable manageable sequence of events that form a chain reaction to produce the end result which is a positive outcome for patients and staff. The philosophy being: 'if we care for our people, they will care for our patients who will in turn have better outcomes as a result of service.' A closer look at the Service Outcome Chain further explains the elements and their mutual relationships. Although multiple relationships may exist, the following general relationships will be assessed:

- Internal service quality improves employee job satisfaction.
- Employee job satisfaction influences employee empowerment.
- Employee empowerment influences service climate.
- Service climate yields greater value (external service quality).
- Value drives patient satisfaction.
- Patient satisfaction leads to patient empowerment.

Internal service quality improves employee job satisfaction. Internal service quality has certain core elements that are fundamental to structuring the service delivery system. These structural elements refer to contextual factors that influence and sustain work behaviour and build high frontline capability (Heskett et al., 1997). For the purposes of this research this includes managerial practices (Schneider & Bowen, 1985; Schneider et al., 1998), service training (Salanova et al., 2005), the design of jobs (Hackman & Oldham, 1980), and the design of the physical setting (Department of Health, 2006). Schneider et al. (1998) conducted a study of 134 branches of a bank and found that foundation issues such as resources, training, managerial practices, and the assistance required to perform effectively, yielded a climate for service, which in turn led to customer perceptions of service quality (also see Hartline & Ferrell, 2001; Parasuraman, 1988; Parasuraman, Zeithaml, & Berry, 1988). As stated by

Schneider and colleagues, management cannot simply make service quality an emphasis and establish a strong service climate without first providing the foundation for such. Hence a climate for service can only be built in an organization in which for example, the physical setting is set up to assist the provision of quality service, the training programs provide people with the competencies required to deliver quality service, the management serves as a role model and exhibits quality service oriented behaviours (Salvaggio, Schneider, Nishii, Mayer, Ramesh, et al., 2007; Schneider et al., 1998) and the organizational policies and practices follow suit.

Bagozzi (1992) suggests that employees who have positive appraisals of their internal work environment have high levels of job satisfaction and these employees are more likely to engage in 'pro-social and helping behaviours,' which leads to high levels of service quality and customer satisfaction (Schmit & Allscheid, 1995). The social exchange theory provides additional support for the relationship between employee attitudes and customer attitudes, where satisfied employees can lead to satisfied customers. This theory claims that individuals exchange their contributions for certain incentives provided by the organization (Barnard, 1938; Blau, 1964; March & Simon, 1958; Payne & Webber, 2006). Central to this theory is the norm of reciprocity (Gouldner, 1960; Payne & Webber, 2006). Employees who perceive incentives (e.g. rewards and recognition) from the organization will have positive attitudes about the organization and in return be inclined to demonstrate behaviours for the betterment of the organization, which fosters positive customer attitudes. Practitioners often explain this relationship by noting that once employees' needs are met, they can focus on the customer (Heskett et al., 1994). Other studies that have shown a significant and positive relationship between employee satisfaction and customer satisfaction are those by Payne & Webber (2006), Ryan, Schmit & Johnson (1996), and Schlesinger & Zornitsky (1991).

With regard to health care, job satisfaction is a priority issue for health organizations as labour costs are high and staffing shortages are common. There is mounting evidence that adverse working conditions and the low satisfaction of nurses are associated with increased turnover (Leveck & Jones, 1996). Studies have found that job stress among nurses has a strong and negative correlation with job satisfaction, and nurse-physician collaboration has a strong and positive correlation with job satisfaction (Aiken et al., 2002; Bratt et al., 2000; Zangaro & Soeken, 2007). Other studies have found that job dissatisfaction, absenteeism and turnover are positively correlated among nurses (O'Brien & Pallas et al., 2004; Aiken et al., 2001). This is

an important finding because of the potential this can have on quality of care (Aiken et al., 2000), patient satisfaction (Weisman & Nathanson, 1985) and patient outcomes (Aiken et al., 2001; Mitchell & Shortell, 1997; Shortell et al., 1994). Studies have linked factors in the work environment to job satisfaction, organizational commitment and employee retention (Beecroft, Kunzman, Krozek, 2001; Roche et al. 2004; Winter-Collins & McDaniel 2000). In light of the staffing shortage in health care, particular attention should be paid to ensuring that service providers are provided with supportive work structures that facilitate job satisfaction.

Employee job satisfaction influences employee empowerment. Conger & Kanungo (1988) define empowerment as employees' motivational concept of self-efficacy. Kanter (1993) offers a useful theoretical framework for understanding how empowering workplace structures can influence employee attitudes and behaviours. Satisfied employees are more likely to be empowered employees and empowered employees are highly motivated in their jobs and find meaning in their work (Thomas & Velthouse, 1990). This motivation allows them to achieve work related goals and empower others. In contrast, employees who lack access to these empowerment structures are more likely to experience feelings of powerlessness, resulting in disengagement from their work and decreased organizational commitment. Maslach & Leiter (1997) propose that fit between employees and their work environments results in greater engagement in work and lower levels of burnout. Researchers offer empirical support for the hypothesis that management behaviours, job design, and values based training can produce a sense of empowerment among employees, which can further pro-social customer oriented behaviour (Hartline & Ferrell, 2001; Peccei & Rosenthal, 2001).

Employee empowerment influences service climate. The way in which service is delivered is often as important as the results. Empowered employees are intrinsically motivated to provide high quality service to patients (Thomas & Velthouse, 1990). Empowered employees find meaning in their work, feel competent in performing their work, have the autonomy needed to carry out their work, and realize the impact they have on patient outcomes. Together, these cognitions reflect an active rather than passive orientation to their role in providing service. By active orientation, this refers to an orientation in which the individual wishes and feels able to shape their role and context. Although not empirically tested before, this study proposes that a positive relationship exists between employee empowerment and service climate. Service climate (Schneider et al., 1998) is viewed as a process and connecting element in this research given its visibility to both the health provider

and the patient. This recognition of the patient has yielded linkage research that shows the climate experiences of employees are validated by the experiences of the clients they serve (Pugh et al., 2002; Schneider et al., 2000, 2005; Wiley 1996). Employees that find value in their internal work/service environment are more likely to feel empowered to provide high levels of quality service to patients. Patients that find value in the service are more likely to feel empowered as a result of the service. Research has shown the influence of service climate on performance and productivity (Pritchard & Karasick, 1973), on customer perceptions of service quality (Schneider & Bowen, 1985; Schneider, Parkington & Buxton, 1980) and on customer satisfaction with service (Johnson, 1998). Additionally, it appears that a climate for service is associated with employee retention, customer loyalty and the profits derived from it (Heskett et al., 1997; Schneider et al., 2000). Several lines of research have found that positive interactions between staff and patients have remarkably strong effects on clinical outcomes, functional status and even physiologic measures of health (Greenfield, Kaplan, & Ware, 1985; Kaplan & Greenfield, 1989; Lahdensuo, Haahtela, Herrala et al., 1996; Sobel, 1995). This further illustrates the importance of establishing a positive service climate in health care.

Service climate yields greater value (external service quality). Service climate is an antecedent of service quality, for which is viewed as outcome element in the Service Outcome Chain. Because the customer's perception of service quality is influenced by the attitudes and behaviours of employees during the service encounter (Bowen & Schneider, 1985), it is important that a climate for service exists. A considerable amount of research has been published in the area of service quality perceptions (Brady & Cronin, 2001; Cronin & Taylor, 1992; Parasuraman, Zeithaml & Berry, 1988) and service quality has become an important corporate strategy for some health organizations (Berry, 1995; Dagger, Sweeney, & Johnson, 2007; Zeithaml & Bitner, 2000). Service quality perceptions are generally defined as a consumer's judgment of, or impressions about, an entity's overall excellence or superiority in providing service (Boulding et al., 1992; Cronin & Taylor, 1992). Parasuraman et al. (1985) propose 10 dimensions that determine service quality, these include: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customers, and tangibles. They propose that the difference between the perceived and expected performance of these dimensions determine overall perceived service quality.

An area of controversy in the literature has been the direction of causality between satisfaction with service and service quality and whether customer satisfaction leads to service quality or vice versa. Parasuraman et al. (1988) conceptualized perceived service quality as a long run overall evaluation of service, whereas satisfaction is a transaction specific evaluation. They assumed that incidents of satisfaction over time result in perceptions of service quality. Other researchers have supported this argument (Bitner, 1990). In contrast, some researchers have empirically supported the notion that perceived service quality is an antecedent of customer satisfaction (Cronin & Taylor, 1992; Dagger et al., 2007; Lee, Lee, & Yoo, 2000). It is this direction of causality that is proposed in this research.

Value drives patient satisfaction. Patient satisfaction is another outcome element in the Service Outcome Chain. It is based on the notion that if patients are satisfied, they have in fact received good service (Turis, 2005; Williams et al., 1998). Strasser & Aharony (1993) describe a comprehensive model of patient satisfaction organized around the theory of human judgment. They emphasize that patient satisfaction is a perceptual, multi-dimensional, dynamic, patient centered, attitudinal and individual process, not a product per se. In some studies, patient satisfaction with service is modelled as mediating the relationship between service quality and behavioural intentions (Anderson & Sullivan, 1993; Brady & Cronin, 2001; Cronin & Taylor, 1992). Other studies have shown a direct relationship between these constructs (Cronin, Brady, & Hult, 2000; Zeithaml et al., 1996). In the current context, patient satisfaction is seen to have both practical and political relevance. In practice, long wait times and/or unsatisfactory relationships with health care providers are potential barriers to seeking treatment and/or to individual treatment choices. Conversely, researchers have linked high levels of patient satisfaction with patient loyalty (Strasser & Aharony, 1993), willingness to return (Cleary & McNeil, 1988), medical compliance (Albrecht & Hoogstraten, 1998), positive health outcomes (Kaplan & Ware, 1995), and physician satisfaction and employee retention (Novack, Suchman, Clark, Epstein, Najberg, & Kaplan, 1997). Politically, public health reporting systems are becoming commonplace and patient satisfaction is often used as a proxy measure for health care quality. Because the quality of the health service encounter may influence future treatment seeking, medical compliance and individual accountability, understanding patient satisfaction is an important vehicle for addressing some of the challenges currently facing the system. In this study, the proposition is made that patient satisfaction with service is a result of service quality and a facilitator of patient empowerment.

Patient satisfaction leads to patient empowerment. A final outcome to be assessed in this research is patient empowerment and the relationship between patient satisfaction and patient empowerment. Patient empowerment may be defined as the patients' motivational concept of self-efficacy (Conger & Kanungo, 1988). Thomas & Velthouse (1990) define empowerment more broadly as increased intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to their role. These cognitions include: meaning, competence, self-determination and impact. Together, these cognitions reflect an active rather than passive orientation to the patients' role in the service encounter, including their role after the service encounter. By active orientation, the authors refer to an orientation in which an individual wishes and feels able to shape their role and context. Within this context, the researcher is interested in learning to what extent, as a result of the service provided, patients perceive themselves to have the ability take on an active role in restoring and maintaining their health and well-being. As stated by Funnel & Anderson (2003), "patients are empowered when they have the knowledge, skills, attitudes and self-awareness necessary to influence their own behaviour and that of others ... to improve the quality of their lives ... we cannot empower patients but we can give them the information and skills they need to attain mastery over their own care" (p. 454). Patients may become empowered through their interactions with health care providers (McKay, Forbes, & Bourner, 1990) through such things as increased patient participation (Hall, 1988), improved communication, health education and discharge planning (Funnel & Anderson, 2003). Studies have shown that patients' active involvement in the medical service encounter is related to higher levels of patient satisfaction and adherence to treatment regimens (Hall, 1988).

3.4 Applying the Chain to Exploring Service Design in the ER

Reliably delivering the service that patients expect and deserve depends in part on how well the various elements or attributes of service are designed into a system and function as a system. Design flaws in any part of the system can reduce the quality of services provided and potentially lead to poor outcomes for both the individual and the organization (Berry et al., 1994; Schlesinger & Heskett, 1991a, 1991b). In this study, the major practical benefit derived from applying the Service Outcome Chain is that this approach views service from a structural, process and outcome perspective. This triangulation of perspectives assists in the design of services and ensures that the needs and preferences of service providers (e.g. physicians, nurses) and patients are supported simultaneously through every link of the chain.

The primary objective of this research is to apply the Service Outcome Chain in exploring elements of service design in the ER. Using data collected from frontline providers and ER patients in the province of BC, principle chain relationships are explored. Specifically this research will address two general research questions: One question is related to defining the elements of service design in the ER, elements that are necessary for achieving service quality. A second question relates to determining the link between the structure and outcomes of service and determining how, as practitioners, we can design for improved outcomes through a focus on service.

Ethical approval for this study was obtained from the Human Research Ethics board at the University of Victoria and the ideas drawn here were explored through a mixed methods approach. According to Yin (1994) the benefit of applying this approach and acquiring multiple sources of evidence is that it can lead to the development of converging lines of inquiry. Thus, any finding or conclusion is likely to be much more convincing and accurate if based on several different sources of information. The mixed methods approach applied in this study involved a quantitative survey, two case studies that included surveys, interviews and photographic methods. This approach allowed for the larger study to be separated into four smaller studies, held together by a common underlying theme. Each of the four smaller studies presents a different perspective for looking at the various elements of service design and their mutual relationships as illustrated in the Service Outcome Chain. In addition, the four studies are presented as a series of chapters in this dissertation. As the reader progresses through each chapter, not only will they come across different perspectives but they will find themselves travelling to greater depths of service design.

For example, Chapter Four examines *The Predictors and Consequences of Service Climate* in the ER. This study provides a broad overview of the antecedents and consequences of service climate, which is a process element in the Service Outcome Chain. In this study, service climate is viewed as mediating the relationship between the structural and outcomes elements in the Service Outcome Chain. In this study, the researcher conducted a large scale quantitative survey of emergency nurses ($n = 180$) throughout BC. The researcher explored the perceptions of service attributes in the design of the department where these nurses work. In addition, the survey gauged the nurse's perception of service quality and patient satisfaction with service. Responses were garnered from the vantage point of the patient.

Chapter Five presents the findings from the study entitled *Service Design - Structure, Process and Outcomes: A Case of Two ERs*. The purpose of the case studies was to expand and add depth to the findings from the larger quantitative survey. In this study, the general flow of the elements in the Service Outcome Chain and their relationships with each other were tested. The general proposition being that certain structural elements (e.g. service training, managerial practices, job design and physical design) through their impact on process (e.g. job satisfaction, employee empowerment and service climate) have the potential to positively influence outcomes of service in health care (e.g. service quality, patient satisfaction with service, patient empowerment). Using survey and interview methods, the perceptions of a variety of service providers ($n = 98$) were explored. This includes the perceptions of physicians, nurses, managers and support staff. This approach provided for findings that could be generalized throughout the province of BC, in addition provide for an intimate look at elements of service design in two select ERs.

Chapter Six provides a broad overview of the patient's view of *Service Design and Patient Empowerment*. These findings stem from data collected from approximately 200 ER patients ($n = 198$) surveyed during the case studies. Patients responded to the same set of questions as offered to health care providers in the previous studies regarding the outcome elements identified in the Service Outcome Chain (e.g. service quality, patient satisfaction with service and patient empowerment). Patients also responded to the same set of questions as health care providers that assessed physical design.

Chapter Seven focuses on *Assessing a Measure for Physical Design*. Physical design is identified as a structural element in the Service Outcome Chain. Using data collected from emergency nurses from across the province of BC ($n = 180$), the quality of the physical design of ERs was assessed. This study assesses a measure for physical design previously applied to health care facilities in the United Kingdom. Photographs taken of the case study sites ($n = 2$) are provided to reinforce what the findings reveal.

Chapter Eight presents a discussion that combines and summarizes the findings from the four studies.

Lastly, Chapter Nine identifies the contributions, implications, limitations and future directions for the research. This chapter is followed by a listing of References in Chapter Ten and the Appendices in Chapter Eleven.

The larger purpose of this research is not to provide a critical perspective of the organization and operations of the ER but rather provide an intimate look at the service realities in the ER from the perspective of the frontline service providers and end users. In addition, this study assesses the potential of applying the Service Outcome Chain to the design, management and evaluation of services in health care. The ER is a very critical component of the health care system, it is hoped readers will see the opportunity and potential benefit that exists in applying a service industry perspective to the design and management of health services provided in the ER.



CHAPTER 4

Examining the Predictors and Consequences of Service Climate

4.1 Summary

Purpose

The intention with this paper is to present the findings from a study that assessed nurse's perceptions of service in the ER where they work. Using a modified version of the Service Profit Chain, this research examined the mediating role of service climate (SC) by exploring predictors of SC, that is, service training (ST), managerial practices (MP), physical design (PD), job design (JD), job satisfaction (JS), and employee empowerment (EE) on consequences of SC, which are service quality (SQ), patient satisfaction (PS) with service, and patient empowerment (PE). The larger proposition being that certain structural variables, through their impact on SC, have the potential to positively influence outcomes in the ER.

Methodology

Registered nurses ($n = 180$) from ERs throughout the province of British Columbia provided information about the quality of the internal service environment (including ST, MP, PD, JD) and JS, EE, and SC. Furthermore, these nurses provided information on external SQ, PS with service, and PE by responding to questions from the vantage point of the patient. The data was analyzed using statistical package for the social sciences (SPSS). Structural equation modelling (SEM) was implemented using linear structural relations (LISREL).

Findings

SEM analyses showed that JS and EE only partially mediated the relationship between MP, PD, and JD and SC. ST was non-significant in the model. External SQ, PS, and PE were fully mediated by SC. In addition, MP and PD have a direct impact on SC, as does MP on SQ.

Research Limitations / Implications

A limitation of this research is that only employee (nurses) data was used in the research model rather than employee and patient data simultaneously. Future research should be conducted that incorporates both viewpoints. Another limitation is the generalizability of the findings on ERs to all of health care. Further research should be conducted in other areas of health care, with other service providers, and with other service organizations to test the invariance of the model.

Practical Implications

The results should lend health care managers to consider the importance of emphasizing internal SQ features that facilitate a SC in the ER.

Originality / Value

This study contributes to the field of health care research as it involves the application of a modified version of the Service Profit Chain to exploring the role of SC in the ER. In addition, the research emphasizes the importance of PD in creating a climate for service.

Keywords

Service Profit Chain, Service Climate, Physical Design, ERs

4.2 Background and Objectives

Commonly referred to as the 'canary in the coalmine' (CAEP, 2002), stories abound in the media concerning overcrowding and deteriorating levels of service, safety and satisfaction in ERs. We hear of diverted ambulances, long waits, stressed and overburdened staff, patients lying in stretchers in hallways for days. Not uncommon are stories of patients waiting in ambulances because of bed shortages, and regrettably worsened medical conditions and the occasional loss of life. The problem is exacerbated by the shortage of emergency providers (physicians and nurses) as well as limitations on patient flow from the intensive care and surgical units. The ER has become both the gatekeeper and the bottleneck (CBC, 2006a) to the hospital. The Canadian Medical Association (2004) reports of a 'crisis in hospital ERs' however some question whether it is a crisis of resources or a crisis of management (Gray, 2000). The overcrowding and the increased workload has lead many to feel unsafe in providing care as evidenced by the number of nurses leaving their jobs, increased sick time and workplace injuries (BCNU, 2006). In addition, this has led to strikes, walkouts, investigations and finger pointing. The current situation not only affects the quality of service delivered to patients, it affects the quality of the work environment for staff and is a recipe for medical error (Schull et al., 2002). Despite a range of initiatives and management strategies, the situation is worsening and remains one of the most serious issues facing health care today.

This study applies service management design principles to examining the predictors and consequences of service climate in the ER (Heskett et al., 1994, 1997; Loveman, 1998; Pugh et al., 2002; Schneider et al., 2000). Schneider et al. (2002) define service climate as employee's shared perceptions of the policies, practices, and procedures that are rewarded, supported, and expected with regard to customer service. Much of the research in this area has been to identify antecedents within organization that promote a positive SC for employees that yield positive service oriented behaviours toward clients. It is assumed that clients would then report positively on the quality of the service experience (Schneider et al., 1998, 2000, 2005). The application of SC to the ER is a means for addressing the gap between the design, delivery, and outcomes of service. Thus, it is a perceptual medium through which the effects of the environment on attitudes and behaviour pass (Guzzo, 1988; Kopelman, 1986).

With a focus on SC, this research will attempt to address the following questions: i) In the ER, is SC the link between the design and outcomes of service? And, ii) Can we design for improved outcomes through a focus on SC? In essence, the researcher is applying a modified

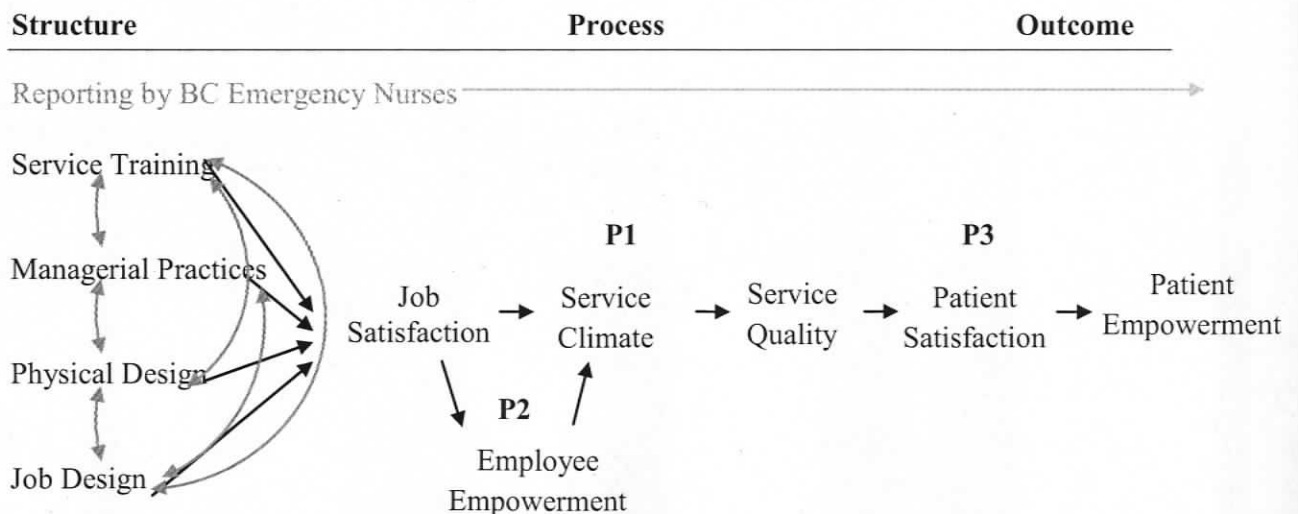
version of the Service Profit Chain (Heskett et al., 1994, 1997) to exploring the role of SC in the ER. The Service Profit Chain being an integrative framework and means for implementing a linked and strategic service vision. This framework assists organizations in understanding how operational investments translate into service operations which relate to client perceptions and behaviours, which ideally translate into profits. The modified version of the chain entitled the Service Outcome Chain (Figure 4.1), views the design of health services from a structural, process and outcome perspective. The combination of these elements emphasizes the idea that a total pattern of important organizational activities must be in place for a service climate to exist. When a service climate does exist, high levels of service quality can be achieved. The general proposition being that certain structural elements, through their impact on SC have the potential to positively influence outcomes in the ER.

4.2.1 Research Propositions

On the basis of previous research, the researcher had the following expectations:

- *Proposition one (P1)*: SC will mediate the relationship between JS and EE on the one side and external SQ, PS, and PE on the other side.
- *Proposition two (P2)*: JS and EE will mediate the relationship between internal SQ features (ST, MP, JD, PD) and SC.
- *Proposition three (P3)*: External SQ, PS with service, and PE are fully mediated through nurse's JS, EE and SC.

Figure 4.1. The service outcome chain (research model).



4.3 Methodology

4.3.1 The Pilot Study

The researcher conducted a large-scale quantitative survey of emergency nurses throughout the province of BC. First, in order to test the appropriateness of the survey (see Appendix 4.1), a two phase pilot study was conducted. The purpose of the pilot study was to determine face validity, relevance, and to ensure that the questions were clearly understood and not ambiguous. In the first phase, six ($n = 6$) practicing health care professionals (two emergency nurses, two nurse administrators and two emergency physicians) were chosen by way of a convenience sample to pre-test the instrument. These participants were from a small community hospital in the province of Alberta, a site where the researcher is employed as a registered nurse, therefore access was easily obtained. The purpose of choosing this sample out of province was to ensure there would be no overlap of respondents when the actual survey was deployed. The participants completed the survey and provided feedback. The responses were used to refine the instrument.

The second phase of the pilot study consisted of distributing the revised instrument to a convenience sample of fourth year nursing students at the University of Victoria ($n = 60$), in addition to a convenience sample ($n = 10$) of practicing emergency nurses and managers from a large regional hospital in Alberta for a total population of $N = 70$. A total of 27 responses were received for a response rate of 39%. In both of these cases, access was obtained due to the researcher's familiarity with the organization. The surveys were personally distributed to subjects by way of: i) Meeting with the practitioners in their workplace; and ii) Attending the last 15 minutes of a fourth year nursing class. In the latter case, the instructors gave their consent for the researcher to come into the class and request student participation. In both cases, subjects were provided with an explanation of the study and informed their participation was of a voluntary and anonymous nature. Subjects were encouraged to complete the survey at home and were provided with a stamped, addressed return envelope for which to submit their completed survey by mail.

Based on the feedback acquired during the pilot study, some questions were omitted or re-worded to avoid duplication and some wording was added to questions to improve clarity. The following statistical analyses were conducted: frequencies, correlations, reliability analysis, and factor analysis to investigate the reliability and underlying factors of the

measures. Once the final revisions were made and the researcher satisfied with the instrument, the survey was finalized for distribution.

4.3.2 Procedure

Once the pilot study was completed, a letter to inform was sent out to all Unit Managers of ERs across the province of BC ($N = 109$ ERs). A listing of addresses for these facilities was acquired from the Government of British Columbia's Ministry of Health website. The purpose of this letter was to inform nurses of the study. It was hoped the Unit Managers would post the letter in a location where it would be easily viewed for the nurses of their department. This appeared however, to be cause for concern for some nurse managers at one particular health authority, as e-mails were received demanding the researcher not come to their sites. E-mails were also received from the Regional Manager of Clinical Trials Administration for this health authority. In consult with the University of Victoria Ethics Committee, the researcher addressed this issue informing this health authority that she would not be entering into any of their sites, that the survey was being distributed by a third party, and that the research is only interested in the perception of individual nurses from across the province, not nurses specific to their health authority.

The assistance of the College of Registered Nurses of British Columbia (CRNBC) was attained for the purposes of targeting the population, generating the sample and distributing the survey. Their assistance provided for a larger, more generalized sample of BC emergency nurses and also maintained subject anonymity. The population was pulled from the CRNBC licensee database in accordance with criteria set by the researcher relative to the 2006 CRNBC Application for Registration. The criteria was as follows: (i) Member type: Registered nurse; (ii) Category: Practicing; (iii) District: Mainland Coastal, Vancouver Metropolitan, North Vancouver Island, Victoria / Gulf Islands, Fraser Valley, Northeast, Northwest, Kootenays, Thompson Columbia, Okanagan; (iv) Education Background: Diploma, bachelor's, master's, doctorate; (v) Employment position: Clinical nurse specialist, staff nurse, manager/supervisor, director/assistant/associate, chief nursing, executive officer; (vi) Place of work: Hospital, community health agency/health centre, nursing station/outpost/nurse clinic; (vii) Area of practice: Emergency care; (viii) Employment status: Employed part-time/casual basis, employed full-time/regular basis, employed part-time/regular basis, employed full-time/casual basis; (ix) Previously gave their consent to participate in research as stated on their application renewal form. This criteria generated a population of 605 ($N = 605$) registered nurses.

A mail-out survey was used as the means for data collection. The researcher provided the CRNBC with the surveys. Attached to each survey were a consent letter and a stamped, addressed, return envelope for participants to return their completed survey by mail. Participant anonymity was maintained as the CRNBC addressed and distributed each survey. Two mail-out distributions were conducted. The initial population size was $N = 605$, however after the first distribution, five surveys were returned due to a change of address. Population size was then reduced to $N = 600$.

4.3.3 Sample

Approximately 200 emergency nurses responded to the survey ($n = 180$) producing a response rate of 30%. The data was gathered over a one month period, the first mail distribution garnered 117 completed surveys, a second mail distribution followed two weeks later and garnered an additional 63 surveys for a total of 180 completed surveys. Eighty seven percent (87.20%) of these nurses were female and the mean age of nurses was 45 years (birth year mean: $M = 1963$; $SD = 9.40$). Cumulative percent figures illustrate that seventy three percent (73.10%) of respondents were born prior to 1970 with 37.70% of those respondents born prior to 1960. These figures provide support for the literature that identifies nursing as an aging profession. Fifty three percent (52.80%) of respondents were full-time, regular employees; thirty percent (30%) were part-time, regular employees; and seventeen percent (17.20%) were employed on a casual basis. Ninety one percent of respondents were employed as a staff nurse (90.60%, $n = 163$). Fifty one percent (51.10%) were educated at the college level, twenty seven percent (26.70%) at the university undergraduate level, and twenty two percent (22.20%) at the graduate level. On average, respondents had been working in the ER setting for a period of 121.12 months ($SD = 98.75$). The mean time respondents had been working in their current ER was 85.19 months ($SD = 82.38$). Respondents claim to have been working in their current capacity, the majority working as a staff nurse, on average for a period of 82.43 months ($SD = 84.75$). The variation in working months is high due to the variation in the age of nurses and months of ER work experience. Table 4.1 provides a summary of the demographic information.

An interesting finding in the demographic data was that out of the six health authorities in the province, two of those six health authorities generated the greatest number of responses. This finding brings forward some interesting questions as to the current work conditions in the ERs of those particular health authorities. It is reasonable to conclude there is some regional

variation. This also leaves to question the conditions that either promoted or deterred response rates between the health authorities, which is beyond the scope of this research. However, the qualitative comments provided by respondents (see Appendix 4.2) provide some insight and are illustrative of the level of many of the concerns that were raised in the literature review. These comments suggest that BC ERs are not dissimilar from what was alleged in the literature.

Table 4.1

Summary of Demographic Information (n = 180)

Measure	Items	n=180	%	Mean	SD
Gender	Female	157	87.20%		
	Male	22	12.20%		
	Missing	1	.60%		
Birth year	1940-49	11	6.10%		
	1950-59	52	28.90%		
	1960-69	59	32.80%		
	1970-79	37	20.60%		
	1980-89	8	4.40%		
	Missing	13	7.20%		
	Education	College/Technical	92		
	Undergraduate	48	26.70%		
	Graduate	40	22.20%		
Work position	Manager/supervisor	14	7.80%		
	Clinical nurse specialist	3	1.70%		
	Staff nurse	163	90.60%		
Work place	Hospital	171	95.0%		
	Community health centre	2	1.10%		
	Nursing station/outpost	1	.60%		
	Other	2	1.10%		
	Missing	4	2.20%		
Employment status	Part-time casual	20	11.10%		
	Part-time regular	54	30.00%		
	Full-time casual	11	6.10%		
	Full-time regular	95	52.80%		
Time working in current position				82.43	84.75
Time working in this ED				85.19	82.38
Time working in ED setting				121.12	98.75
Employing health authority	Vancouver Coastal Health	34	18.90%		
	Vancouver Island Health	28	15.60%		
	Provincial Health Service	6	3.30%		
	Fraser Health	51	28.30%		
	Interior Health	52	28.90%		
	Northern Health	9	5.00%		
Time working in health authority				122.82	101.29

4.3.4 Instrument and Measures

A paper, mail-out survey was used as the means for data collection. The survey, entitled 'The Service Outcome Questionnaire' (Appendix 4.1) contained 136 questions of a five point Likert scale that assessed various elements of service design in addition to 11 demographic questions, and four open ended/feedback questions. Completion time of the survey was approximately 25 minutes and participation was voluntary. The questionnaire was developed using scales previously developed, and well-established in the literature, by Boudreaux et al. (1999), the Department of Health (2006), Hackman & Oldham (1980), Parasuraman et al. (1988), Salanova et al. (2005), Schneider & colleagues (1985, 1992, 1998), Spreitzer (1995), Thomas & Velthouse (1990), and Ware, Cook, & Wall (1979). The items were categorized and measured under the following elements or variables:

Structural Elements

Element 1: Internal Service Quality

- Service training (four items, questions 1-4)
- Managerial practices (seven items, questions 5-11)
- Physical design (24 items, questions 19-42)
- Job design (21 items, questions 43-63)

Process Elements

Element 2: Employee Job Satisfaction

- Intrinsic job satisfaction (six items, questions 64-69)
- Extrinsic job satisfaction (nine items, questions 70-78)
- Overall job satisfaction (one item, question 79)

Element 3: Employee Empowerment

- Meaning (three items, questions 80-82)
- Competence (three items, questions 83-85)
- Autonomy (three items, questions 86-88)
- Impact (three items, questions 89-91)

Element 4: Service Climate

- Global service climate (seven items, questions 12-18)

Outcome Elements

Element 5: External Service Quality

- Responsiveness (three items, questions 92, 98, 100)
- Tangibles (three items, questions 93, 94, 99)
- Reliability (three items, questions 95, 96, 97)
- Assurance (three items, questions 101, 102, 103)
- Empathy (three items, questions 104, 105, 106)

Element 6: Patient Satisfaction

- Triage and registration (four items, questions 116-119)
- Nursing Staff (three items, questions 120-122)
- Physician staff (five items, questions 123-127)
- Discharge process (three items, questions 128-130)
- Other (five items, questions 131-135)
- Overall patient satisfaction (one item, question 136)

Element 7: Patient Empowerment

- Meaning (three items, questions 107-109)
- Competence (three items, questions 110-112)
- Impact (three items, questions 113-115)

A description of the elements is provided below. The results from the principal components analyses are provided in the appendices (Appendix 4.3, Tables 4.3.1 to 4.3.8). Some of the tables are included in the text.

Service training (ST). ST was assessed using a four item measure (Cronbach's alpha 0.79) developed by Salanova et al. (2005). Employees were asked about the degree to which these organizational service training activities are important in facilitating their performance. Results of a factor analysis of items produced a mono-factor solution with only one component explaining 61.81% of variance with an eigenvalue of 2.47. Items were scored on a five-point rating scale ranging from one (strong disagree) to five (strong agree). Higher scores were indicative of higher levels of each item.

Managerial practices (MP). MPs were assessed using a seven item measure (Cronbach's alpha 0.90) developed by Schneider & colleagues (1985, 2002). This measure reflects those actions taken by an employee's immediate manager that support and reward the delivery of

quality service. These items were used to assess managerial behaviours from the vantage point of the employee. Results of a factor analysis of items produced a mono-factor solution (Table 4.2) with one component explaining 63.03% of variance and an eigenvalue of 4.41. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Table 4.2

Results of the Principal Components Analysis for Managerial Practices (n = 180)

Items:	Component 1
Managerial Practices	Managerial Practices
MP Support	0.79
MP Recognition	0.81
MP Performance Goals	0.77
MP Work Together	0.80
MP Standards	0.80
MP Orderly Routine	0.82
MP Assists New Employees	0.78
<i>Alpha</i>	0.90
<i>Eigenvalues</i>	4.41
<i>% Variance</i>	63

Physical design (PD). PD was assessed using a portion of the instrument developed by the NHS Estates (24 items, Cronbach's alpha 0.91) (Department of Health, 2006). The dimensions or sub-elements of physical design were: *Ambience* - factors that affect perceptions of and responses to the built environment (six items, Cronbach's alpha 0.86); *User-friendly* - the extent to which the built environment provides comfort to users (six items, Cronbach's alpha 0.76); *Layout* - the way the department is laid out, enabling users to perform their duties and operate as a system (four items, Cronbach's alpha 0.71); *Access* - access to amenities such as shopping for essentials, food services, banking, the outdoors, and media/technology (three items, Cronbach's alpha 0.62); *Cleanliness* - the internal and external cleanliness of the department (two items, Cronbach's alpha 0.76); *Adaptability* - how accommodating and adaptable the space is in relation to purpose (three items, Cronbach's alpha 0.61). Factor analysis with varimax rotation produced six components with eigenvalues over 1.00 explaining for 61.94% variance, the rotation converged in 13 iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Job design (JD). Job design was assessed using a 21 item measure (Cronbach's alpha 0.69) from Hackman & Oldham's (1980) Job Diagnostic Survey, which acquires people's

perceptions about specific characteristics of their jobs. Only the job characteristics portion of Hackman & Oldham's instrument was applied here. Some of the items were reverse scored. The dimensions assessed were: *Skill Variety* - the degree to which a job requires a variety of different activities in carrying out the work (three items, Cronbach's alpha 0.64); *Task Identity* - the degree to which the job requires completion of a whole and identifiable piece of work (three items, Cronbach's alpha 0.50); *Autonomy* - the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out (three items, Cronbach's alpha 0.56); *Task Significance* - the degree to which the job has a substantial impact on the lives or work of other people (three items, Cronbach's alpha 0.62); *Feedback from the Job* - the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance (three items, Cronbach's alpha 0.49); *Feedback from Agents* - the degree to which the employee receives clear information about his or her performance from supervisors or from co-workers (three items, Cronbach's 0.80); and *Dealing with Others* - the degree to which the job requires the employee to work closely with other people in carrying out the work activities (three items, Cronbach's alpha 0.57). Factor analysis with varimax rotation produced seven components with eigenvalues over 1.00 that explained for 62.01% variance. The rotation converged in seven iterations. In some cases the internal reliabilities may have been increased by dropping certain items, however after consideration it was decided to leave the original items as is due to the measure being well-established in the literature. Other studies (Lin Xie, Elangovan, & Hrabluik, 2008) have indicated that the Hackman & Oldham model does not load well on its factors. These authors indicate that the problem is not so much with the low reliabilities but with the factors themselves. Items were scored on a five-point rating scale ranging from one (completely inaccurate) to five (completely accurate). Higher scores were indicative of higher levels of each item.

Job satisfaction (JS). Job satisfaction is the degree to which a person reports satisfaction with intrinsic and extrinsic features of the job. Job satisfaction was assessed using a 16 item measure (Cronbach's alpha 0.86) developed by Warr et al. (1979). At one level of analysis all 16 items could be identified under the heading of total job satisfaction. At another level, three separate components could be identified: i) Six items come together to represent *intrinsic* features of the job (Cronbach's alpha 0.78); ii) Nine items align to represent *extrinsic* features

of the job (Cronbach's alpha 0.74); iii) A single item of *overall job satisfaction* was also identified. Factor analysis with varimax rotation produced four components with eigenvalues over 1.00, explaining for 60.27% variance. The rotation converged in five iterations. The four components were conceptually supported in the literature and related to satisfaction with *Management*, *Intrinsic* sources of satisfaction, *Extrinsic* sources of satisfaction, and satisfaction with *Security/Privacy* in the ER. The researcher decided to maintain two of the original three components (intrinsic, extrinsic) because the overall reliabilities of the scales were higher with the original two components and the meaning underlying the components were similar. The overall measure was dropped as it loaded on all four components during the factor analysis. Respondents were asked to indicate how satisfied or dissatisfied they are by using a five-point scale ranging from one (very dissatisfied) to five (very satisfied). Higher scores were indicative of a higher level of job satisfaction.

Employee empowerment (EE). Employee empowerment refers to increased intrinsic task motivation manifested in a set of four cognitions (meaning, competence, autonomy, and impact) reflecting an individual's orientation to his or her work role (Thomas & Velthouse, 1990). Empowerment was assessed using a 12 item measure (Cronbach's alpha 0.84) developed by Spreitzer et al. (1997) in alignment with the four cognitions identified by Thomas & Velthouse (1990). *Meaning* - is the value of a work goal or purpose judged in relation to an individual's own ideals or standards (three items, Cronbach's alpha 0.91). *Competence* - is an individual's belief in his or her capability to perform activities with skill (three items, Cronbach's alpha 0.85). *Autonomy* - is an individual's sense of having choice in initiating and regulating actions (three items, Cronbach's alpha 0.88). *Impact* - is the degree to which an individual can influence strategic, administrative, or operating outcomes at work (three items, Cronbach's alpha 0.85). Factor analysis with varimax rotation produced four components with eigenvalues over 1.00, explaining for 81.63% variance. The rotation converged in five iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Service climate (SC). Service climate refers to employees' shared perceptions of the practices, procedures, behaviours that are rewarded, supported and expected by the organization with regard to customer service and service quality (Dastmalchian et al., 1989; Schneider et al., 2002). Service climate was assessed using a seven-item global measure

(Cronbach's alpha 0.81) based on the work of Schneider et al. (1998). The items in the survey refer to a collection of behavioural features or activities of organizations that focus explicitly on service quality. The wording was modified slightly to suit health care. Factor analysis with varimax rotation produced two components with eigenvalues over 1.00, explaining for 61.57% variance (Table 4.3). The rotation converged in three iterations. The first component focused on *Leadership and Communication*, the second component focused more on acquiring the *Tools and Knowledge* needed to provide quality service. The researcher decided to maintain the original global measure due to its high reliability and being well established in the literature. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of a higher level of service climate.

Table 4.3

Results of the Principal Components Analysis for Service Climate (n = 180)

Items:	Component 1	Component 2
Service Climate	Leadership	Tools, Knowledge
SC Leadership	0.87	
SC Measurement	0.81	
SC Communication	0.73	
SC Rewards	0.54	
SC Tools		0.45
SC Knowledge		0.82
SC Overall		0.75
<i>Alpha</i>	0.79	0.62
<i>Eigenvalues</i>	3.31	1.00
<i>% Variance</i>	47.24	14.32

Service quality (SQ). Service quality refers to the manner in which services are delivered to the patient that influences the perceived value of the service. Service quality was assessed using an adaptation of the SERVQUAL instrument (15 items, Cronbach's alpha 0.83; Babakus & Boller, 1992; Cronin & Taylor, 1992; Parasuraman et al. 1988) that measures the following dimensions: *Tangibles* - the appearance of the physical facilities, equipment, personnel, and communication materials (three items, Cronbach's alpha 0.45). *Reliability* - the ability to perform the promised services both dependably and accurately (three items, Cronbach's alpha 0.59). *Responsiveness* - the willingness to help clients and to provide prompt service (three items, Cronbach's alpha 0.59). *Assurance* - the knowledge and courtesy of employees as well as their ability to convey trust and confidence (three items, Cronbach's alpha 0.58). *Empathy* - the provision of caring, individualized attention to clients (three items, Cronbach's alpha 0.72). Factor analysis with varimax rotation produced three components with eigenvalues over

1.00 explaining 52% variance. The underlying constructs focused on *Empathy* (five items, Cronbach's alpha 0.81), *Reliability* (four items, Cronbach's alpha 0.71), and *Tangibles* (five items, Cronbach's alpha 0.58) as important aspects for SQ. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher perceived levels of service quality.

Patient satisfaction (PS). Patient satisfaction with service is defined as "an attitude-like judgement following a purchase act of a series of consumer product interactions" (Lovelock & Wirtz, 2004, p. 44) and was assessed using a 21 item survey (Cronbach's alpha 0.90) developed by Boudreaux, Ary, Mandry, & McCabe (1999). The items measure several domains including satisfaction with *Triage and Registration* (four items, Cronbach's alpha 0.72), satisfaction with *Nursing Staff* (three items, Cronbach's alpha 0.60), satisfaction with *Physician Staff* (five items, Cronbach's alpha 0.80), satisfaction with *Advice and Discharge Instructions* (three items, Cronbach's alpha 0.74), and satisfaction with *Other* (six items, Cronbach's alpha 0.79). Factor analysis with varimax rotation produced five components with eigenvalues over 1.00 that explained 65.49% variance. The rotation converged in six iterations. These five components focused on *Caring of Staff* (six items, Cronbach's alpha 0.90), *Physician Care* (four items, Cronbach's alpha 0.87), *Triage and Wait Times* (five items, Cronbach's alpha 0.83), *Information and Education* (four items, Cronbach's alpha 0.75) provided to patients and their families, and feelings of *Privacy and Security* (two items, Cronbach's alpha 0.47), while in the ER. All items were scored on a five-point rating scale ranging from one (very dissatisfied) to five (very satisfied). Higher scores were indicative of higher levels of patient satisfaction.

Patient empowerment (PE). Patient empowerment is increased intrinsic task motivation manifested in a set of cognitions reflecting an individual's orientation to his or her role, in this case the patients' role in achieving and maintaining optimal health and well-being. The researcher reduced the original set of four cognitions as defined by Spreitzer et al. (1997) and Thomas & Velthouse (1990) to the following three cognitions: meaning, competence, and impact, producing a nine-item measure of patient empowerment (Cronbach's alpha 0.77). These were cognitions were believed to be most applicable to the patient experience in the ER. *Meaning* - is the value of a goal or purpose, judged in relation to an individual's own ideals or standards (three items, Cronbach's alpha 0.76). *Competence* - is an individual's belief in his or her capability to perform personal health care activities with skill (three items, Cronbach's

alpha 0.78). *Impact* - is the degree to which an individual feels capable of influencing their personal health outcomes (three items, Cronbach's alpha 0.88). Factor analysis with varimax rotation produced three components with eigenvalues over 1.00 explaining for 75.51% variance. The rotation converged in four iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of empowerment.

The intention with this research paper is to present a broad overview of nurse's perceptions of the design of service in the ER where they work. Therefore, the elements will be analyzed and reported as single component solutions and data analyzed at the individual level of analysis. Although the data was analyzed and is presented using the full data set ($n = 180$) where the missing data was replaced with the series mean, the analyzed data in raw data form is available upon request.

4.3.5 Fit Indices

The researcher used SEM methods, implemented in LISREL 8.72 (Jöreskog & Sörbom, 1993) for data analyses. Missing data was replaced with the series mean to ensure a complete sample of $n = 180$. The mean substitution was calculated for each of the 10 variables and the input for each analysis was based on a zero-order correlation matrix. The goodness of fit of the models was evaluated using absolute and relative indices. The goodness-of-fit indices calculated were (see Joreskog & Sorbom, 1993): i) the chi-square goodness-of-fit statistic, ii) the root mean-square error of approximation (RMSEA), iii) the comparative fit index (CFI), iv) the root mean square residual (RMR), v) the goodness-of-fit index (GFI), and vi) the adjusted goodness of fit index (AGFI).

4.4 Results

4.4.1 Preliminary Results

General statistical analysis of the survey data was conducted using SPSS. To test whether emergency nurses from the various health authorities in the province differed on the service elements (i.e. study variables), the researcher carried out a MANOVA with all ten aggregated study variables: MP, ST, JD, PD, JS, EE, SC, SQ, PS, and PE included as the dependent variables in the model and health authority as the factor. Multivariate results for health authority showed a significant Wilks' lambda multivariate coefficient (Wilks' $\Lambda = .62$, $p \leq .05$). In a test-between subjects effect, significance was shown between health authority and job design ($F(5,174) = 2.21$, $p \leq .05$), health authority and SQ ($F(5,174) = 4.14$, $p \leq .001$) and

health authority and PS ($F(5,174) = 3.92, p \leq .01$). The findings revealed significant variation between the health authorities in perceptions of JD, SQ, and PS with service. The intention with this paper is to present the findings from an individual level of analysis (BC emergency nurses in general) rather than the organizational or unit level of analysis (health authority or ER). Given the impact of health authority on the study variables, the researcher decided to conduct a second analysis to assess the impact of health authority on service climate. Multiple regression analyses were conducted using SC as the dependent variable and MP, ST, JD, PD, JS, and EE as the independent variables. In the first regression, health authority was included as an independent variable ($F = 41.51, p \leq .00$). In the second regression, health authority was removed ($F = 48.68, p \leq .00$). Although both models were significant, the findings showed no difference between the two. In both models, multiple regression coefficients indicated that managerial practices are the strongest predictors of service climate (mean Beta of .45, $p \leq .00$), followed by job design (mean Beta of .16, $p \leq .00$). According to the R squared or the overall magnitude of regression, 63% of the variance in service climate can be accounted for by the independent/predictor variables with or without the inclusion of health authority. In other words, health authority is not a predictor of service climate, however managerial practices and job design are. As mentioned previously, the qualitative comments provided by respondents (Appendix 4.2) provide some insight to this finding.

4.4.2 Descriptive Analyses

Table 4.4 shows the mean values, standard deviations, final internal consistencies, and inter-correlations of scales. With regard to the descriptive statistics, there were low ratings for PD ($M = 2.54, SD = .63$), SC ($M = 2.79, SD = .69$), and MP ($M = 2.81, SD = .81$). In contrast, emergency nurses gave favourable ratings to the design of their jobs ($M = 3.81, SD = .33$), as well as the degree to which they feel empowered in their work ($M = 3.73, SD = .49$). Emergency nurses also perceived patients to feel somewhat empowered as a result of the service provided in their department ($M = 3.40, SD = .41$).

Table 4.4

Means, Standard Deviations, Internal Consistencies, and Inter-correlations (Aggregated Measures; n = 180)

	Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10
1	Service Training	3.11	.81	.79	1.00									
2	Managerial Practices	2.81	.85	.90	.64**	1.00								
3	Physical Design	2.54	.63	.91	.34**	.31**	1.00							
4	Job Design	3.81	.33	.68	.55**	.54**	.34**	1.00						
5	Job Satisfaction	3.29	.57	.86	.48**	.58**	.50**	.51**	1.00					
6	Staff Empowerment	3.73	.49	.84	.27**	.25**	.23**	.40**	.58*	1.00				
7	Service Climate	2.79	.68	.81	.60**	.73**	.41**	.58**	.61**	.35**	1.00			
8	Service Quality	3.30	.49	.83	.36**	.35**	.43**	.41**	.39**	.27**	.60**	1.00		
9	Patient Satisfaction	3.31	.48	.90	.24**	.18*	.25**	.28**	.31**	.28**	.38**	.72**	1.00	
10	Patient Empowerment	3.40	.41	.77	.19**	.29**	.25**	.24**	.23**	.27**	.36**	.51**	.48**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

As expected, there were significant and positive correlations between all ten variables. Service climate was most strongly correlated with MP ($r = .73$), ST ($r = .60$), JD ($r = .58$), JS ($r = .61$), and SQ ($r = .60$); and moderately correlated with PD ($r = .41$). Internal service quality elements (MP, ST, JD, PD) were all positively related with SC (mean $r = .58$), MP being the most strongly correlated. The greater the perceptions of the quality of the internal service environment for employees, the more positive the perceptions of service climate.

Regarding the inter-correlations between employee and patient variables, on the one hand, JS and EE were significantly correlated with SC (mean $r = .48$). On the other hand, nurse's perception of SC was significantly associated with their perceptions of SQ, PS with service, and PE (mean $r = .45$).

There were strong and significant correlations between MP and ST ($r = .64$), MP and JD ($r = .54$), MP and JS ($r = .58$), and MP and SC ($r = .73$). ST was strongly associated with JD ($r = .55$), and SC ($r = .60$). PD was most strongly associated with JS ($r = .50$), SC ($r = .41$), and SQ ($r = .43$). JD most strongly associated with SC ($r = .58$). JS most strongly associated with SC ($r = .61$). SC strongly associated with SQ ($r = .60$), and SQ most strongly associated with to PS with service ($r = .72$) and PE ($r = .51$). PE most strongly correlated with SQ ($r = .51$) and PS ($r = .48$) with service.

Service climate is not only significantly and positively associated with the structural elements (i.e. internal service quality) of service it is also significantly and positively associated with the outcomes of service (i.e. external SQ, PS, and PE) as perceived by nurses.

4.4.2 Confirmatory Factor Analyses

Next, confirmatory factor analysis (CFA) and structural equation modeling (SEM) tests were conducted using LISREL 8.72 (Jöreskog & Sörbom, 1993). Fit indices for all four models are summarized in Table 4.5. With regard to the model, a single-indicator model was used due to the model being too complex for the data with all of the original paths. Application of a single indicator model reduced the complexity and number of paths in the model. Only Models 1 (M1) and 4 (M4) will be presented here. Model 4 presents the final LISREL analysis.

Table 4.5

Fit Indices for Measurement and Structural Equation Models and Chi Square Difference Tests for Structural Models

Model	Figure	df	Chi Square (χ^2)	RMSEA	CFI	RMR	GFI	AGFI	$\Delta\chi^2$	Δdf
Model 1 (M1)	2	30	217.94 ($p=0.00$)	0.18	0.87	0.16	0.82	0.67		
Model 2 (M2)	N/A	29	107.27 ($p=0.00$)	0.12	0.95	0.08	0.89	0.80	$M_1-M_2=111$	1
Model 3 (M3)	N/A	28	88.68 ($p=0.00$)	0.10	0.96	0.08	0.92	0.83	$M_2-M_3=19$	1
Model 4 (M4)	3	27	70.52 ($p=0.00$)	0.09	0.97	0.06	0.93	0.86	$M_3-M_4=18$	1

First, the researcher tested the model (M1). As shown in Figure 4.2, the model demonstrated poor fit with the data ($\chi^2(30) = 217.94, p = .00, \chi^2/df = 7.26, RMSEA = .18, CFI = .87, RMR = .16, GFI = .82, AGFI = .67$). On the basis of modification indices, the fit of the model could be improved by freeing up a direct path between MP and SC. The researcher thereby obtained a revised model (M2) that postulates MP as being a direct predictor of SC. This model was fitted and the fit indices improved ($\chi^2(29) = 107.27, p = .00, \chi^2/df = 3.70, RMSEA = .12, CFI = .95, RMR = .08, GFI = .89, AGFI = .80$). There was a significant change in the χ^2 value ($\Delta \chi^2(1) = 111, p < .01$).

The modification indices suggested support for the theoretical prediction of the link between service leadership and service quality (Heskett 1994, 1997; Schneider et al., 1992). On the basis of this, a third model was obtained (M3), in which a direct path from MP predicting SQ was allowed. This modification improved the model further showing a better fit with the data ($\chi^2(28) = 88.68, p = .00, \chi^2/df = 3.17, RMSEA = .10, CFI = .96, RMR = .08,$

GFI = .92, AGFI = .83). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 19, p < .01$).

The modification indices suggested support for the theoretical prediction of evidence based design (Ulrich, 1992) and the influence of the built environment on service delivery in health care (Bitner, 1992; Fottler et al., 2002). The researcher obtained a fourth model (M4) where another direct path was created between PD and SC. This revised model presented a significantly improved fit with the data ($\chi^2(27) = 70.52, p = .00, \chi^2/df = 2.61, RMSEA = .09, CFI = .97, RMR = .06, GFI = .93, AGFI = .86$). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 18, p < .01$).

This final model (M4) (see Figure 4.3) illustrates direct paths between MP and SC and SQ, and between PD and SC. There are partially mediated paths between JD and SC and ST and SC through JS and EE. As for the criterion variables: SQ, PS with service, and PE, the effects of the exogenous variables are fully mediated through nurses' JS, EE, and SC. The standardized beta and gamma paths in M4 reflect those from the final LISREL analysis.

4.4.3 Testing the Propositions: The Research Model

According to Baron & Kenny (1986) and Judd & Kenny (1981), when a mediational model involves latent constructs, SEM provides the basic data analysis strategy (James, Mulaik, & Brett, 2006). In accordance with the four basic steps to establish mediation effects proposed by the authors, and to test propositions, the researcher fit the research model (as depicted in Figure 4.3) to the data. Each of the latent constructs (ST, MP, PD, JD, JS, EE, SC, SQ, PS and PE) was estimated with a single indicator. Information on the measurement error of these constructs was incorporated into the model by estimating the measurement error using the formula $(1 - \alpha)$ (Bollen, 1989) and assigning this value to each of the measurement error terms. The results are given in Table 4.5 and show that the research model (M4) fits the data, with the majority of fit indices meeting the criteria. Only AGFI (.86) was short of the conventional .90. All path coefficients were significant with the exception of the path from ST to JS, which did not meet the criteria of 1.96 (the z-value required for significance at $p < .05$). Some light into this finding is that nurses claim that they do not receive service training of sorts. They receive technical training (e.g. advanced cardiac life support) but do not receive any training that reinforces the 'service aspect' of health care. However, the results show that JS and EE only partially mediated the relationship between internal SQ features (MP, PD, JD)

and SC. In addition, SQ, PS with service, and PE were fully mediated by SC. Proposition one (P1) therefore was only partially supported by the data as partial mediation presented on the one side of SC and full mediation on the other.

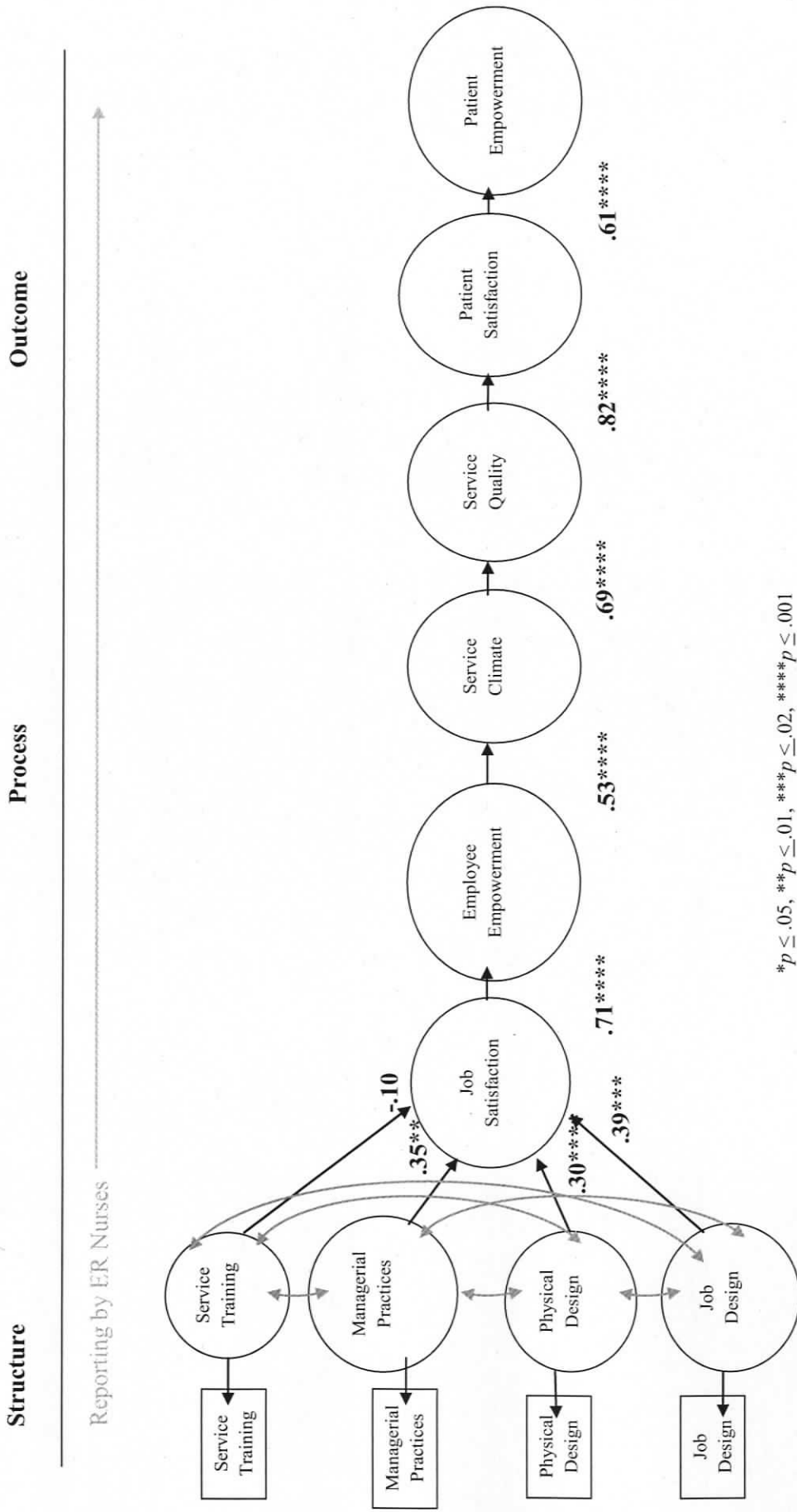
In Proposition two (P2), the researcher proposed that JS and EE would mediate the relationship between internal SQ features (i.e. MP, ST, PD, and JD) and SC. It was found this model (M1) did not fit the data, although the parameter estimates were significant (with the exception of the path between ST and JS). Based on the modification indices, direct paths were created between MP and SC (M2), and PD and SC (M4), this improved the fit of the model and the parameter estimates maintained statistical significance (with the exception of ST and JS). Therefore, at least partial mediation exists. To add insight into this finding, in the feedback question areas (see Appendix 4.2), nurses provided comments pertaining to the structural elements of their work (e.g. MP, PD, JD). After an analysis for themes, it was found that nurses enjoy their work because it is challenging, dynamic, high-adrenaline, fast paced and ever-changing. Nurses claim that they enjoy the teamwork involved with their job and “tapping into the knowledge of colleagues”. The most positive aspect of their job is the feedback they receive from patients and to know they helped to save a life. These factors all relate to job design. Problems areas however are with the lack of managerial support and/or presence, often because the managers are stretched themselves, having to manage two or three other departments, and are simply not around or available. Nurses state that everyone is so stretched that it is often not possible to do the job well and because nursing staff are so concerned for the welfare of their patients, they try to make-up for the short fall in resources. This chronic lack of staff has led many nurses to having to work beneath their skill level and perform non-nursing duties. This chronic short staffing means “12 hours with no breaks and because we have no time, we are task oriented and patients feel uncared for.” In regard to PD, faulty equipment, poor layout and lighting, lack of privacy and security in the department, along with limited space are factors that negatively impact SC. Taken together, it is understandable how the context and quality of the internal work/service environment for employees significantly affects perceptions of SC.

Proposition three (P3) stated that ‘External SQ, PS with service, and PE are fully mediated through nurses’ JS, EE, and SC.’ This proposition was supported by the data. The standardized beta and gamma paths in M4 reflect this. The beta and gamma paths were statistically significant with the exception of the gamma path between ST and JS. It may also

be noted that the gamma path between MP and SQ produced a negative value in terms of significance. This negative value may be the result of artefact or a suppression effect. Tabachnick & Fidell (2001) state that a type of suppression occurs when the sign of a regression weight of an independent variable (MP) is the opposite of what would be expected on the basis of the correlation with the dependent variable (SQ) ($r = 0.35, p < .01$). This is called negative or net suppression. Predictability is still enhanced because the magnitude of the effect of the independent variable is greater (although the sign is opposite) in the presence of the suppressor. This correlation reveals that the relationship between MP and SQ is not a strong relationship, but it is still a positive and significant relationship. Another argument could be made that this finding is an illustration of the reality of work life in the ER. For example, comments were made by nurses that expressed their frustration with having to be repeatedly told by management to 'do more with less' such as having to assess and treat patients in the hallways due to lack of stretchers and space in the department, and without a corresponding increase in staff. Comments such as this provide support for the argument that the greater the involvement of managers, the lesser the service quality.

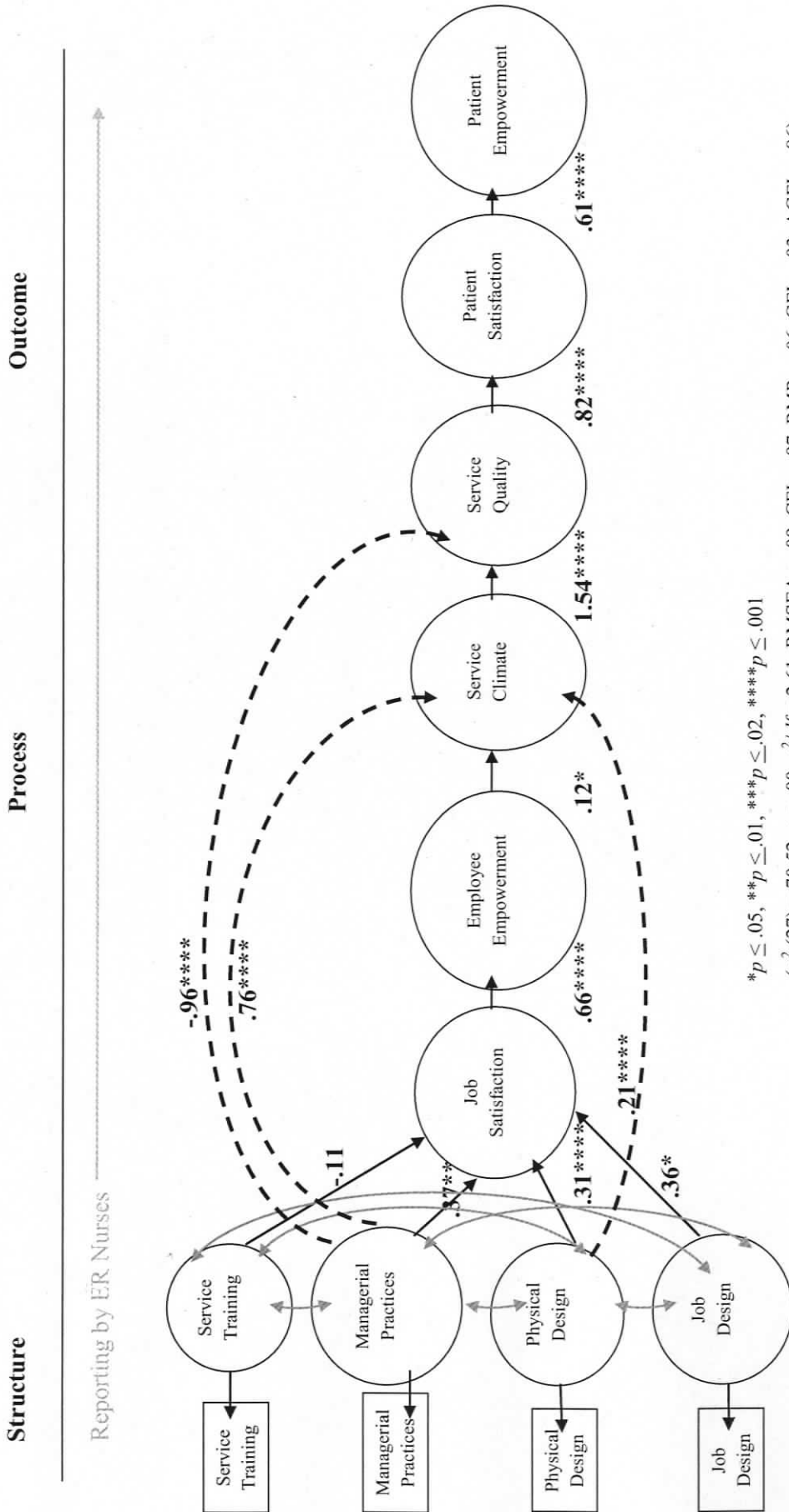
Other comments taken from the feedback questions state that many nurses feel that it is impossible to achieve a SC in the ER and delivery SQ due to the constant pressures and demands of overcrowding and staff shortages. Nurses claim that staff morale has deteriorated due to overcrowding and management problems. For example, one nurse stated, "I left my previous job because of this, because I wanted to work in a more organized hospital but things aren't much different here. We all hope it will get better but when? I would not want to be a patient here." Nurses state that there is simply not enough time to spend explaining anything in detail to patients. Patient teaching and explanation of treatments and tests as well as discharge instructions by both physicians and nurses are not being met due to overcrowding and decreased staff in the ER. The patient leaves with more questions than answers. A comment made by another nurse, "all we seem to have time for is to put out fires and give medications." Nurses feel that "quality of care is sacrificed, sometimes the surface is skimmed", and there is a reduced ability to fully explore all patient needs. Due to the workload they are often placed in a position that interferes with the quality of care that they would like to deliver to patients.

Figure 4.2. The research model (M1) with standardized beta and gamma path coefficients ($n = 180$).



* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, **** $p \leq .02$, ***** $p \leq .001$
 $(\chi^2(30) = 217.94, p = .00, \chi^2/df = 7.26, RMSEA = .18, CFI = .87, RMR = .16, GFI = .82, AGFI = .67)$

Figure 4.3. The final research model (M4) with standardized beta and gamma path coefficients ($n = 180$).



* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, **** $p \leq .0001$

($\chi^2(27) = 70.52, p = .00, \chi^2/df = 2.61, RMSEA = .09, CFI = .97, RMR = .06, GFI = .93, AGFI = .86$)

Note: the standardized beta/gamma paths in this model (M4) reflect the final LISREL analysis.

4.5 Discussion

Using a modified version of the Service Profit Chain, this paper examined the mediating role of service climate (SC) by exploring predictors of SC, that is MP, ST, PD, JD, JS, and EE on outcomes of SC, which are SQ, PS with service, and PE. The larger proposition of this study was that certain structural elements, through their impact on SC, have the potential to positively influence outcomes in the ER. Using data collected from emergency nurses from across the province of British Columbia, principle chain relationships were explored.

The main propositions for this study were largely supported by the data. All path coefficients were significant with the exception of the path from ST to JS. The finding shows that ST does not have a direct or significant influence on nurse's job satisfaction. With regard to the Service Outcome Chain, the data support partial mediation on one side of the model and full mediation on the other side. The results show that JS and EE partially mediate the relationship between the elements of internal SQ (MP, PD, JD) and SC. However SC fully mediates the relationship with external SQ, PS with service, and PE. The best fitting model for the data has direct paths that link MP to SC and external SQ, and PD to SC. The researcher extends previous research in this field and delves into the predictors and consequences of SC.

4.5.1 Linking Internal SQ Features to SC

The challenges facing the ER such as overcrowding, staff shortages and inadequate facilities are representative of the challenges facing the larger health care system. The findings of the study suggest that a focus on SC may serve as a strategic means for addressing some of the challenges or current day realities of life in the ER.

The Service Outcome Chain has proven to be a useful tool for implementing and assessing service strategy. It may also serve as a guide for service design initiatives. In this study, SC was the driver of the Service Outcome Chain and the anchor for which everything else was designed around. This included MPs, JD, and PD. The present results agree with previous research into the positive relationship between organizational resources or foundation issues as an antecedent of SC (Liao & Chuang, 2004, Salanaova et al., 2005; Schneider et al., 1998). Although previous work has examined organizational predictors of SC, this study went further and included MPs, PD, JD, JS, and EE as predictors of SC. The findings show that in the ER, when nurses perceive elements of their internal work/service environment as being

positive (i.e. MP, PD, and JD) they feel more satisfied with their job and more empowered to provide quality service to patients, which in turn leads to a positive service climate.

It is important to note that while JS and EE are significant predictors of SC, their effect may be limited by the direct influence of PD and MPs. In other words, although nurses may be satisfied with their jobs and empowered to provide quality service to patients, the design of the physical setting and the practices and behaviours of management have a much stronger impact on SC than realized.

The PD has also been shown to be a direct and significant contributor to SC, hence the success of a service strategy. For example, if the ambience is poor, the design not functional, nor user-friendly, the layout tight and confusing, or the department not well maintained, these characteristics of PD have a direct and negative impact on SC.

Managerial practices were also shown to be a direct predictor of SQ. Whether this relationship is positive or negative is uncertain. The comments made by nurses in regard to MPs and SQ were in opposition to the statistical interpretation of the data made by the researcher. However what is certain is that MPs have a direct impact on SQ.

The results of this study extend previous research on the predictors of SC by showing empirically that JS and feelings of empowerment partially mediate the relationship between internal SQ elements (i.e. MP, PD, and JD) and SC. The findings illustrate the importance of developing aspects of the internal environment, in attempt to create conditions that satisfy and empower nurses. Working in an organization that facilitates satisfaction and empowerment exerts a powerful, collective influence on SC (i.e. when nurses identify with their patients, find significance and meaning in their work, and feel competent in fulfilling their work roles, they realize the tremendous impact they have in delivering service to patients). This in turn has a positive impact on shared perceptions of SC.

4.5.2 Are SC and PE Part of the Answer?

In line with previous research (Schneider et al., 1998), the researcher formulated a proposition that SQ, PS with service, and PE are fully mediated by SC. The findings support this proposition. Although no previous research has been found that specifically notes the influence of SC on feelings of empowerment, research does exist that examines empowerment as a predictor of satisfaction (Spreitzer et al., 1997). Although the researcher chose to reverse this relationship, the findings illustrate that SC is perceived to be a significant predictor of SQ,

which has a significant impact on PS with service, and PE. In applying the Service Outcome Chain to service design, while developing a climate for service is the 'process goal' of service design, an 'empowered patient' is the end goal. An empowered patient is one who takes an active interest in restoring and maintaining their optimal health and well-being. The findings suggest that creating a positive SC for staff creates a quality, satisfying and meaningful service experience for patients. During this experience, feelings of self-competence are increased, along with the realization or reinforcement of the patients' own ability in influencing their personal health outcomes. Taking it further, a greater sense of awareness and responsibility on the part of the patient has positive implications for the ER. An empowered patient may lead to reductions in the demand for ER service, which may have positive cost implications for the larger health care system.

4.5.3 Practical Implications

The findings provide evidence that in the ER setting, in the province of BC, emergency nurses perceive a weak SC to exist and feel that the overall the quality of service that they provide in the ER is not good. In other words, they claim that the leadership shown by management does not support a service quality effort, and efforts to measure the quality of work and service are ineffective. Nurses feel they have the knowledge and skill set necessary to delivery quality work and service but that they are not provided with the tools and technology needed to do so. They also claim that they do not receive any recognition or reward for their efforts to provide quality service despite working under such demanding and stressful conditions.

Based on these findings, it is suggested to the management of ERs that they work regularly with employees to discuss performance goals and recognize and reward employees for high quality work and service. As it stands, nurses do not feel recognized or appreciated. It is also recommended that that management strive to keep an orderly routine going on the department, and take time to assist new employees to learn about the department and its patients. There is great value realized when management themselves serve as a role models. These nurses have also expressed their desire to have management be more available and physically present in the department and work more with the staff to encourage collaboration in serving patients.

A recommendation is also made to managers to improve, where possible, the design of the physical setting as it has shown to be a significant predictor of SC. There are certain attributes of PD that are significant predictors of SC. These include such things as natural light, way finding potential, cleanliness of the department, and measures taken to ensure the privacy and security of patients and staff. Having universal rooms that are standardized and adaptable, along with designated space for isolation patients, facilitates a SC. Another important characteristic is ambience. Designing a space that promotes a sense of calm and relaxation and offer forms of distraction (e.g. interesting views and forms of media entertainment) also contributes to SC.

These findings illustrate the need for management to focus attention on aspects of the structural elements of the Service Outcome Chain, also referred to as internal work/service quality elements, that have shown to be significant to SC. In summary, this includes managerial practices, the design of the physical setting, and the design of jobs, which have shown to be fundamental to developing a SC in the ER.

Any service organization has to meet the quality challenge to ensure present and future organizational profitability. The difference here with public sector health organizations is that 'profitability' is not the main driver. However, the SQ challenge should not be disregarded. Health care providers who interact with patients daily to provide service are key in this process. As with previous research (i.e. Bitner et al., 1990; Salanova et al., 2005; Schneider et al., 1998), this study has shown that frontline providers (e.g. nurses) contribute to SQ and thus, to the perceptions, (and cognitions, attitudes, and intentions) of patients (Salanova et al., 2005). The way frontline providers feel collectively in the workplace and perceive their work environment is a core issue in creating a SC and delivering SQ, and managers need to pay attention to the satisfaction, motivation and empowerment of employees to guarantee the delivery of quality service to patients. It is important for management not to wait for frontline providers to feel dissatisfied, unmotivated, or powerless before they take corrective measures. Rather, target issues should be to improve the quality of the internal work/service environment in ways that improve job satisfaction, and encourage employees to feel empowered in their work. Meeting this quality challenge requires a focus on enhancing nurse's JS, improving intrinsic motivation, and helping them to feel supported and enjoy coming to work. It is important that management should take action to avoid loss of the incentive needed to provide

quality service to patients under such demanding and stressful work conditions. In addition, building and sustaining an organizational environment that supports a SC makes an organization attractive to potential recruits and retains experienced nurses. It also empowers the individual (staff and patients) to adopt a longer term perspective with regard to their own health and well-being.

4.5.4 Strengths, Limitations and Further Research

The strengths of this study are that it applied a service management perspective to the design and delivery of service in the ER. Using a modified version of the Service Profit Chain, the study explored principle relationships of the service delivery system with particular attention to the role of SC. The researcher developed the conceptualization of the Service Outcome Chain, applicable to the ER setting and to public sector hospitals in general. The findings provide support for application of the Service Outcome Chain in assessing the design of service in the ER.

In addition, the researcher used perceptions of internal SQ elements (i.e. MP, ST, PD, and JD) and JS and EE to explore their predictability on SC. The researcher also tested specific indicators of the patient service experience in the ER as perceived by nurses (i.e. SQ, PS with service, and PE). In contrast with previous research, SEM was used rather than a series of multiple regressions. The researcher assessed perceptions of PD, which is an area of organizational studies that is largely unexplored.

The present study also has some limitations. First, the researcher used only employee (nurses) data rather than employee and patient data simultaneously, which can lead to problems with external validity. Second, the data were primarily analyzed at individual level of analysis (emergency nurses in general). The research would benefit from applying an organizational or unit analysis in addition to the analysis conducted here. A comparison across the health authorities and ERs would add meaningful insight to the data. Although some qualitative commentary has been included, a mixed methods approach including qualitative interview data would enrich the findings further.

Further research is recommended on the physical design of the service setting and on developing a measure for assessing 'physical service design.' The impact of management on SQ in the ER is another area for further exploration. Finally, research could be carried out in other service occupations and organizations to test the invariance of the proposed model.



CHAPTER 5

Service Design - Service Structure, Process and Outcomes: A Case of Two ERs

5.1 Summary

Purpose

This paper presents a detailed and comparative view of the researchers' time spent exploring various aspects of service design in two ERs. Using a modified version of the Service Profit Chain, this study examined the mediating role of service climate (SC) by exploring predictors of SC, that is, service training (ST), managerial practices (MP), physical design (PD), job design (JD), job satisfaction (JS), and employee empowerment (EE) on outcomes of SC, which are service quality (SQ), patient satisfaction (PS) with service, and patient empowerment (PE). The larger proposition being that certain structural variables, through their impact on SC, have the potential to positively influence outcomes in the ER.

Methodology

A comparative case study was conducted of two ERs within the Vancouver Island Health Authority (VIHA). A mixed methodology was used to assess the perceptions of health care providers ($n = 93$). These providers commented on internal SQ elements (ST, MP, PD, and JD), JS, EE, and SC. Furthermore they provided their perception of external service elements such as SQ, PS with service, and PE by responding to questions from the vantage point of the patient. Quantitative data were analyzed using statistical package for the social sciences (SPSS); and structural equation modelling (SEM) using linear structural relations (LISREL). Qualitative data was analyzed using content analysis and pattern matching.

Findings

The analyses showed that ST and PD had a direct and significant influence on SC as did MPs on SQ. JD had a direct and significant impact on EE, which was a significant indicator of PE. In addition, external SQ, PS, and PE were fully mediated by SC. The qualitative data enriched these findings.

Research Limitations / Implications

A limitation of this study is that the researcher used only staff data rather than staff and patient data simultaneously in the research model. Future research should be done that incorporates both viewpoints. In addition, research could be carried out in other service organizations to test the invariance of the research model.

Practical Implications

The results should lend health care managers to consider the benefits of applying the Service Profit Chain, or a modified version, to the design and evaluation of services in ER.

Originality / Value

The contribution of this research is that it applies a modified version of the Service Profit Chain to exploring the structure, process and outcomes of service design in the ER.

Keywords

Service Profit Chain, Service Climate, Physical Design, ERs

5.2 Background and Objectives

5.2.1 Vancouver Island Health Authority

As larger organizational issues directly impact frontline service delivery, a description of the health authority and challenges faced will be presented prior to providing a description of the ERs that were the focus of investigation.

Through a network of hospitals, clinics, centres, health units, and residential facilities, the Vancouver Island Health Authority (VIHA) provides health service to over 752,000 people on Vancouver Island (this is 17% of the population of British Columbia), on the islands of the Georgia Strait, and in the mainland communities north of Powell River and south of Rivers Inlet (VIHA, 2008). VIHA employs approximately 17,000 health care professionals, technicians and support staff, as well as contracted service providers and more than 1,700 physicians. VIHA has approximately 138 health service facilities, approximately 1,500 acute care and rehabilitation beds, 5,700 residential care beds and assisted living units, 100 community addiction beds, 800 community mental health beds and 14 staff unions. Like many health service jurisdictions across Canada, VIHA faces significant challenges in ensuring they have adequate human resources to meet the need for health services. The population is both growing and aging, which adds strain to every aspect of the health system.

One of the most significant challenges facing VIHA is a declining workforce. In 2006 the organization estimated that it would face a loss of 6,800 people or almost 40% of its current employee base within five years (VIHA, 2006). This potential loss is due to two factors: i) An aging workforce, current national data suggest the average age of Canadian health care workers is approximately 42 years. The average age of VIHAs workforce is higher yet at 45 years; and, ii) Attrition - people leaving before retirement age. On an annual basis, VIHA expects about 3% of employees to retire and 5% to leave for reasons other than retirement. Viewed from the perspective of bargaining sectors, in proportional terms the largest loss will be in management (50%), followed by facilities (48%), community (41%), nursing (37%), and paramedical (36%). The organization projects they will need to recruit up to 7,300 new employees over the next five years to cover losses due to retirement and attrition and to meet new requirements due to growth in residential care, home support, and primary health care (VIHA, 2006).

From 2000 till present, VIHA has recruited an average of 1,400 (8%) employees per year. If VIHA is able to continue to hire employees at the rate they have been in the past, they expect to be able to meet demand. However, VIHA reports that it has become increasingly difficult to fill some positions and estimates of the staffing needs for service redesign/strategic priorities are likely underestimated. The organization projects a shortfall of 500 FTEs if significant action is not taken. To meet these workforce needs, VIHA must not only build on past recruitment successes, but must also find a better way to manage attrition, which may have an impact almost twice as significant to that of retirement (VIHA, 2006). VIHA has identified their greatest areas of weakness to be the work environment, communication, and managerial span of control.

VIHA routinely loses a large number of employees every year for reasons other than retirement. They report the intensity of the workload, the physical working conditions, salary rollbacks and outsourcing, have all had a negative impact on moral. VIHA reports that in 2005, their health authority had the highest sick time costs across the entire province.

Demographics and work environment issues have to some degree been compounded by other challenges. Specifically, there is a lack of communication with front line staff (VIHA, 2006). Many of VIHA's managers are responsible for large numbers of staff, in some cases dispersed across large and remote demographic areas. These managers must travel a great deal which has a significant impact on their ability to develop and maintain relationships with employees. VIHA has identified their awareness that managers are crucial to recruitment and retention, and that a good relationship between managers and staff contributes to employee satisfaction and engagement. The organization acknowledges that managers are burdened with responsibilities that are too broad, and less able to be supportive which has far reaching negative effects. This is an area the organization is striving to address as identified in their 'People Plan Infrastructure Plan' (VIHA, 2006).

The following paragraphs provide background information on the two ERs that were the sites of the case studies. These sites were chosen at the request of the VIHA Executive due to their interest in acquiring a front-line perspective of these two departments. The two sites explored were the Victoria General Hospital ER (VGH/ER, South Vancouver Island) and the Nanaimo Regional General Hospital ER (NRGH/ER, Central Vancouver Island). The NRGH is designated as a Regional Specialty Hospital and VGH designated as a Tertiary Hospital.

5.2.2 Victoria General Hospital ER

The VGH/ER serves a population of about 350,000 in the Greater Victoria area and over 700,000 people throughout the island. The VGH/ER provides care to the general medical and surgical population, with special attention to trauma, neurology, paediatric and gynaecology/obstetrical patients. This department serves as the Regional Trauma Centre for Vancouver Island and sees approximately 120 patients in 24 hours. The department was built in 1983 to accommodate 10,000 visits a year. However in 2006/2007 the department reported more than 36,000 annual patient visits. With a growing and aging population, annual patient visits have been steadily increasing. Not surprisingly, the current ER is too small to meet current demand. Photographs of the department are provided in Illustration 5.1 and 5.2.

In 2007, the government announced a \$19 million expansion that would triple the size of the current ER (Ministry of Health, 2007). It is reported that this new department will have more patient treatment spaces, offer a more patient centred layout, greater privacy, and provide an improved work environment for staff. The current department is 530 square metres; the new ER will be three times this size at 1,660 square metres. The new department will have a total of 35 treatment beds, up from the current 20. This will include 11 acute care beds (currently there are 14), two trauma rooms (currently there is one), one paediatric trauma bed (currently none specifically designated), three triage holding beds (currently none specifically designated), three paediatric beds including a paediatric secure room (currently there are none), seven fast track beds (currently fast track beds are only available in the evenings after Surgical Short Stay daily activities are completed), three procedure rooms (same as current), two gynaecology rooms (currently there is one), and three isolation rooms including a paediatric isolation room (currently there is one). The seven fast track beds will be a treatment area where patients with minor afflictions can be treated and discharged efficiently.

The current ER has one main entrance meaning that all patients, whether arriving by ambulance or arriving on their own, all enter through the same door. The new ER will have three separate entrances - one for ambulatory patients/patients arriving on their own, a second for patients arriving by ambulance, and a third for patients with highly infectious diseases who can be placed directly in an isolation room without putting other patients at risk. This area will be equipped with a decontamination shower, which will allow individuals exposed to chemicals to be decontaminated without impact to the rest of the department. Construction is

expected to begin this year (2008) with completion by the end of 2009. The unit manager states that “with the new department being developed, staff morale is raised.” Although the VGH/ER is undergoing some structural, physical changes due to constraints with the physical work environment, challenges presenting to other aspects of the internal work environment are presently unknown to the researcher. In comparison with other ERs within the health authority, the VGH/ER has a low public profile.

Illustration 5.1. VGH/ER Triage Area

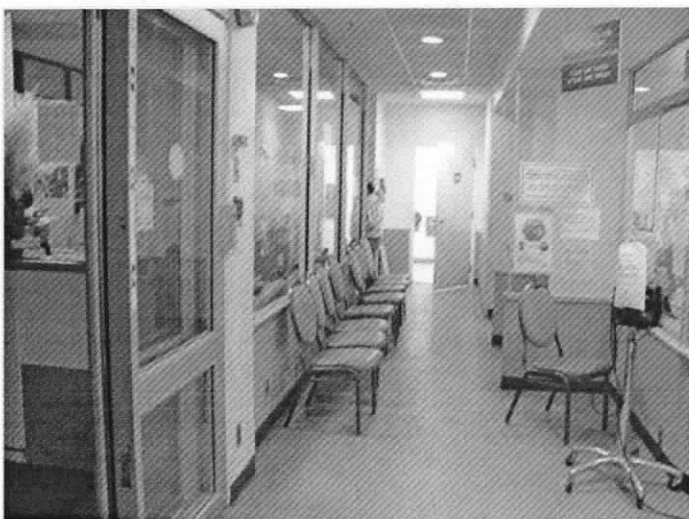
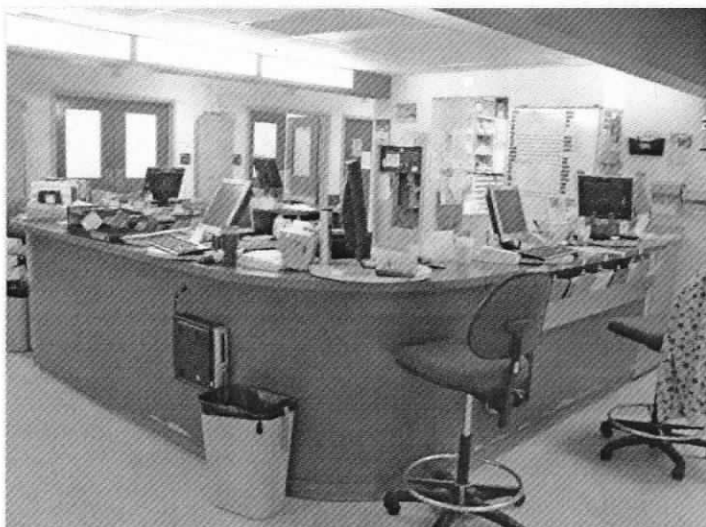


Illustration 5.2. VGH/ER Nursing Desk



5.2.3 Nanaimo Regional Hospital ER

The NRGH/ER is a department with a high public profile. It is reported as being the busiest ER on Vancouver Island and the 6th busiest ER in the province (Walton, 2007). This ER serves a population of about 250,000 on the central east coast of Vancouver Island with a reported 48,000 annual patient visits. Patients range in age from newborn to 103 years with emergent, urgent and non-urgent complaints. In addition, the ER provides care to admitted patients when no beds are available on inpatient units. The NRGH is designated as a Regional Specialty Hospital, and the ER provides care to largely the general medical and surgical population with a high proportion of retirees. The department has dedicated emergency educated physicians and nurses who work closely with consultants, medical imaging, laboratory, respiratory therapists, and social workers to provide care for patients with acute illness/injuries or exacerbations of chronic problems. The department sees anywhere from 90-150 patients in 24 hours and was built in 1991 to manage the care of 12,000 annual patient visits. That number has increased to an average of 50,000 patient visits annually, hence the current space has limitations for meeting current needs. The ER is currently undergoing an estimated \$19 million expansion which includes increasing space, providing more patient care areas and improving flow by better integrating the various components of the ER (VIHA, 2006). The expansion plan also includes the development of an adjacent combined Psychiatric Intensive Care Unit and a Psychiatric Emergency Service with six secure rooms and two short stay beds. Photographs of this ER are provided in Illustration 5.3 and 5.4.

Illustration 5.3. NRGH/ER Nursing Desk

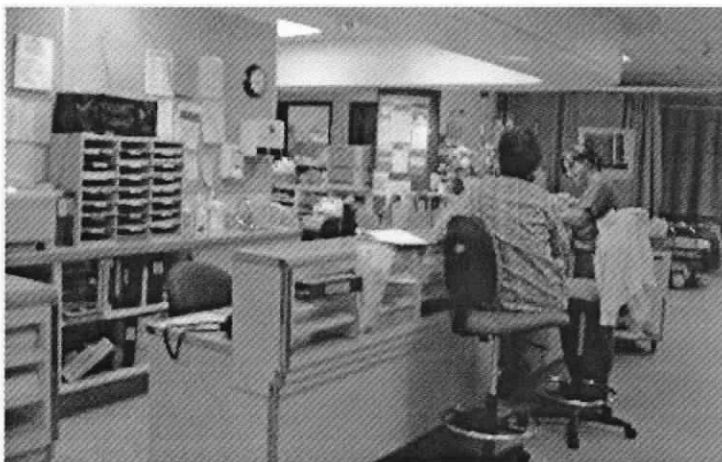


Illustration 5.4. NRGH/ER Triage Area



Some events have occurred in the past few years that have brought the NRGH/ER into the public spotlight. A review of the headlines provides some understanding of what has occurred:

- Latest ER crisis hit communities large and small (CMA, 2000).
- ED problems result of bed shortages, doctors contend (CMA, 2004).
- Stress at city ER: Nanaimo nurses fear mass exodus (Wilson, 2004).
- Nanaimo ER doctors withdraw all services (Harnett & Bell, 2004).
- Nanaimo doctors settle dispute (Gidney, 2004).
- Was it worth it? Key players evaluate effects of crippled emergency room (Wilson, 2004).
- Patients receive excellent care at NRGH: Survey (Wilson, 2004).
- Probe launched after senior dies in hall of hospital (Fong, 2006).
- Hope glimmers for a new ER: Planning process underway at NRGH (Wilson, 2006).
- Jammed NRGH cancels surgeries. Turning patients away 'a last resort' (Wilson, 2007).
- Long wait times plague hospital; Nanaimo hospital is the busiest on the island with 45,000 visits every year (Walton, 2007).

In the past four years, two events in particular have brought the department into the public spotlight. The first was in 2004, when the emergency physicians resigned en masse due to a bitter contract dispute between the Nanaimo Emergency Physicians Association (NEPA), VIHA, and the Ministry of Health. The second was the death of an elderly patient, lying in the hallway of the department, waiting to be seen by a doctor. Both events caused a stir of media attention and had an impact on the relations between staff and management, and staff and patients and citizens of the community.

For example, with regard to the mass resignation of the 21 ER physicians, the dispute was over staffing levels where the sides disagreed over a formula that dictated the number of ER physicians needed in Nanaimo. Prior to the walk out, the physicians and the health authority had been negotiating for two years in attempt to reach a contract agreement. Given NRGH's status of having the busiest ER on Vancouver Island, the physicians requested parity with the staffing levels provided in Victoria. However the health authority said parity with Victoria was not warranted since Nanaimo's patients were not 'in the same acuity level as those in Victoria hospitals'. This conceded that Nanaimo's ER cases were not as acute or as serious. At the same time, the Ministry of Health ordered funding cuts to physician staffing at NRGH/ER.

From the get go, NEPA members said their main concern was over safe staffing levels. The physicians contended that patients in Nanaimo and Central Island were just as ill as those who utilize the services of ERs at Victoria's two hospitals and deserve the same physician to patient ratio as residents of Victoria (one ER physician for every 3,000 patient visits). The physicians requested 17 full-time equivalent (FTE) positions. The Ministry of Health argued that physician staffing levels were based on a formula used province wide that takes into account patient volumes and acuity levels. According to the formula, NRGH's ER only warranted a reduced staffing level of 14.34 FTE physicians.

Voices rang in protest and the majority of citizens, nurses and other medical doctors and specialists in Nanaimo and Central Island were quick to side with the doctors. The newspaper was inundated with letters to the editor and telephone calls. Many were outraged that Ministry officials appeared to be implying that residents of Nanaimo and Central Island did not get as sick as those in the Capital Region, and therefore required fewer ED physicians locally.

In protest, the dispute led the physicians to reducing services in the ER to treatment of life and limb threatening illnesses and injuries only, to eventually the total withdrawal of

services. When NEPA announced its members would no longer be available to work in the ER, VIHA put in place a contingency plan that was to bring physicians from other health care facilities to Nanaimo to cover shifts. This plan unravelled the following day, when VIHA found it would be unable to staff the ER with qualified physicians.

It was not until the withdrawal of services and the public outcry that the Ministry claimed the formula was 'flexible' and if the evaluation of the data confirmed higher staffing levels were warranted, the numbers would be adjusted accordingly. The dispute finally ended after 15 days of data collection, comparisons and re-evaluation of patient volumes and acuity levels, which resulted in a new salary based contract that offered funding for 17 FTE physicians in addition to the department being placed in the same acuity level as Victoria hospitals. Although the number of FTE's was basically a return to the status-quo staffing levels in force before the funding cuts imposed by the Ministry, it was a number the physicians were comfortable with. Many asked why the staff and citizens had to go through this to end up right where they started from. However the medical community felt there was great value in the exercise both locally and provincially. It is unusual to see 21 physicians with a very specific patient care focus bring about such tumultuous change and comment from great heights. The exercise illustrated the strength and unity that exists within the department, the hospital and the community. It is challenges such as these that impact the climate within, hence affect front line service delivery.

Table 5.1 on the following page presents a general demographic and operational comparison of the two ERs, all data included in this table was provided by the manager of each unit.

Table 5.1.

General Comparison of the ERs (n = 2)

Descriptors		NRGH/ER	VGH/ER
Year built		1991 (17 years)	1980 (28 years)
Square footage		9400	5700
Annual visits		48,000 to 52,000	36,000
# Visits/24 hrs		90-150	100-140
Bed/stretchers	Trauma	4	1+ 1 space for paediatric if needed
	Fast Track	2+ 1 chair	7+ 5 chairs in Surgical Day Care after hours
	Treatment	12	20
	Hallway	5	3
	Isolation	1	1
	Triage/holding	2	0
	Gynaecology	1	0
	Seclusion	1	0
	Admitted spots	5	0
	Expansion	Hallway	Hallway
Daily flow	0700-0900	Quiet trickle	Quiet trickle
	0900-1200	Busy	Picks up, becoming busy
	1200-1500	Moderate	Really, really busy
	1500-2300	Busy	Continues to be busy
	2300-0700	Cooling	Cooling
	0200-0700	Slower	Slower
Fast track	Hours	1100-2300 daily	Mon to Fri 1530-2300; weekends 1100-2300
Patient: nurse ratio	0700-0800	5:1	The nurses are assigned beds. They receive a number of patients in those beds on an ongoing basis. The nurse may have several patients at once, as the stretchers may be occupied and they have moved patients to a chair to await disposition.
	0900-1200	5:1	
	1200-1500	7:1	
	1500-2300	7:1	
	2300-0200	5:1	
# Physicians working per 24 hours	0700-1100	2	1
	1100-1500	3	2
	1500-1900	3	2 until 1700, then 3 until 1900
	1900-2300	3	3 until 2100, then down to 2
	2300-0300	2	2 until 0200 then down to 1
	0300-0700	1	1
Patient acuity	CTAS 1	1%	CTAS 3 are the majority
	CTAS 2	18%	
	CTAS 3	43%	
	CTAS 4	36%	
	CTAS 5	2%	
Chief Complaints	(Reason for ED visit)	Abdominal pain, chest pain, lacerations, limb pain	
Staffing	#FTEs:	33.7	31
	#PTEs:	14	20
	# Casual:	11	24
	#LPNs:	2.8	7
	# Unit clerks:	6.7	7+ 3 casual
	#Physicians:	14	26
	#Clinical leaders:	4.4	3
	#Managers:	1	1
	#FTEs Cleaning:	4.4	Varied, not owned by VIHA
	Annual overtime :	23,749 hours	8%
	Annual absenteeism :	6.1%, 99.672 hrs	N/A
	Recruitment rates:	2 vacancies	Hired 14 new staff
	Retention rate:	7 let last year	Very few in the past year

5.2.1 Research Propositions

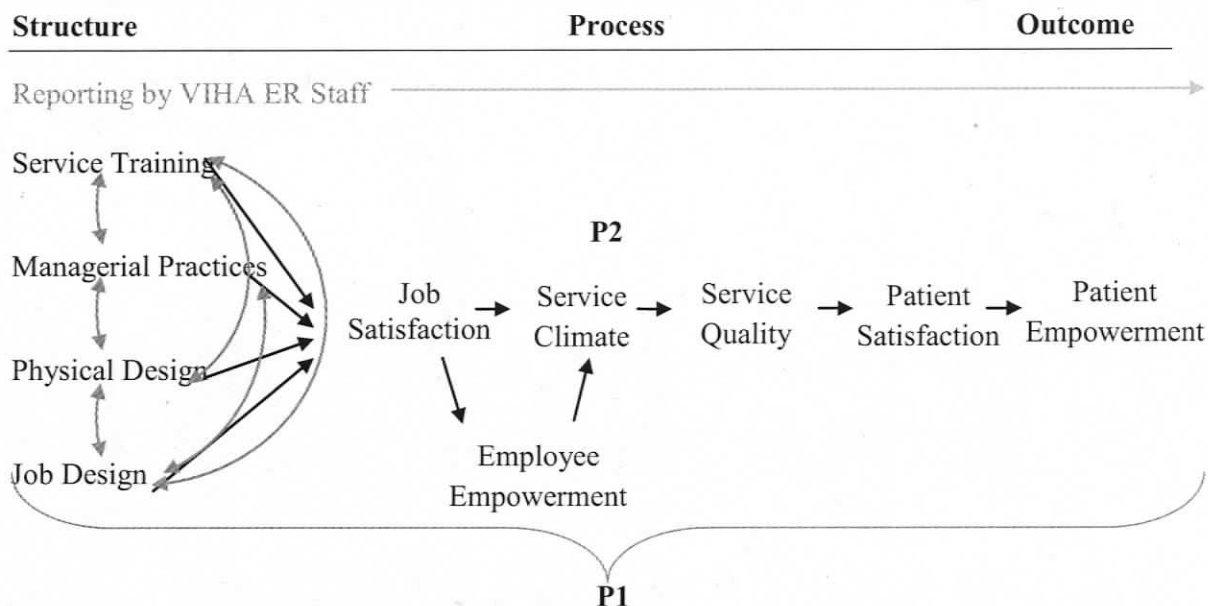
The objective of this research is to build on an earlier study conducted by Steinke (2008) that applied a modified version of the Service Profit Chain (Heskett et al., 1997) to broadly exploring the role of SC in ERs. In the earlier study, the perception of BC emergency nurses ($n = 180$) were assessed. In the current study, the intention is to apply the same theoretical framework in conducting a comparative case study of two ERs where the perceptions of staff ($n = 93$; nurses and physicians) are explored. The purpose of the case studies is to acquire an in-depth look at the design of service in ERs with reference to the various elements that make up the Service Outcome Chain.

The Service Outcome Chain (Figure 5.1) is a means for implementing a linked and strategic service vision. This framework assists organizations in understanding how operational investments to service (i.e. structural elements of service), translate into service operations (i.e. process elements of service), which relate to perceptions of service and other measures of organizational success (i.e. outcome elements of service). In this study, the Service Outcome Chain is applied to explore various structural (ST, MP, JD, PD), process (JS, EE, and SC), and outcome elements (SQ, PS, PE) of service design. Schneider's (1998, 2000, 2005) work on SC largely drives this research whereby he and his colleagues identified antecedents within organization that promote a positive SC for employees that yields positive service oriented behaviours towards clients, who then report positively on the quality of the service experience. In the Service Outcome Chain, additional antecedents and consequences of SC are explored.

On the basis of previous research, the following propositions are explored:

- *Proposition one (P1):* In the EDs under study, certain structural elements of service (ST, MP, JD, PD), through their impact on process elements (JS, EE, SC), have the potential to positively influence outcome elements (SQ, PS, PE) of service design in the ER.
- *Proposition two (P2):* In the ERs under study, SC will mediate the relationship between structural (MP, ST, JD, PD) and outcome (SQ, PS, PE) elements of service design.

Figure 5.1. The service outcome chain (research model).



5.3 Methodology

The study involved a mixed method approach drawing upon both quantitative and qualitative data collection procedures. This approach allowed for a more comprehensive examination and a greater depth of understanding the issues involved. There are three stages that constitute this study, the *Pilot Study*, the *Quantitative Survey* and the *Qualitative Case Studies*. However the focus of this paper will be on the latter two studies. This combined triangulation of methods has been used to corroborate and enhance the validity of the findings from each stage of the study. In the social sciences, triangulation is used when applying two or more methods to the same research problem in order to increase the reliability and validity of the results. If the findings of both methods point in the same direction, the chances are that “facts” have been obtained. “If the results are contradictory, we realize that the use of a single method could have misled us.” It is important to ensure that the findings of a combined method approach complement each other (Gummeson, 1991, p. 120).

5.3.1 The Pilot Study

Methodology

To test the appropriateness of the measuring instruments, a two phase pilot study was conducted. The purpose of the pilot study was to pre-test the measurement tools (the quantitative surveys and the semi-structured interview questions). This was done to determine face validity, relevance and clarity of the items.

Phase one

In the first phase, which involved an exploratory pretesting of the instruments, six ($n = 6$) practicing health care professionals (two emergency nurses, two nurse administrators, and two emergency physicians) were chosen by way of a convenience sample to pre-test the instruments. These participants were from a small community hospital in the province of Alberta, a site where the researcher is employed as a registered nurse, therefore access was easily obtained. The respondents were approached directly by the researcher and the purpose of the pilot study was explained. All six individuals approached agreed to participate and a date, time, and location for which to conduct the interviews were organized. The interviews were conducted over a period of seven days. The background materials were given to participants 48 hours in advance. These included a cover letter that stated the agreed upon date, time, and location for the interview, the purpose of the study, and statements concerning confidentiality and anonymity. Attached to the cover letter were copies of both measurement tools. The participants were asked to complete the survey items and interview questions prior to the meeting and provided feedback on the instruments during that time. The interviews were conducted at the worksite or place of residence. Each interview was approximately one hour in length. The purpose of the interview was to discuss the participants' experience in completing the instruments. Their responses were used to refine the instruments.

Phase two

The second phase of the pilot study consisted of distributing the revised quantitative survey instrument to a convenience sample of fourth year nursing students at the University of Victoria ($n = 60$), in addition to a convenience sample ($n = 10$) of practicing ER nurses and managers from a large regional hospital in Alberta for a total population of $N = 70$. A total of 27 responses were received for a response rate of 39%. The purpose of this second phase was to pilot the modified survey instrument. In both of these cases, access was obtained due to the

researcher's familiarity with the organizations. The surveys were personally distributed to subjects by way of: i) Meeting with the practitioners in their workplace; and ii) Attending the last 15 minutes of a fourth year nursing class. In the latter case, the instructors gave their consent for the researcher to come into the class and request student participation. In both cases, subjects were provided with an explanation of the study and informed their participation was voluntary and anonymous. A consent letter was attached to each survey. Subjects were encouraged to complete the survey at home and were provided with a stamped, addressed return envelope for which to submit their completed survey by mail.

Results

The following is a summary of the comments received during the pilot study and the ways in which the comments led to the modification of the instruments:

- Appearance of the questionnaire, the respondent's comments had an impact on the visual design of the survey instrument. For example, the placement of the Likert Scales and the wording used in the Likert Scales.
- Another issue was whether to incorporate additional areas for comments. The decision was not to have such space, as it would make the questionnaire too long.
- There were comments in regard to the wording and sentence structure of the questions. Some survey questions were omitted to avoid duplication, other questions were reworded to improve clarity or enhance relevance.

The following statistical analyses were also conducted: frequencies, correlations, reliability analysis, and factor analysis to investigate the reliability and underlying factors of the measures. From the feedback received, overall the questions satisfied their intended purpose and addressed the focus of the study. Face and content validity were therefore demonstrated through the feedback compiled during the pilot study. Questions were finalized and preparations made to proceed with data collection.

5.3.2 *The Quantitative Study*

Methodology

Procedure

Subjects were informed of the research through a letter to inform, which was provided to the unit manager of each department three weeks in advance of data collection. The unit manager posted the letter on the staff bulletin board and placed a copy in the file folder of each employee. The purpose of this letter was to provide a brief summary and timeline of the research and inform subjects that participation was voluntary. Staff were also informed of the study through the Emergency Services Newsletter (November 2006 edition) where the Director of Emergency Services included a 1/3 page description of the study.

A paper, mail-out survey was used as the means for data collection. The Director of Emergency Services for VIHA requested to be provided with the surveys, she would then distribute them to the manager of each department who would then place a copy of the survey in the file folder of each employee. The survey was distributed to staff members of both ERs [physicians ($n = 51$), physician leaders ($n = 2$), licensed practical nurses ($n = 17$), registered nurses ($n = 114$), clinical nurse leaders ($n = 6$), educators ($n = 2$), unit managers ($n = 2$), unit clerks ($n = 22$), unit aides ($n = 2$)]. The population size for the staff survey was estimated at approximately 200 subjects ($N = 218$). A consent letter was attached to each survey that addressed the topics of voluntary participation, anonymity and confidentiality of the data. Implied consent was achieved through the completion and return of surveys. Subjects had the option of completing the survey at home or at the work. Upon completion, subjects were asked to either deposit their completed survey into the secured box located at triage or return by mail in the return-addressed, stamped envelope provided. Subjects were given a two-week time frame to complete the survey.

Sample

The data was gathered over a one month period and garnered a response rate of 43 % ($n = 93$). Forty seven percent (47.30%) of those respondents were from the VGH/ER ($n = 44$), and 53% were from NRGH/ER ($n = 49$). At the individual level of analysis (VIHA), demographic details are as follows: Seventy three percent (72.80%) of respondents were female and the mean age of respondents was 45 years (birth year mean: $M = 1963$; $SD = 9.56$). Cumulative percent figures illustrate that seventy percent (70.40%) of respondents were born

prior to 1970 with 38.30% of those respondents born prior to 1960. These figures provide support for the literature that identifies the industry of health care as an aging profession. Fifty eight percent (58.10%) of respondents were full-time, regular employees; nineteen percent (19.40%) were part-time, regular employees; and nine percent (8.60%) were employed on a casual basis. Fifty two percent of respondents were employed as a staff nurse (51.60%, $n = 48$). Fourteen percent (14.00%, $n = 13$) employed in an administrative position such as a unit clerk, and twelve percent (12%, $n = 11$) employed as physicians in the ERs under study. Fifty percent (49.50%) of respondents were educated at the college level, 24% at the undergraduate university level, and 27% percent at the graduate level. On average, respondents had been working in the ER setting for a period of 125.41 months ($SD = 102.78$). The mean time respondents had been working in their current ER was 82.39 months ($SD = 74.33$). Respondents claim to have been working in their current capacity, the majority working as a staff nurse, on average for a period of 89.16 months ($SD = 86.19$). Table 5.2 provides a summary of demographic information at the organizational level of analysis where comparative data of the two ERs is presented.

Table 5.2.

Summary of Demographic Information (n = 93)

Measure	Items	VGH/ER				NRGH/ER			
		Freq.	%	Mean	SD	Freq.	%	Mean	SD
Respondents		44	100.00			49	100.00		
Gender	Female	31	72.10	1.28	0.45	36	73.50	1.27	0.45
	Male	12	27.30			13	26.50		
	Missing	1	2.30						
Birth year	1940-49	2	4.50	7.14	1.00	2	4.10	6.72	0.91
	1950-59	7	15.90			20	40.80		
	1960-69	12	27.30			14	28.60		
	1970-79	12	27.30			9	18.40		
	1980-89	2	4.50			1	2.00		
	Missing	9	20.50			3	6.10		
Education	College/Technical	21	47.70	3.75	0.81	25	51.00	3.80	0.89
	Undergraduate	13	29.50			9	18.40		
	Graduate	10	22.70			15	30.60		
	Missing								
Work position	Maintenance/Ancil.	0	0.00	6.74	1.80	2	4.10	6.59	2.26
	Allied Health	4	9.10			3	6.10		
	Physician	4	9.10			7	14.30		
	Staff Nurse	28	63.60			20	40.80		
	Clinical nurse spec.	1	2.30			3	6.10		
	Administrative	3	6.80			10	20.40		
	Management	0	0.00			3	6.10		
	Other	2	4.50			1	2.00		
	Missing	2	4.50						
	Workplace	Hospital	44			100.00	1.00		
Employment status	Part-time casual	5	11.40	3.02	1.12	3	6.10	3.40	0.99
	Part-time regular	10	22.70			8	16.30		
	Full-time casual	6	13.60			3	6.10		
	Full-time regular	21	47.70			33	67.30		
	Missing	2	4.50			2	4.10		
Time working in current position (months)				89.87	86.26			88.56	87.01
Time working in this ED (months)				91.17	92.81			75.41	55.53
Time working in ED setting (months)				112.71	104.56			135.53	101.26
Time working in health authority (months)				128.15	97.86			108.55	82.57

Instrument and Measures

The survey, entitled 'The Service Outcome Questionnaire' (refer to Appendix 4.1) contained 136 questions of a five point Likert scale that assessed various elements of service design in addition to 11 demographic questions, and four open ended/feedback questions. The questionnaire used in this study was the same questionnaire used in the previous study of BC emergency nurses. Completion time of the survey was approximately 25 minutes. The questionnaire was developed using scales previously developed, and well-established in the

literature, by Boudreaux et al. (1999), the Department of Health (2006), Hackman & Oldham (1980), Parasuraman et al. (1988), Salanova et al. (2005), Schneider & colleagues (1985, 1992, 1998), Spreitzer (1995), Thomas & Velthouse (1990), and Ware, Cook, & Wall (1979).

The items were categorized and measured under the following elements or variables:

Structural Elements

Element 1: Internal Service Quality

- Service training (four items, questions 1-4)
- Managerial practices (seven items, questions 5-11)
- Physical design (24 items, questions 19-42)
- Job design (21 items, questions 43-63)

Process Elements

Element 2: Employee Satisfaction

- Intrinsic job satisfaction (six items, questions 64-69)
- Extrinsic job satisfaction (nine items, questions 70-78)
- Overall job satisfaction (one item, question 79)

Element 3: Employee Empowerment

- Meaning (three items, questions 80-82)
- Competence (three items, questions 83-85)
- Autonomy (three items, questions 86-88)
- Impact (three items, questions 89-91)

Element 4: Service Climate

- Global service climate (seven items, questions 12-18)

Outcome Elements

Element 5: External Service Quality

- Responsiveness (three items, questions 92, 98, 100)
- Tangibles (three items, questions 93, 94, 99)
- Reliability (three items, questions 95, 96, 97)
- Assurance (three items, questions 101, 102, 103)
- Empathy (three items, questions 104, 105, 106)

Element 6: Patient Satisfaction

- Triage and registration (four items, questions 116-119)

- Nursing Staff (three items, questions 120-122)
- Physician staff (five items, questions 123-127)
- Discharge process (three items, questions 128-130)
- Other (five items, questions 131-135)
- Overall patient satisfaction (one item, question 136)

Element 7: Patient Empowerment

- Meaning (three items, questions 107-109)
- Competence (three items, questions 110-112)
- Impact (three items, questions 113-115)

A description of each element is provided below. Result of the principal component analysis for each variable is provided in Appendix 5.1 (Tables 5.1.1 to 5.1.10).

Service training (ST). ST was assessed using a four item measure (Cronbach's alpha 0.77) developed by Salanova et al. (2005). Employees were asked about the degree to which these organizational service-training activities are important in facilitating their performance. Results of a factor analysis of items produced a mono-factor solution with only one component explaining 59.67% of variance with an eigenvalue of 2.39. Items were scored on a five-point rating scale ranging from one (strong disagree) to five (strong agree). Higher scores were indicative of higher levels of each item.

Managerial practices (MP). MPs were assessed using a seven item measure (Cronbach's alpha 0.91) developed by Schneider & colleagues (1985, 2002). This measure reflects those actions taken by an employee's immediate manager that support and reward the delivery of quality service. These items were used to assess managerial behaviours from the vantage point of the employee. Results of a factor analysis of items produced a mono-factor solution with one component explaining 65.16% of variance and an eigenvalue of 4.56. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Physical design (PD). PD was assessed using a portion of the instrument developed by the NHS Estates (24 items, Cronbach's alpha 0.94) (Department of Health, 2006). The dimensions or sub-elements of physical design were: *Ambience* - factors that affect perceptions of and responses to the built environment (six items, Cronbach's alpha 0.85); *User-friendly* - the extent to which the built environment provides comfort to users (six items, Cronbach's alpha

0.87); *Layout* - the way the department is laid out, enabling users to perform their duties and operate as a system (four items, Cronbach's alpha 0.70); *Access* - access to amenities such as shopping for essentials, food services, banking, the outdoors, and media/technology (three items, Cronbach's alpha 0.73); *Cleanliness* - the internal and external cleanliness of the department (two items, Cronbach's alpha 0.82); *Adaptability* - how accommodating and adaptable the space is in relation to purpose (three items, Cronbach's alpha 0.60).). Factor analysis with varimax rotation produced four components with eigenvalues over 1.00 explaining 62.61% variance. The rotation converged in 12 iterations. The researcher identified the following four underlying constructs: *Functionality* - how accommodating and adaptable the space is in relation to purpose (eleven items, Cronbach's alpha 0.93); *Ambience* - factors that affect perceptions of and responses to the built environment (six items, Cronbach's alpha 0.88); *User-Friendly* - the extent to which the built environment provides comfort to users (four items, Cronbach's alpha 0.71); and *Layout* - the way the department is laid out, enabling users to perform their duties and operate as a system (three items, Cronbach's alpha 0.64). Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Job design (JD). Job design was assessed using a 21 item measure (Cronbach's alpha 0.78) from Hackman & Oldham's (1980) Job Diagnostic Survey, which acquires people's perceptions about specific characteristics of their jobs. Only the job characteristics portion of Hackman & Oldham's instrument was applied here. The dimensions assessed were: *Skill Variety* - the degree to which a job requires a variety of different activities in carrying out the work (three items, Cronbach's alpha 0.76); *Task Identity* - the degree to which the job requires completion of a whole and identifiable piece of work (three items, Cronbach's alpha 0.62); *Autonomy* - the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out (three items, Cronbach's alpha 0.66); *Task Significance* - the degree to which the job has a substantial impact on the lives or work of other people (three items, Cronbach's alpha 0.51); *Feedback from the Job* - the degree to which carrying out the work activities required by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance (three items, Cronbach's alpha 0.67); *Feedback from Agents* - the degree to which the employee receives clear information about his

or her performance from supervisors or from co-workers (three items, Cronbach's 0.87); and *Dealing with Others* - the degree to which the job requires the employee to work closely with other people in carrying out the work activities (three items, Cronbach's alpha 0.54). Factor analysis with varimax rotation produced six components with eigenvalues over 1.00 that explained for 62.01% variance. The rotation converged in 12 iterations. In some cases the internal reliabilities may have been increased by dropping certain items, however after consideration it was decided to leave the original items as is due to the measure being well-established in the literature. Other studies (Lin Xie, Elangovan, & Hrabluik, 2008) have indicated that the Hackman & Oldham model does not load well on its factors. These authors indicate that the problem is not so much with the low reliabilities but with the factors themselves. Although reduced by one construct, the underlying constructs that presented were similar to those presented in the literature and are understandable given the work environment in the ER. Table 5.3 presents the results of factor analysis. Items were scored on a five-point rating scale ranging from one (completely inaccurate) to five (completely accurate). Higher scores were indicative of higher levels of each item.

Table 5.3.

Results of Principal Component Analysis of Job Design (n = 93)

Items: Job Design	Component 1 Skill Variety	Component 2 Feed Agents	Component 3 Feed Job	Component 4 Task ID	Component 5 Autonomy	Component 6 Deal Others
Skill Var3	0.79					
Skill Var 2	0.79					
Skill Var 1	0.42					
Task Sig 2	0.76					
Task Sig 1	0.68					
Feed Age 1		0.87				
Feed Age 2		0.85				
Feed Age 3		0.81				
Autonomy 1		0.38				
Feed Job 1			0.73			
Feed Job 2			0.66			
Feed Job 3			0.55			
Deal Others 1			0.61			
Task ID 1				0.81		
Task ID 2				0.49		
Task ID 3				0.81		
Autonomy 2					0.81	
Autonomy 3					0.77	
Deal Others 2						0.52
Deal Others 3						0.70
Task Sig 3						0.65
<i>Alpha</i>	0.79	0.82	0.65	0.62	0.73	0.44
<i>Eigenvalues</i>	4.83	3.05	0.67	1.55	1.42	1.09
<i>% Variance</i>	22.91	14.53	7.96	7.39	6.76	5.20

Job satisfaction (JS). Job satisfaction is the degree to which a person reports satisfaction with intrinsic and extrinsic features of the job. Job satisfaction was assessed using a 16 item measure (Cronbach's alpha 0.89) developed by Warr et al. (1979). At one level of analysis all 16 items could be identified under the heading of total job satisfaction. At another level, three separate components could be identified: i) Six items come together to represent intrinsic features of the job (Cronbach's alpha 0.85); ii) Nine items align to represent extrinsic features of the job (Cronbach's alpha 0.76); iii) A single item of overall job satisfaction was also identified. Factor analysis with varimax rotation produced three components with eigenvalues over 1.00, explaining for 60.23% variance. The rotation converged in five iterations. The underlying constructs produced during factor analysis represented various aspects of *Management* (e.g. relations between management and workers), *Intrinsic* (e.g. the amount of responsibility the employee is given) and *Extrinsic* features of the job (e.g. hours of work). Table 5.4 presents the results of factor analysis. Respondents were asked to indicate how

satisfied or dissatisfied they are by using a five-point scale ranging one (very dissatisfied) to five (very satisfied). Higher scores were indicative of higher levels of job satisfaction.

Table 5.4.

Results of Principal Component Analysis of Job Satisfaction (n = 93)

Items: Job Satisfaction	Component 1 Management	Component 2 Intrinsic	Component 3 Extrinsic
JS Relations	0.83		
JS Recognition	0.76		
JS Supervisor	0.73		
JS Attention	0.72		
JS Physical	0.69		
JS Organized	0.66		
JS Freedom	0.56		
JS Abilities		0.81	
JS Responsibilities		0.79	
JS Variety		0.76	
JS Colleagues		0.54	
JS Security			0.81
JS Pay			0.77
JS Hours			0.62
JS Overall			0.55
JS Promotion			0.47
<i>Alpha</i>	0.87	0.79	0.77
<i>Eigenvalues</i>	5.63	1.92	1.48
<i>% Variance</i>	37.51	12.80	9.89

Employee empowerment (EE). Employee empowerment refers to increased intrinsic task motivation manifested in a set of four cognitions (meaning, competence, autonomy, and impact) reflecting an individual's orientation to his or her work role (Thomas & Velthouse, 1990). Empowerment was assessed using a 12 item measure (Cronbach's alpha 0.84) developed by Spreitzer et al. (1997) in alignment with the four cognitions identified by Thomas & Velthouse (1990). *Meaning* - is the value of a work goal or purpose judged in relation to an individual's own ideals or standards (three items, Cronbach's alpha 0.97). *Competence* - is an individual's belief in his or her capability to perform activities with skill (three items, Cronbach's alpha 0.87). *Autonomy* - is an individual's sense of having choice in initiating and regulating actions (three items, Cronbach's alpha 0.87). *Impact* - is the degree to which an individual can influence strategic, administrative, or operating outcomes at work (three items, Cronbach's alpha 0.82). Factor analysis with varimax rotation produced four components with eigenvalues over 1.00, explaining for 83.66% variance. The rotation converged in five iterations. Items were scored on a five-point rating scale ranging from one

(strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Service climate (SC). Service climate refers to employees' shared perceptions of the practices, procedures, behaviours that are rewarded, supported and expected by the organization with regard to customer service and service quality (Dastmalchian et al., 1989; Schneider et al., 2002). Service climate was assessed using a seven-item global measure (Cronbach's alpha 0.83) based on the work of Schneider et al. (1998). The items in the survey refer to a collection of behavioural features or activities of organizations that focus explicitly on service quality. The wording was modified slightly to suit health care. Results of a factor analysis of items produced a mono-factor solution with one component explaining 50.77% of variance and an eigenvalue of 3.55. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of a higher level of service climate.

Service quality (SQ). Service quality refers to the manner in which services are delivered to the patient that influences the perceived value of the service. Service quality was assessed using an adaptation of the SERVQUAL instrument (15 items, Cronbach's alpha 0.84; Babakus & Boller, 1992; Cronin & Taylor, 1992; Parasuraman et al. 1988) that measures the following dimensions: *Tangibles* - the appearance of the physical facilities, equipment, personnel, and communication materials (three items, Cronbach's alpha 0.51). *Reliability* - the ability to perform the promised services both dependably and accurately (three items, Cronbach's alpha 0.58). *Responsiveness* - the willingness to help clients and to provide prompt service (three items, Cronbach's alpha 0.51). *Assurance* - the knowledge and courtesy of employees as well as their ability to convey trust and confidence (three items, Cronbach's alpha 0.65). *Empathy* - the provision of caring, individualized attention to clients (three items, Cronbach's alpha 0.72). Factor analysis with varimax rotation produced four components with eigenvalues over 1.00 explaining 59.27% variance. The underlying constructs produced were similar to those identified in the original measure. The components identified emphasized *Empathy* shown by staff (seven items, Cronbach's alpha 0.80), the *Professionalism* of staff (three items, Cronbach's alpha 0.69), *Tangibles* supportive of the service quality effort (three items, Cronbach's alpha 0.61), and the *Reliability* of staff (three items, Cronbach's alpha 0.53). Although the reliabilities reported here are lower than those reported in the literature, the

researcher decided to not reduce any of the items due to the measure being well-established in the literature. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher perceived levels of service quality.

Patient satisfaction (PS). Patient satisfaction with service is defined as “an attitude-like judgement following a purchase act of a series of consumer product interactions” (Lovelock & Wirtz, 2004, p. 44) and was assessed using a 21 item survey (Cronbach’s alpha 0.91) developed by Boudreaux, Ary, Mandry, & McCabe (1999). The items measure several domains including satisfaction with *Triage and Registration* (four items, Cronbach’s alpha 0.72), satisfaction with *Nursing Staff* (three items, Cronbach’s alpha 0.73), satisfaction with *Physician Staff* (five items, Cronbach’s alpha 0.80), satisfaction with *Advice and Discharge Instructions* (three items, Cronbach’s alpha 0.79), and satisfaction with *Other* (six items, Cronbach’s alpha 0.85). Factor analysis with oblimin rotation produced five components with eigenvalues over 1.00 that explained 66.36% variance. The rotation converged in 22 iterations. The researcher identified the following five underlying constructs as: satisfaction with the *Care and Courtesy Provided by Staff* (six items, Cronbach’s alpha 0.86); satisfaction with the *Physician Staff* (seven items, Cronbach’s alpha 0.87); satisfaction with the *Triage Experience* (three items, Cronbach’s alpha 0.75); satisfaction with the *Wait and Information* provided regarding such (three items, Cronbach’s alpha 0.73); and satisfaction with *Privacy and Security* in the department (two items, Cronbach’s alpha 0.56). All items were scored on a five-point rating scale ranging from one (very dissatisfied) to five (very satisfied). Higher scores were indicative of higher levels of patient satisfaction.

Patient empowerment (PE). Patient empowerment is increased intrinsic task motivation manifested in a set of cognitions reflecting an individual’s orientation to his or her role, in this case the patients’ role in achieving and maintaining optimal health and well-being. The original set of four cognitions as defined by Spreitzer et al. (1997) and Thomas & Velthouse (1990) was reduced to a set of three cognitions: meaning, competence and impact, producing a nine-item measure of patient empowerment (Cronbach’s alpha 0.87). *Meaning* - is the value of a goal or purpose, judged in relation to an individual’s own ideals or standards (three items, Cronbach’s alpha 0.83). *Competence* - is an individual’s belief in his or her capability to perform personal health care activities with skill (three items, Cronbach’s alpha 0.87). *Impact*

- is the degree to which an individual feels capable of influencing their personal health outcomes (three items, Cronbach's alpha 0.92). Factor analysis with varimax rotation produced three components with eigenvalues over 1.00 explaining for 82.76% variance. The rotation converged in four iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of empowerment.

Fit Indices

The researcher used SEM methods, implemented in LISREL 8.72 (Jöreskog & Sörbom, 1993) for data analyses. Missing data was replaced with the series mean to ensure a complete sample of $n = 93$. The mean substitution was calculated for each of the 10 variables and the input for each analysis was based on a zero-order correlation matrix. The goodness of fit of the models was evaluated using absolute and relative indices. The goodness-of-fit indices calculated were (see Joreskog & Sorbom, 1993): i) the chi-square goodness-of-fit statistic, ii) the root mean-square error of approximation (RMSEA), iii) the comparative fit index (CFI), iv) the root mean square residual (RMR), v) the goodness-of-fit index (GFI), and vi) the adjusted goodness of fit index (AGFI).

Results

Preliminary results

General statistical analysis of the survey data was conducted using SPSS (Statistical Package for the Social Sciences). To test whether staff from the two ERs differed on the study variables, the researcher carried out a MANOVA with all ten aggregated study variables: MP, ST, JD, PD, JS, EE, SC, SQ, PS, and PE - included as the dependent variables and ER (VGH or NRGH) and work position (physicians, nurses, etc.) included as factors.

Multivariate results for ER (VGH or NRGH) showed a significant Wilks' lambda multivariate coefficient (Wilks' $\Lambda = .71$, $p \leq .00$). In a test-between subjects effect, significance was shown between ER and JS ($F(1, 91) = 3.93$, $p \leq .05$), ER and EE ($F(1, 91) = 5.30$, $p \leq .05$), ER and SC ($F(1, 91) = 7.22$, $p \leq .00$), and ER and PS with service ($F(1, 91) = 14.33$, $p \leq .00$). There are significant differences in staff perceptions of JS, EE, SC, and PS with service depending on the ER assessed.

Multivariate results for work position (physician, staff nurse, allied health provider, administrator, maintenance, etc.) also showed a significant Wilks' lambda coefficient, (Wilks'

$\Lambda=.33, p \leq .05$). In a test-between subjects effect, significance was shown between work position and JS ($F(7, 83)=2.75, p \leq .01$) and work position and EE ($F(7, 83)=2.95, p \leq .01$). There are significant differences in staff perceptions of JS and EE depending on their position at work, whether they work as a physician, nurse, administrator, allied health provider, administrator or manager.

Several ANOVA tests were carried out to determine whether certain demographic variables had an impact on perceptions of service elements. The ANOVA results revealed that in the ERs under study: length of time spent working in current position (e.g. as a physician, nurse) does impact perceptions of PS with service ($F [55, 35] = 1.70, p < .05$). Time spent working in the ER does impact perceptions of PD ($F [52, 35] = 2.31, p = .00$). Time spent working in the health authority does impact perceptions of SC ($F [57, 29] = 1.87, p < .05$) and perceptions of PE ($F [57, 29] = 2.14, p \leq .01$). These results indicate that how long the employee spends working in the health authority, the department, and the work position does impact perceptions of service elements such as PD, SC, PS with service, and PE.

The following analyses, including SEM, will be conducted at the individual level of analysis (VIHA ER staff in general). An organizational level of analysis (VGH/ER or NRGH/ER specifically) will be conducted further in the chapter to allow for in-depth comparisons to be made between the ERs.

I. Individual level of analysis

Descriptive analyses. Table 5.5 shows mean values, standard deviations, final internal consistencies, and inter-correlations of scales. A reminder that the Likert scale used in the survey ranged from one (1) to five (5) where a higher number represents a higher rating / higher level of approval for the measure assessed. There were low ratings for PD ($M = 2.19, SD = .66$), SC ($M = 2.89, SD = .73$), MP ($M = 3.02, SD = .86$), and ST ($M = 3.17, SD = .75$).

There were moderate ratings for JS ($M = 3.22, SD = .64$), SQ ($M = 3.29, SD = .48$), and PS with service ($M = 3.31, SD = .50$).

VIHA ER staff gave more favourable ratings to the design of their jobs ($M = 3.80, SD = .44$), as well as the degree to which they feel empowered in their work ($M = 3.74, SD = .52$), and the degree to which they perceive patients to feel empowered as a result of the service provided ($M = 3.36, SD = .55$).

Table 5.5

Means, Standard Deviations, Internal Consistencies, and Inter-correlations (Aggregated Measures; n= 93)

	Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10
1	Service Training	3.17	.75	.77	1.00									
2	Managerial Practices	3.02	.86	.91	.67**	1.00								
3	Physical Design	2.19	.66	.94	.35**	.36**	1.00							
4	Job Design	3.80	.44	.78	.33**	.45**	.32**	1.00						
5	Job Satisfaction	3.22	.64	.89	.58**	.59**	.54**	.57**	1.00					
6	Employee Empowerment	3.74	.52	.84	.32**	.35**	.24**	.59**	.40*	1.00				
7	Service Climate	2.89	.73	.83	.73**	.78**	.57**	.37**	.65**	.29**	1.00			
8	Service Quality	3.29	.48	.84	.44**	.34**	.54**	.29**	.49**	.28**	.57**	1.00		
9	Patient Satisfaction	3.31	.50	.91	.33**	.22**	.49**	.29**	.42**	.31**	.42**	.75**	1.00	
10	Patient Empowerment	3.36	.55	.87	.38**	.22**	.38**	.32**	.32**	.46**	.32**	.45**	.55**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

As expected, there were significant and positive correlations between all ten variables, which illustrates the strong and significant relationships that exist between the variables identified and assessed within the Service Outcome Chain.

On the structural side of the chain, the strongest correlations were noted between: MPs and ST ($r = .67$), MPs and JD ($r = .45$), and MPs and JS ($r = .59$). PD showed strong relationships with JS ($r = .54$), SC ($r = .57$), and SQ ($r = .54$). JD showed strong relationships with JS ($r = .57$), and EE ($r = .59$). In the process (middle) area of the chain (the process of providing service), SC had strong associations with MPs ($r = .78$), ST ($r = .73$), PD ($r = .57$), JS ($r = .65$), and SQ ($r = .57$). Toward the outcome end of the chain, strong relations were noted between: SQ and PS with service ($r = .75$), and PS with service and PE ($r = .55$). PE was also found to be strongly associated with EE ($r = .46$).

Regarding the inter-correlations between the structural and outcome variables with the process variable of SC, the structural variables (ST, MP, PD, JD) had the strongest inter-correlation with and SC (mean $r = .61$), compared to the process variables (mean $r = .47$), and the outcome variables (mean $r = .44$) and their relationship with SC. Although SC is significantly and positively associated with all of the structural, process, and outcomes elements of service design, the strongest inter-correlations exist within the structural elements.

Table 5.6 provides an aggregate comparison of means according to position worked. Not all of the work positions are included in this table, only the positions of allied health providers (x-ray and laboratory staff), management, physicians, nurses and administrators/unit clerks. The researcher chose to include these positions as they provided varying perspectives of the different times and events of the patient's service experience. For example, the administrators (unit clerks) interact with patients upon their arrival to the ER. The staff nurses are usually next to interact with patients at triage and then again in the treatment area. This is followed by the physicians who assess, diagnose and order tests if needed. The allied health providers then conduct the required radiology or laboratory tests. This is followed by interaction again with the physicians and nurses who provide treatment. The patient's final contact during the service experience is usually with a physician or nurse.

Multivariate results for work position (physician, staff nurse, allied health provider, administrator, management, etc.) showed a significant Wilks' lambda multivariate coefficient, (Wilks' $\Lambda = .33$, $p \leq .05$). In a test-between subjects effect, significance was shown between work position and JS ($F(7, 83) = 2.75$, $p \leq .01$) and work position and EE ($F(7, 83) = 2.95$, $p \leq .01$). There are significant differences in staff perceptions of JS and EE depending on their position at work. An interesting finding in this comparison of means is management ($n = 3$) gave the highest ratings to seven out of the 10 variables or service elements: ST ($M = 3.83$, $SD = .58$), MP ($M = 3.90$, $SD = .59$), JD ($M = 4.24$, $SD = .69$), JS ($M = 3.81$, $SD = .44$), EE ($M = 4.50$, $SD = .50$), SC ($M = 3.81$, $SD = .36$), and SQ ($M = 3.51$, $SD = .10$). Staff working in capacity of administration such as unit clerks gave the lowest ratings to five out of the 10 variables: MP ($M = 2.63$, $SD = 1.07$), PD ($M = 2.05$, $SD = .50$), JD ($M = 3.64$, $SD = .50$), JS ($M = 2.78$, $SD = .77$), and SC ($M = 2.66$, $SD = .71$). Physicians gave the lowest rating to ST ($M = 3.06$, $SD = .86$), and the highest rating to PE ($M = 3.64$, $SD = .56$). Nurses gave the lowest ratings to perceptions of SQ ($M = 3.21$, $SD = .46$), and PS with service ($M = 3.22$, $SD = .45$). Across all of the various work positions, low ratings were given to the physical design of the ED ($M = 2.25$, mean $SD = .56$). Caution must be taken with interpretation due to the varying sample size among the work positions.

Table 5.6.

Means, Standard Deviations Assessed According to Work Position (Aggregated Measures; n = 93)

Demographics/Work Position	Service Elements	n	Mean	SD
Allied Health Prof. (X-Ray, Lab)	Service Training	7	3.32	.57
Management		3	3.83	.58
Physician		11	3.06	.86
Staff Nurse		48	3.17	.72
Administration (Unit Clerk)		13	3.13	.93
Allied Health Prof. (X-Ray, Lab)	Managerial Practices	7	3.20	.36
Management		3	3.90	.59
Physician		11	3.07	.87
Staff Nurse		48	3.07	.81
Administration (Unit Clerk)		13	2.63	1.07
Allied Health Prof. (X-Ray, Lab)	Physical Design	7	2.45	.35
Management		3	2.17	.63
Physician		11	2.46	.55
Staff Nurse		48	2.14	.79
Administration (Unit Clerk)		13	2.05	.50
Allied Health Prof. (X-Ray, Lab)	Job Design	7	3.67	.48
Management		3	4.24	.69
Physician		11	4.11	.35
Staff Nurse		48	3.79	.40
Administration (Unit Clerk)		13	3.64	.50
Allied Health Prof. (X-Ray, Lab)	Job Satisfaction	7	3.38	.40
Management		3	3.81	.44
Physician		11	3.72	.43
Staff Nurse		48	3.23	.62
Administration (Unit Clerk)		13	2.78	.77
Allied Health Prof. (X-Ray, Lab)	Employee Empowerment	7	3.58	.26
Management		3	4.50	.50
Physician		11	4.12	.42
Staff Nurse		48	3.64	.51
Administration (Unit Clerk)		13	3.78	.59
Allied Health Prof. (X-Ray, Lab)	Service Climate	7	3.20	.34
Management		3	3.81	.36
Physician		11	2.83	.77
Staff Nurse		48	2.85	.76
Administration (Unit Clerk)		13	2.66	.71
Allied Health Prof. (X-Ray, Lab)	Service Quality	7	3.39	.30

Management		3	3.51	.10
Physician		11	3.46	.54
Staff Nurse		48	3.21	.46
Administration (Unit Clerk)		13	3.42	.47
Allied Health Prof. (X-Ray, Lab)	Patient Satisfaction	7	3.37	.45
Management		3	3.41	.23
Physician		11	3.63	.45
Staff Nurse		48	3.22	.44
Administration (Unit Clerk)		13	3.48	.45
Allied Health Prof. (X-Ray, Lab)	Patient Empowerment	7	3.43	.46
Management		3	3.19	.74
Physician		11	3.64	.56
Staff Nurse		48	3.31	.57
Administration (Unit Clerk)		13	3.47	.43

Confirmatory factor analyses

Next, confirmatory factor analysis (CFA) and structural equation modeling (SEM) tests were conducted using LISREL 8.72 (Jöreskog & Sörbom, 1993). Fit indices for all six models are summarized in Table 5.7. With regard to the model, a single-indicator model was used. Only Models 1 (M1) and 4 (M6) will be presented here. Model 6 presents the final LISREL analysis.

Table 5.7.

Fit Indices for Measurement and Structural Equation Models and Chi Square Difference Tests for Structural Models (n = 93)

Model	Figure	df	Chi Square (χ^2)	RMSEA	CFI	RMR	GFI	AGFI	$\Delta\chi^2$	Δdf
Model 1 (M1)	5	30	187.11 ($p=0.00$)	0.20	0.81	0.22	0.77	0.58		
Model 2 (M2)	N/A	29	85.88 ($p=0.00$)	0.15	0.93	0.10	0.85	0.71	$M_1-M_2=95.23$	1
Model 3 (M3)	N/A	28	71.34 ($p=0.00$)	0.13	0.95	0.09	0.87	0.75	$M_2-M_3=14.54$	1
Model 4 (M4)	N/A	27	52.03 ($p=0.00$)	0.09	0.97	0.09	0.90	0.81	$M_3-M_4=19.31$	1
Model 5 (M5)	N/A	26	40.11 ($p=0.04$)	0.07	0.98	0.06	0.92	0.84	$M_4-M_5=11.92$	1
Model 6 (M6)	6	25	27.24 ($p=0.33$)	0.05	1.00	0.05	0.94	0.87	$M_5-M_6=12.87$	1

First, the researcher tested the model (M1). As shown in Figure 5.2, the model demonstrated poor fit with the data ($\chi^2(30) = 181.11, p = .00, \chi^2/df = 6.04, RMSEA = .20, CFI = .81, RMR = .22, GFI = .77, AGFI = .58$). On the basis of modification indices, the fit of the model could be improved by freeing up a direct path between ST and SC (modification index: 58.45). The researcher thereby obtained a revised model (M2) that postulates ST as being a direct predictor of SC. This model was fitted and the fit indices improved ($\chi^2(29) =$

85.88, $p = .00$, $\chi^2/df = 2.96$, RMSEA = .15, CFI = .93, RMR = .10, GFI = .85, AGFI = .71). There was a significant change in the χ^2 value ($\Delta \chi^2(1) = 95.23, p < .01$).

The modification indices suggested support for the prediction of the link between PD to SC (modification index 14.43). On the basis of this, a third model was obtained (M3), in which a direct path from PD predicting SC was allowed. This modification improved the model further showing a better fit with the data ($\chi^2(28) = 71.34, p = .00$, $\chi^2/df = 2.55$, RMSEA = .13, CFI = .95, RMR = .09, GFI = .87, AGFI = .75). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 14.54, p < .01$).

The modification indices suggested support for the prediction of JD to EE (modification index: 17.75). The researcher obtained a fourth model (M4) where another direct path was created between JD and EE. This revised model presented a significantly improved fit with the data ($\chi^2(27) = 52.03, p = .00$, $\chi^2/df = 1.93$, RMSEA = .09, CFI = .97, RMR = .09, GFI = .90, AGFI = .81). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 19.31, p < .01$).

The modification indices suggested a fifth model (M5) that would allow a direct path from EE to CE (modification index: 10.28). This revised model presented a significantly improved fit with the data ($\chi^2(26) = 40.11, p = .04$, $\chi^2/df = 1.54$, RMSEA = .07, CFI = .98, RMR = .06, GFI = .92, AGFI = .84). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 11.92, p < .01$).

The modification indices from the fifth model suggested a direct path between MP to SQ (modification index: 10.94), this led to a sixth and final model (M6) as illustrated in Figure 5.3. This revised model presented a significantly improved fit with the data ($\chi^2(25) = 27.24, p = .33$, $\chi^2/df = 1.09$, RMSEA = .05, CFI = 1.00, RMR = .05, GFI = .94, AGFI = .87). Again there was a significant change in the χ^2 value ($\Delta \chi^2(1) = 12.87, p < .01$). This sixth and final model illustrates direct paths between ST and SC, PD and SC, JD and EE, EE and PE, and MP and SQ. There are partially mediated paths between JD and SC and ST and SC through JS and EE. As for the criterion variables: SQ, PS with service, and PE, the effects of the exogenous variables are fully mediated through nurse's JS, EE, and SC. The standardized beta and gamma paths in M6 reflect those from the final LISREL analysis.

Testing the propositions: The research model

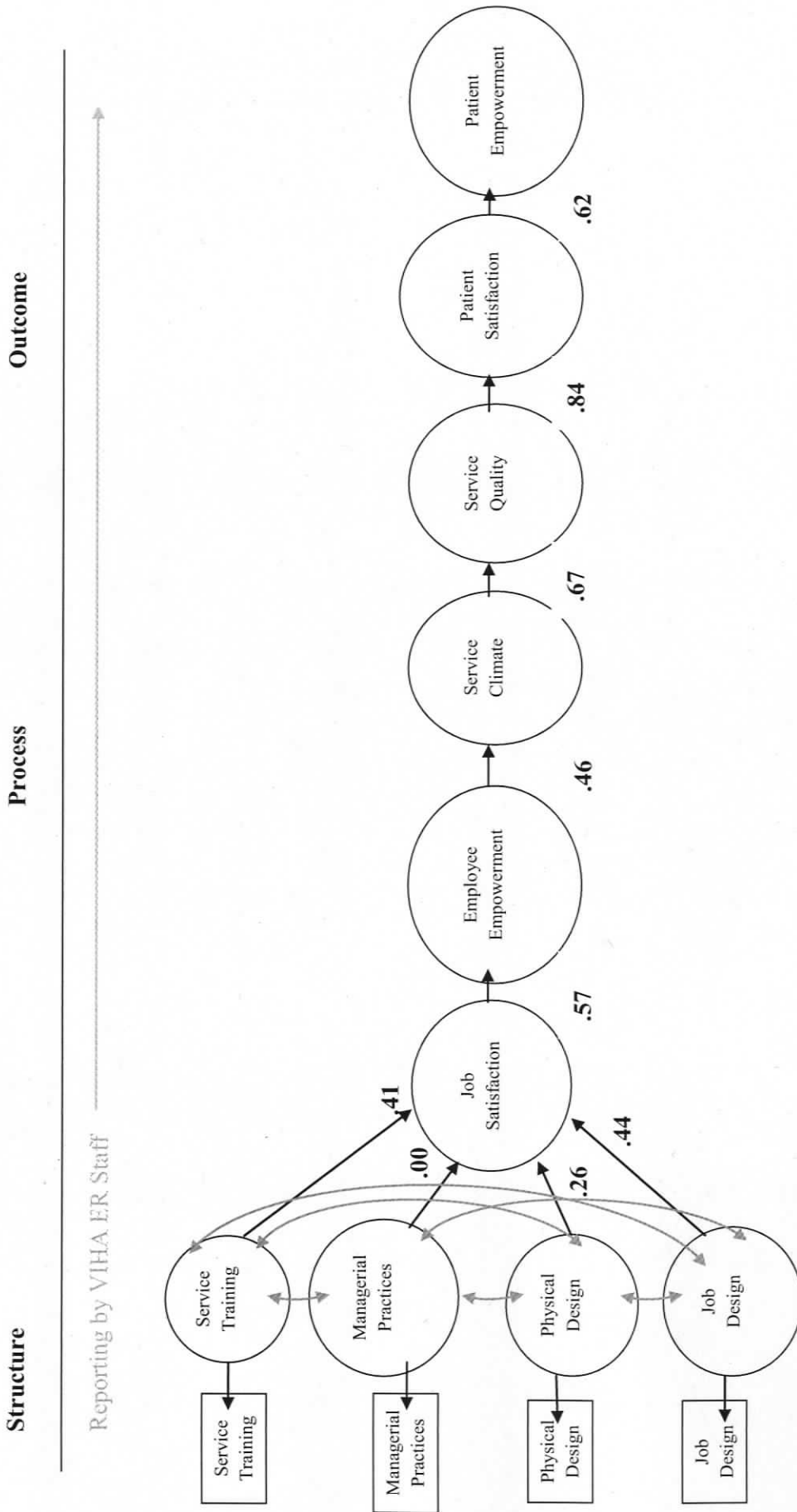
According to Baron & Kenny (1986) and Judd & Kenny (1981), when a mediational model involves latent constructs, SEM provides the basic data analysis strategy (James, Mulaik, & Brett, 2006). In accordance with the four basic steps to establish mediation effects proposed by the authors, and to test the propositions, the researcher fit the research model (as depicted in Figure 5.3) to the data. Each of the latent constructs (ST, MP, PD, JD, JS, EE, SC, SQ, PS and PE) was estimated with a single indicator. Information on the measurement error of these constructs was incorporated into the model by estimating the measurement error using the formula $(1 - \alpha)$ (Bollen, 1989) and assigning this value to each of the measurement error terms. The results are given in Table 5.7 and show that the research model (M6) fits the data, with the majority of fit indices meeting the criteria. Only AGFI (.87) was short of the conventional .90. The majority of the path coefficients were significant ($p \leq .05$) with the exception of the paths between JS and EE; EE and SC; and MP and JS which were not significant. These paths did not meet the criteria of 1.96 (the z-value required for significance at $p < .05$). These results showed that JS and EE were not significant predictors of SC in the ERs studied, nor did they mediate the relationship between internal SQ elements (MP, ST, PD, JD) and SC. Only the structural elements of ST and PD were significant and direct predictors of SC. JD was a direct and significant predictor of EE, as was EE on PE. On the basis of these findings, it could be said that proposition one (P1) was supported by the data. The findings are evident of certain structural elements of service design (ST, PD, JD), that impact process elements (JS, JD, EE, SC) to varying degrees, which have an effect on outcome elements such as SQ, PS with service and PE.

As for proposition two (P2), SC was found to mediate the relationship between certain structural elements of service design, and outcome elements such as SQ, PS with service and PE, proposition two was also supported by the data. There were some relationships that were proven to be not influenced SC such as the relationship between EE and PE, this relationship is also supported in the literature (Williams, 2002). MPs and SQ are another direct and significant relationship not influenced by SC. This is a similar finding to that found in the previous study that assessed BC emergency nurses ($N = 180$). On the basis of this finding, it is confirmed that MPs in some way impact perceptions of SQ. Whether that impact is positive

or negative is uncertain at this time as different viewpoints have been expressed. It is hoped a review of the qualitative interview findings will shed light on this finding.

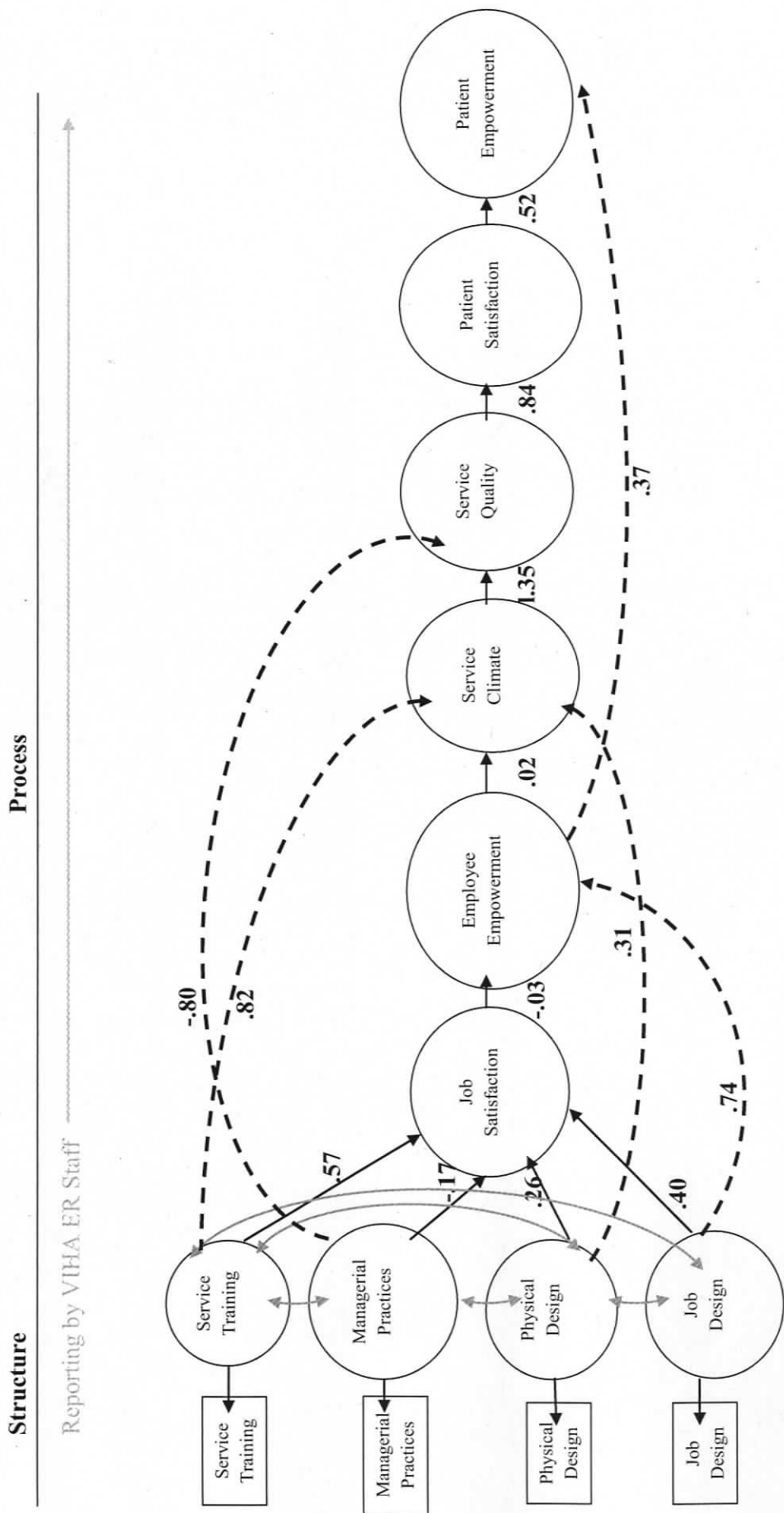
On the basis of these results, it could be said that both propositions were supported by the data. Although it appears that the process elements of JS and EE were not significantly impacted by the structural elements and not predictive of SC. The structural elements of PD and ST directly impacted the process element of SC, which influenced perceptions of SQ, PS with service and PE.

Figure 5.2. The research model (M1) with standardized beta and gamma path coefficients ($n = 93$).



($\chi^2(30) = 217.94, p = .00, \chi^2/df = 7.26, RMSEA = .18, CFI = .87, RMR = .16, GFI = .82, AGFI = .67$)

Figure 5.3. The final research model (M6) with standardized beta and gamma path coefficients ($n = 93$).



* The standardized beta/gamma paths in this model (M6) reflect the final LISREL analysis.

($\chi^2 = 27.24, p = .00, \chi^2/df = 1.08, RMSEA = .047, CFI = 1.00, RMR = .045, GFI = .94, AGFI = .87$)

* All paths coefficients were significant ($p \leq .05$) with the exception of the paths between JS and EE; EE and SC; and MP and JS are not significant.

II. Organizational level of analysis

Descriptive analyses. From here the researcher split the data file to analyze and compare the data according to the two ERs. Table 5.8 provides a comparison of means between the two departments. Staff at the NRGH/ER gave higher ratings for all ten variables in comparison with the VGH/ER. Multivariate results for ER (VGH or NRGH) showed a significant Wilks' lambda multivariate coefficient, (Wilks' Λ = .71, $p \leq .00$). In a test-between subjects effect, significance was shown between ER and JS ($F(1, 91) = 3.93$, $p \leq .05$), ER and EE ($F(1, 91) = 5.30$, $p \leq .05$), ER and SC ($F(1, 91) = 7.22$, $p \leq .00$), and ER and PS with service ($F(1, 91) = 14.33$, $p \leq .00$). There are significant differences in staff perceptions of JS, EE, SC, and PS with service when comparing the two ERs.

Table 5.8

Means, Standard Deviations Assessed According to ER (Aggregated Measures According to ER; n= 44 for VGH/ER Staff, and n= 49 for NRGH/ER Staff)

Demographics/VIHA	Service Elements	n	Mean	SD
VGH/ER	Service Training	44	3.08	.65
	Managerial Practices	44	2.87	.66
	Physical Design	44	2.15	.68
	Job Design	44	3.73	.34
	Service Climate	44	2.68	.63
	Job Satisfaction	44	3.08	.60
	Employee Empowerment	44	3.61	.44
	Service Quality	44	3.20	.48
	Patient Satisfaction	44	3.12	.45
	Patient Empowerment	44	3.28	.46
NRGH/ER	Service Training	49	3.26	.82
	Managerial Practices	49	3.16	.99
	Physical Design	49	2.23	.65
	Job Design	49	3.86	.51
	Service Climate	49	3.08	.76
	Job Satisfaction	49	3.35	.66
	Employee Empowerment	49	3.86	.57
	Service Quality	49	3.38	.47
	Patient Satisfaction	49	3.49	.49
	Patient Empowerment	49	3.44	.61

Several ANOVA tests were also carried out with the split data file to determine whether certain demographic variables had an impact on perceptions of the service elements. The results indicate that how long the employee spends working in the department, their work position, employment status, age, and level of education all have an impact to varying degrees on perceptions of all the ten variables or service elements (MP, ST, PD, JD, JS, EE, SC, SQ, PS, PE). Difference is accounted for depending on the department worked in (VGH/ER or NRGH/ER).

Specifically within the VGH/ER, the ANOVA results revealed the following statistically significant findings: time worked in the department affected perceptions of PD ($F [27, 11] = 3.14, p < .05$); work position affected perceptions of SQ ($F [5, 36] = 3.61, p < .01$) and PS with service ($F [5, 36] = 4.38, p < .01$). Employment status had an effect on perceptions of MPs ($F [3, 38] = 3.18, p < .05$) and perceptions of PS with service ($F [3, 38] = 2.91, p < .05$). Age or year of birth had an impact on perceptions of SC ($F [4, 30] = 2.78, p < .05$), as did education on perceptions of PD ($F [2, 41] = 3.77, p < .05$).

Specifically within the NRGH/ER, the ANOVA tests revealed the following: time spent working in the department impacted perceptions of PD ($F [34, 14] = 2.42, p < .05$). Perceptions of JS were impacted by work position ($F [7, 41] = 2.27, p < .05$) and time spent working in the department ($F [34, 14] = 2.61, p < .05$). Employment status had an effect on perceptions of ST ($F [3, 43] = 3.07, p < .05$), SQ ($F [3, 43] = 3.78, p < .05$), and PS with service ($F [3, 43] = 3.07, p \leq .00$). Age or birth year had an effect on perceptions of PE ($F [4, 41] = 3.55, p < .05$). Lastly, level of education had an impact on perceptions of JD ($F [2, 46] = 4.13, p < .05$), JS ($F [2, 46] = 3.69, p < .05$), and EE ($F [2, 46] = 7.00, p < .00$).

As demonstrated in Table 5.9, physicians at NRGH/ER rated lower on all variables with the exception of JD (NRGH/ER: $M = 4.11, SD = .44$; VGH/ER: $M = 4.09, SD = .12$); EE (NRGH/ER: $M = 4.29, SD = .42$; VGH/ER: $M = 3.81, SD = .15$); PS with Service (NRGH/ER: $M = 3.69, SD = .42$; VGH/ER: $M = 3.52, SD = .53$); and PE (NRGH/ER: $M = 3.88, SD = .34$; VGH/ER: $M = 3.19, SD = .63$). Table 5.9 also demonstrates the nurse's perception. Nurses at NRGH/ER ($n = 20$) rated higher on all variables in comparison with nurses from VGH/ER ($n = 28$). Together, the two tables provide evidence for the difference in opinion between nurses and physicians within the two ERs. Although the nurses at NRGH/ER rated higher on all of the service elements, physicians at NRGH/ER rated lower on the service elements with the exception of JD, EE, PS with service, and PE.

Table 5.9.

Means, Standard Deviations Assessed According to Work Position and ER (Aggregated Measures for VGH/ER Physicians n= 4 and for NRGH/ER Physicians n = 7; and for VGH/ER Staff Nurses n= 28 and NRGH/ER Staff Nurses n= 20)

Work Position	ED	Service Elements	n	Mean	SD
Physicians	VGH/ER	Service Training	4	3.23	.35
		Managerial Practices	4	3.29	.19
		Physical Design	4	2.80	.48
		Job Design	4	4.09	.12
		Job Satisfaction	4	3.76	.24
		Employee Empowerment	4	3.81	.15
		Service Climate	4	3.06	.51
		Service Quality	4	3.58	.62
		Patient Satisfaction	4	3.52	.53
		Patient Empowerment	4	3.19	.63
	NRGH/ER	Service Training	7	2.96	1.06
		Managerial Practices	7	2.94	1.08
		Physical Design	7	2.26	.50
		Job Design	7	4.11	.44
		Job Satisfaction	7	3.68	.52
		Employee Empowerment	7	4.29	.42
		Service Climate	7	2.69	.89
		Service Quality	7	3.39	.51
		Patient Satisfaction	7	3.69	.42
Patient Empowerment	7	3.88	.34		
Staff Nurses	VGH/ER	Service Training	28	3.04	.72
		Managerial Practices	28	2.88	.71
		Physical Design	28	1.98	.72
		Job Design	28	3.73	.34
		Job Satisfaction	28	3.09	.62
		Employee Empowerment	28	3.61	.45
		Service Climate	28	2.57	.67
		Service Quality	28	3.15	.41
		Patient Satisfaction	28	3.05	.37
		Patient Empowerment	28	3.29	.44
	NRGH/ER	Service Training	20	3.33	.70
		Managerial Practices	20	3.31	.89
		Physical Design	20	2.34	.84
		Job Design	20	3.86	.46
		Job Satisfaction	20	3.43	.55
		Employee Empowerment	20	3.68	.58
		Service Climate	20	3.22	.71
		Service Quality	20	3.30	.49
Patient Satisfaction	20	3.44	.42		
Patient Empowerment	20	3.32	.72		

Summary of the Results

The purpose of this quantitative study was to build on an earlier study conducted by Steinke (2008) that applied a modified version of the Service Profit Chain (Heskett et al., 1997) to broadly exploring certain structural, process and outcome elements of service design. In the earlier study, the perception of BC emergency nurses ($n = 180$) were assessed. In the current study, the same theoretical framework was applied in conducting a comparative case study of the two ERs where the perceptions of staff ($n = 93$; nurses and physicians) were explored. The purpose of the case studies was to acquire a comparative, in-depth look at the design of service in these ERs with reference to the various elements that make up the Service Outcome Chain.

Some interesting findings came out of this quantitative survey of the two case studies and the main proposition was largely supported. The findings provide further evidence that certain structural elements of service (e.g. ST, PD), through their impact on process (e.g. SC), have the potential to positively influence outcomes (e.g. SQ, PS, PE) of service in the ER. Once again, SC has proven to serve as a link between the structure and outcomes of service.

In contrary to the findings of BC emergency nurses, in the final model for this study, ST proved to be a direct and significant predictor of SC as was PD. MPs proved to have a direct and significant influence on SQ. Other interesting and significant findings were the direct paths between JD and EE, and EE and PE. This is understandable given the history of the two departments, NRGH in particular.

There were significant differences among the two ERs and perceptions of JS, EE, SC, and PS with service. There were also significant differences between the work positions (e.g. physicians, nurses, unit clerks, allied health providers) and their perception of these elements. Different cultures and experiences come into play among the different work groups. For example, it is believed the significant structural paths between JD and EE, and EE and PE are the result of the inclusion of physicians and the context in which they practice.

Surprisingly, in the final research model, the paths between JS and EE, and EE and SC were not significant. It is believed that some of the work groups in this sample do not need to feel satisfied in order to feel empowered, nor do they need to feel empowered in order to facilitate a SC. The findings emphasize the importance of the structural elements of service design in establishing a SC in the ER.

In regard to the general mean ratings of the service elements, VIHA ER staff gave low ratings to MPs, ST, PD, and SC; this identifies the elements of service design that are in need of attention. Staff gave moderate ratings to JS, SQ and PS with service, and favourable ratings to JD, EE, and PE.

It may be concluded that the structural elements of service design, aspects of the internal work environment, are perceived as being the weakest links in the Service Outcome Chain for this data set.

At the organizational level of analysis, NRGH/ER staff gave higher ratings to all ten variables in comparison with VGH/ER staff. There were significant differences between the two ERs and feelings of JS, SC, EE, and PS with service. NRGH/ER nurses rated higher on all of the service elements in comparison with VGH/ER nurses. NRGH/ER physicians rated lower on all of the service elements with the exception of JD, EE, PS with service and PE. This finding among NRGH/ER physicians is not surprising as they are the group of 21 that stood together in challenging times with the health authority and Ministry. These physicians took a stand and withdrew all physician services from the ER in their efforts to maintain adequate staffing ratios for the community in the face of physician cutbacks. The finding among NRGH/ER nurses however is a surprise to the researcher. Based on her experience in both departments, the nurses at VGH/ER appeared much more cohesive, friendly and welcoming than did the nurses at NRGH/ER. The NRGH/ER physicians on the other hand, seemed much more outgoing, eager, and interested to learn of ways to improve their department than did physicians at VGH/ER. Perhaps one physician at VGH/ER said it best "the difference between the VGH and the NRGH docs is that the VGH docs have given up, the NRGH docs are still trying. NRGH docs are more receptive, VGH docs say "I'm just going to come in, do my job and go home."

With regard to demographics, the length of time spent working in the current position, in the department, and for the health authority had a significant impact on perceptions of all ten service elements (MP, ST, PD, JD, JS, EE, SC, SQ PS and PE). Age, education and employment status also showed to have significant impact on perceptions of the elements.

As expected, there were significant and positive correlations between the ten variables, however the strongest associations occurred within the structural elements and SC. This is yet another finding that highlights the importance of building on the quality of the internal work/service environment for staff.

5.3.3 The Qualitative Study

Methodology

Procedure

This component of the case studies involved conducting a number of semi-structured open ended interviews. The data acquired was used to enhance the findings from the quantitative survey. A search for themes and patterns was attempted by comparing the results with patterns predicted from the literature and found in the survey findings.

The procedure for this component of the study went as follows: The manager of each ER provided the researcher with a list of names and contact information of staff members that had expressed interest to be interviewed for the study. These members were informed of the study through a letter to inform and through communications with the manger and fellow colleagues. Staff subjects were contacted either in person or by e-mail and asked to participate in a 45 minute interview at the department. Subjects were informed as to the purpose of the interview and that participation was voluntary. If the subject agreed to participate, a date and time for conducting the interview was mutually agreed upon. Confirmation of the interview along with a copy of the consent form was e-mailed to participants beforehand. At the interview, the researcher requested a signed consent form in addition to consent to audiotape the interview. The purpose of the audiotape was to maintain accuracy of the data collected. The participant was also provided with the option to review or validate their data prior to analysis. In addition, participants had the option to receive a summary of the results if desired. A total of 12 ($n = 12$) interviews were conducted between the two ERs, an average of six interviews were planned for each department ($n = 6$). The interviews for each ER took place over the course of one week. Each interview was approximately 45 minutes in duration.

Sample

The participants were staff members of the ERs under study. At NRGH/ER ($n = 5$), the convenience sample consisted of one director, two emergency nurses, one emergency physician, and one emergency physician/department head. At VGH/ER ($n = 7$), the sample consisted of two managers, two emergency nurses, one unit clerk, one emergency physician, and one emergency physician/department head. The participants were already familiar with the study due to their involvement to varying degrees with the earlier quantitative survey.

Instrument and Measures

The case study questions (Appendix 5.2) were based on suggestions made by Yin (1984) and followed the pattern of elements identified in the Service Outcome Chain. The questions also expanded on the items presented in the Service Outcome Questionnaire (Appendix 4.1). No two participants were asked the same set of questions rather they were asked varying questions on elements of service design. A drawback to this sort of approach was the inability to make direct comparisons among the respondents however it did allow for a broad view of the elements. The researcher also varied the questions according to the work position of the individual. For example a manager was asked a different set of questions than those directed to a staff nurse. Some questions served to confirm the responses of another. For example, if a manager stated that performance evaluations were regularly conducted, the researcher would listen for confirmation of this during the interview with the staff nurse.

Data Analysis

The dominant mode of analysis used for the case studies was the approach known as “pattern matching” whereby the audio-recorded interviews were transcribed verbatim and then analyzed for themes. This format conformed to the guidelines outlined by Yin (1984) who describes pattern matching as a way of linking the data to the propositions, “several pieces of information from the same case may be related to some theoretical proposition” (p.33). Such logic compares an empirically based pattern with a predicted one. If the patterns coincide, the results can help to strengthen the internal validity (Yin, 1984). The results were initially documented in a question-and-answer format however due to the extended length of the document the researcher chose to present the findings as a summary of themes particular to each element in the Service Outcome Chain and each ER under study.

Results

Organizational themes

The responses were aggregated to present the following summary of themes. This summary will help to elaborate on the findings from the quantitative survey. It will also assist in relating the different elements of the Service Outcome Chain to the frontline realities in the ER. Some of the more interesting themes to the reader have been highlighted in the summary.

NRGH/ER: Organizational Themes Relating to Service Design

i) Managerial Practices

Managerial practices vary between different ER departments but certain factors are common, especially in the realms of leadership and communication. The value of 'round the clock' leadership at the management level is becoming recognized as key to effective ER functioning but this role needs to be developed further so there is accountability and more of a team atmosphere.

Nurses note that while decision making is still limited, it is the quality of the management practices that are important, especially as it relates to how people in management positions handle crisis situations. Happenings in the ER that may generate media attention, for example require careful handling and respect for employee needs balanced with the public's 'need to know.' Nurses also have expressed a need for support from management in gaining more control over their immediate environment. As one nurse put it, "Triage would be so much more relaxed if there was a buffer without having to be interrupted 15 times..." Nurses want to be able to focus on the patient.

Physicians have expressed an awareness that communication can be difficult at multiple levels. It is hard to encourage staff to 'get with the program' so to speak, while managers are asking them to do more with less, and yet still expect staff to continue to achieve.

There is a sense that management is doing the best they can but one overall theme was that managers need to focus more on individual employees and helping them to develop as well as providing them with feedback.

ii) Job Design

The simplest reason for the importance of job design in the ER is simply because 'who does what' needs to be clarified. Some ER departments accomplish this better than others.

Perception exists in some ER's that even relatively new nurses get promoted too fast and are in charge within about a year because older workers are either retiring or are on maternity leave. New nurses lack training and experience and this needs to be addressed as it is "worrisome and very unsafe."

Job design sometimes goes hand-in-hand with job evaluations because it is often these evaluations which guide changes in this area. Nurses have expressed a need for more feedback while others are suggesting that there does not seem to be any follow up to the evaluations that are completed. Nurses have suggested that formal evaluations should be done every year, as well as a timeline for progression through the department.

In terms of job advancement, one nurse stated: "People feel their getting picked on because of no opportunities for movement but it's because there's no timeline for flow" from one specialty area to another in the ER. According to nurses, there should be some standard for progression so that people are not either held back or pushed forward before they are ready

iii) Service Training

ER Directors suggest a range of courses are offered which are paid for and the staff member is paid for attending. Service courses, annual performance reviews, self-assessments and awards of excellence are also offered in terms of training. Directors note that no matter how much service training is provided, staff "do not seem to identify with this."

Nurses advise that specialty education is offered and if nurses want to attend they are encouraged to do so. However there is recognition of the fact that whether or not a person takes advantage of these opportunities depends on personality, to an extent. Some people don't bother finding out about the opportunities, while others refuse to do anything on their days off.

iv) Physical Design

The role of physical design in the operation of an efficient ER is crucial but can be somewhat overshadowed by the issue of manpower. Physicians point out that in order for a department to become operational, more staff is needed with the idea being that this would increase efficiency. As one physician noted, one huge problem in operating rooms is that they have two to three times the space they need but no more staff. "It's a manpower issue with increased space that hasn't been included. Staffing is a huge problem."

Overcrowding within the physical space and overcrowding for the patients is another area of concern. Physicians have noted that "everything is plastered against the walls, or cannot be moved." Most lacking is the available space to see patients so some flexibility is required.

Nurses emphasize the need for them to be able to establish boundaries in terms of physical space. Flow of traffic throughout the ER is a big issue. As one nurse explained, "... at triage you have the ambulances and visitors wandering through, people can just come and go, then family at nursing desk or RCMP officers reading papers at the desk, there are limits due to physical design. There is a lack of respect for our space as nurses. We need to have some control over our environment. I feel we have no control. There is lack of respect for our space, our work space, this causes frustration. Nurses feel they should have "some control at the door," whether it be a greeter, a liaison person or even a closed department.

Nurses further suggest that the aesthetics of the ER should be less chaotic, cleaner because this involves our health, well-being and safety. It's also a spatial issue. There is also often housekeeping issues or not an appropriate space set aside for infection control. As one nurse explained, "the whole department is slowed down if there is not the appropriate people to clean the area. As nurses, it's just not within our scope."

Physicians suggest a somewhat radical idea that could improve some physical design issues. Their idea involved putting the ER away from the hospital to establish some boundary between what we do and what the hospital does. According to one physician, "now we observe slack, management cuts and pushed beds to the ER. Closing beds has the effect of backing up into the ER." This is inappropriate because the ER is where the sickest mix of people are ... The ER is where they come to the hospital." Physicians suggest a culture and mentality that emphasizes more human interaction and more space.

v) Job Satisfaction

Physicians are aware that ER departments are losing a big percentage of nursing staff due to burnout, stress and exhaustion, to name a few reasons. Coupled with that is an awareness that when frontline staff are stressed, something needs to be done about it fairly early on.

Physicians understand sustainability and know that longer shifts lead to decreased job satisfaction and less longevity in business. As a group, physicians try to pay attention to lifestyle issues.

“Medicine is long term and management doesn’t think to look at things long-term. They don’t realize that it is cheaper to retain than it is to burn out and rehire.”

Nurses point out that if you treat people with respect, this increases morale. As one nurse asked “...why does this get missed...?” Nurses believe increasing respect needs to come from top leadership and managers. Respect “needs to be seen as an issue of superior importance and money has to be allocated appropriately.”

vi) Empowerment

Nurses stress that empowerment lies in gaining competence in a number of areas but it is now not uncommon to see fairly new nurses moving “up the ladder” a little too quickly (within a year or so) when they have hardly enough training or experience to be in charge. This happens because older nurses may be on leave or retiring.

vii) Service Climate

In a sense, it could be said that service climate sets the tone for the patient’s experience in the ER. Service climate is reflected in both attitude and action. In a general sense the current service climate in ER departments dictate that patients see many more nurses through the course of their stay than physicians. And the physicians are guided by the tendency that the greater the specialization, the less hands on care a physician may offer.

Handling of patient flow is one area in which service climate has an effect. As one Director noted, her department makes an effort to handle issues in a direct manner, especially when patients have left without being seen. Staff call to follow up with these patients, and their charts are saved for the manager. The triage nurse indicates dialogue with the patient, a plan is established for follow up care, the manager then calls the patient.

The climate of service is also greatly affected by the people that work within it. In a general sense, nurses as a group were described this way: Retiring, older nurses are the best nurses, they’re not as cynical, they’re older, calmer, more life experiences. The middle aged (40s) nurses are jaded and tired. The younger nurses are more service focused, have more energy.

Physicians emphasize that relationships with nurses, other physicians and staff in general are crucial in these organizations. They tend to describe their working relationships as good but admit that these can be strained, given different individuals and personalities. Physicians caution that communication and personal relationships decrease as the institution gets bigger. Relationships breakdown as size increases and it becomes “a culture of NO”. When faced with additional work on top of current responsibilities, the service culture becomes one in which staff end up saying no, rather than seeing how they can work within a situation to provide better service.

The notion of wanting to provide a better service climate, which would encourage the provision of a better service overall is not unfamiliar to some physicians, despite all the problems with burnout, stress, exhaustion some hospital staff experience. As one physician noted, there is definitely more of a customer service orientation here coming from the Department Head. Focus is “placed on the little things such as proving comfort, a blanket, simple things.” Physicians even note that this somewhat more welcoming or receptive service climate is not necessarily present consistently from one ER department to another. In some ER departments there is no time for, or sense of, working to comfort the patient because ... “it’s a different mentality.”

Physicians also make something of a distinction between service climate and service quality, with one physician claiming that “they talk about service quality but they’re putting out fires. Administration is removed from it ... they try and come up with plans but front line doesn’t know about it or feel it.”

Nurses may have a more positive view of ways to alter or improve service climate. Nurses have suggested the use of volunteers and that management trying to start that process with getting volunteers. As one nurse commented, “flow of traffic through the department is a big issue. What would be beneficial is if there was a greeter here for 16 hours a day. In other words, someone that can go in and check on people, etc. Need someone to be a gatekeeper. What we have right now is piece-mealing. It needs to be a job. Nurses have suggested that elderly volunteers would be good in such a role because it would “save so much stress at the door, someone to just appease the visitors. If we had someone that could do that we wouldn’t feel so much like” I’m at a zoo...”

As another nurse put it, “The message now is that the patient is always right. This is the business now. The RCMP have a level of respect from the public, but as nurses we no longer do. In health care, there is no wall anymore, no respect, patients are demanding, we cannot provide the service they expect and we’re not allowed to question them. Patients are not being accountable. No one wants to wait, its all about them.”

One recommendation is that ER departments should make this an expectation and help staff to get there.

viii) Service Quality

Service quality requires focusing on each patient as an individual, trying to anticipate and meet needs and communicating with each other. At the Director level, service quality is seen as a goal that needs to be promoted more, with the aim of exceeding expectations. From the Director point of view, the fact that staff are serving the public is crucial. But directors admit that measuring service quality performance can be difficult as we have significant workloads.

People at the management/director level have some ideas about how service quality should be viewed in the context of the ER. One Director suggested that there “should be a service guarantee ... general terms as to wait times and provision of service as more urgent people come in.” Feedback on service quality should be shared with the ER staff to determine patient perceptions and where improvements can be made.

Physicians stress that service quality in the ER can be described in even more simple terms. Service quality “is not treating/assessing patients in the hallway or waiting room. That is not being respectful to the patient. We’re constantly being told to do more with less.” Physicians note that the perception is that because of the ongoing problems, there must not be a lot of support coming from the management because the problems still exist. Physicians suggest they are given the mandate to do things and not given the resources. Our sense of ability to not be able to deliver quality care is related ostensibly to overcrowding.

Still other physicians emphasize that service quality is most important on an individual level. As one physician noted, building “a good rapport with patients in that first minute ... a touch of the hand, joking around is crucial to making a connection, establishing trust and respect. Ninety percent of complaints would be reduced if we paid more attention to this.”

Service quality in the ER is getting what the patient needs in a timely manner and complaints that occur often are related to a communication issues. As one physician suggested, that he knows he has provided quality service when someone can come in and he can see them in a timely manner. "We're getting caught up now in the inefficiencies. Treating patients in the hallways is not respectful. The true setting that we have here is not respectful and does not allow me to do a respectful job for them. Simple things can go a huge distance, patient trust increases and listening increases.

Physicians see service quality decreasing because people and staff are pushed to the limits, situations escalate and negative interactions result.

Recommendations to improve service quality include:

- Bring in more volunteers to calm people.
- The future may not be about adding more RNs, but adding in aides.
- Move the ER away from the hospital (e.g. Whistler) where the doors close at a given hour and after that, if someone comes needing help, call a physician.
- Focus on creating more human interaction and more space.

ix) Patient Satisfaction

Patient satisfaction is not always easily measured but nurses tend to know if they have done a good job or not. As one nurse put it, "when it feels that things have flowed well, things are stocked, etc., your feel like you've got stuff done, there are beds available, patients are admitted or discharged, patient's needs are being met and/or you know you were able to get them the resources they need." Then, it is hoped, patients would be satisfied with their experience.

Physicians are aware that first person contact is crucial to patient satisfaction. Many complaints received are related to problems with that first interaction. Physicians suggest that satisfaction surveys that have been done are often "asking the wrong people the wrong questions" because they're asking people who don't really have a sense of what's going on about the system. Physicians suggest the need for longitudinal studies and indices that can be measured over time.

VGH/ER: Organizational Themes Relating to Service Design

i) Managerial Practices

The reality of ER work environments of today is often best described as “organized chaos.” By and large, these facilities are suffering staff shortages, employee burnout, ineffective leadership and inconsistency in policy and practice from one ER to another. Managerial practices have an important part to play in this situation. Even in the midst of these problems, people at the managerial level tend to hold on to the hope that things will improve if the department is given more staff and more space in which to work.

Many of the issues relate to communication between staff and managers. Managers may profess to have an open door policy and believe they do engage the staff and encourage staff participation in decision making. They further believe that staff do not usually respond to opportunities unless approached directly and individually. Clerks feel they have little input and whether or not issues are negotiable depends on what type of manager staff may have at any given time.

In terms of assisting new staff, nurses feel that managers don't have much to do with new staff unless there are vacation or other requests or problems. New staff are often criticized for what they lack in experience when they start. There is a general feeling that more support and patience is needed for new people coming in. Nurses commented on the importance of managers being visible, accessible and approachable, including 'making an appearance' in their departments daily, and really listening to the concerns of staff. Those with no manager to report to, such as physicians, tend to value their independence. In fact it is this independence that has been reported by physicians as one reason they chose the profession in the first place. As one physician put it, having a manager “would not work due to ego.” One Department Head underlined the importance of managerial practices in how they affect attitudes within the work environment by putting it this way. “... the difference between the VGH and the NRGH docs is that the VGH docs have given up, the NRG docs are still trying. NRGH docs are more receptive, VGH docs say “I'm just going to come in, do my job and go home.””

In terms of values, managers placed a staff's willingness to help as a key priority. Management feel some staff are not always schooled in core service values. Nurses stress the need for fairness, visibility, explanation, interest and concern from their managers and among themselves. A general lack of cohesiveness and support in some areas was expressed as well as the need for more communication, not only for training and development purposes but also for the general well-being of the ER. Use of case studies and patient follow-up was recommended so that hospital staff have a better idea of patient outcomes. In general, it is felt that leadership is somewhat lacking but good managers do exist and are encouraging to their staff.

ii) Service Training

Proper training is an important component of any functioning ER. Nurses now receive paid education leave and choice in selection of courses but nurses have suggested that management does not do anything to promote this. Courses are available but not upfront and if there and if there is education money, it is often difficult to get time off because few relief staff available. No training or education is provided for physicians. Their educational opportunities are in department rounds.

On-the-job training usually consists of a general orientation followed by a unit orientation and then buddy shifts, depending on experience. At the clerk level, it is not uncommon for there to be little guidance. Clerks have reported that they were sometimes simply given a task and told to figure it

out. Among nurses, sharing of information is increasingly important. For example if a nurse took a course that they funded, the nurses, in return, were expected to share that knowledge with colleagues.

On the job training usually consists of a general orientation, followed by a unit orientation and then buddy shifts, depending on experience. In terms of other types of training, as one nurse noted, there is “no vision as far as personal empowerment. More emphasis is put on posters, literature put out. There’s more emphasis on slogan posters versus opportunities for personal development.”

Into the future, management are recognizing that recruitment is important, but much depends on manner of presentation and good communication skills.

iii) Job Design

Job design is often a key factor in creating effective organizational structure, and in the case of hospital staff this is more true than ever. But the role of reinforcement (both positive and negative) is sometimes overlooked as ER staff go about their daily duties. Management profess to understand the importance of rewarding good effort with positive comments, providing feedback every shift, but recognize there is some negativity. Nurses are seen as having a fairly autonomous and flexible role by management yet nurses feel that positive reinforcement usually comes from fellow staff members, patients or from the job itself, as in when staff can observe something that they have done work out for the better. Physicians tend to feel they get more negative than positive feedback. Most physicians would like to see more feedback coming from the patient but do not always feel they get much appreciation from their patients. Physicians point out that they know within themselves when they have done a good or a poor job on any given day. As one physician stressed, “you know when you’ve had a bad shift.” Inherently physician’s job satisfaction comes from the feedback they receive from the job itself. “We’re in a profession where we save lives, yet the number of people that come back and say thank you is rare.”

Physicians tend to get more respect from patients than from other staff. A hierarchy exists and the societal respect for the physician predominates whereas nursing is viewed as a service profession. There is also a gender discrepancy. As one female physician noted, “Often I walk into a room and am asked to get a bedpan for the patient, etc. Patients don’t view me as a physician because I’m female, of smaller stature, etc.” Nurses have noted a concern about the quality of a patient’s visit, having a satisfactory end result but feel that pressure is increased because there is not enough staff. This pressure often has a definite effect on the design of their jobs, their ability to fully accomplish their job and the patient’s subsequent experience as a whole. Job design is important in establishing a feeling that one is really accomplishing something of importance in ER settings. ER physicians should be using skills that are important for use in the ER, not acting in other capacities. Much multi-tasking is required in an environment that is chaotic at times.

Physicians recognize that many nurses have left due to burnout and many have gone into less stressful areas. Those that have stayed are cynical; they’re not empowered in general. In ER work, it is said that many come into the professions hoping to make a difference but the reality of what they are and are not able to do sets in very quickly. “The new crowd that comes in, they’re fresh, inexperienced, some are very enthusiastic but we notice the nature of their training and where they have trained. For some we see less emphasis on service and the little things that are so important.”

iv) Physical Design

Physical design affects every aspect of ER functioning and effectiveness. In terms of layout and floor plan, proximity of patients to each other, proximity to specific rooms or equipment, ambience,

(lighting, temperature) noise, and maintaining privacy, when necessary are key concerns among management and staff. In terms of proximity, rooms that serve specific functions are not as closely located as they should be. Harsh lighting noise and temperature problems are not uncommon in ER's. Maintaining standards of cleanliness is crucial, as is making sure housekeeping does not interfere with patient interaction.

In terms of security, it has been suggested that "the crisis is always in the department, not in the waiting room." As such, it is important that the security personnel make themselves very visible in the department.

v) Job Satisfaction

Job satisfaction is ultimately affected by pay, hours of work, recognition, possibilities for promotion and job security. Nurses tend to feel that the pay is good and are accepting of the hours and the need to do shift work, although it was reported that some would like to self-schedule. However, many nurses leave the profession not only because of burnout but also because of workload or if they tire of night shifts or shift work in general. In terms of overall job satisfaction, for some, as one nurse put it, "Everyday is the same, you feel like you are coming into a war zone." Nurses complain that they can't always get to their patients in a timely fashion.

Physicians report a shift in job satisfaction between the older and younger groups of physicians. Because the younger generation of doctors is more accustomed to lack of resources, manpower, and even treating people in the hallways, their job satisfaction is higher because for them it has always been that way. With older physicians, the conditions used to be better so their job satisfaction in the ER environment as it is now, tends to be lower. Physicians themselves report finding job satisfaction in getting things done and getting people better. Some importance is attached to recruiting team players, people who want to work together and discuss cases rather than loner types. However, management admits there is nothing in place to accurately measure job satisfaction because performance reviews, when they are completed, focus on how things are going rather than how staff feel about their jobs.

vi) Employee Empowerment

Management personnel tend to believe that empowerment does not have much of an impact on ER operations simply because there are so many patients in the ER, and that cannot be fixed. They note that from a management perspective, opportunities for empowerment and staff participation are not necessarily embraced. When asked by management if staff members would like to be on a team or serve on a committee, managers report that the only response they get happens when they approach people individually. As one manager put it, "I think the staff find themselves in the victim's role."

For nurses, empowerment is not clear-cut either. Nurses report that between physicians and management, they feel that nobody is listening or cares about them. Nurses report that improvements are not happening in the ER fast enough. With overcrowding comes the practice of sending ER patients out that really should not be out or keeping patients in ER that should be on a ward and nurses feel they have little control. Nurses feel they are doing their job, fulfilling their tasks with no one really to back them up.

At the clerk level, it is a somewhat different story as clerks seem to feel at least some sense of personal empowerment. As one clerk noted, the ER is never routine, there are "different situations, different colleagues or working partners all the time. You go away feeling that you've made a difference, it is rewarding."

vii) Service Climate

The general feeling among nurses with regard to service climate is that patients are coming into the ER and not getting the support they need because staff are overworked, frustrated and exhausted. People feel helpless and too busy to think of simple basic things like politeness with patients. Nurses often feel their concerns are not heard and the "patient then becomes the enemy."

Department Heads report that they believe there is a lot of wisdom that is not being tapped into with regard to the climate in the ER of today, and that more of a service culture needs to develop.

Clerks note that the burnout of staff, workload, overtime, not having time for relaxation at the beginning of a shift are all a hindrance to having a positive service climate. Clerks suggest that a lot of people are just not happy, there is no appreciation from an organizational point of view. Concerns revolve around what more could be cut back as opposed to the emotional rewards of the job. At the clerk level it is mentioned that over the years they have started to feel like less a part of a team and felt they have received less recognition.

Eighty percent (80%) of physician's frustration are systems issues that they cannot deal with, and there is a general sense of a lack of ability to make the changes that are needed. Some even questioned the existence of a service climate in the ER at all. It was reported that:

"There is a huge glaring defect in our service delivery in ER. This is not an ER department, this is an admitted ward! If a patient wants good service, they need to go out of the ER, on the ward you'll get good service, but not in the ER. My priority in the ER is to get you in, make a diagnosis, and start treatment. Spending time on hand and foot is not what we do, comfort is not what we do. Yes, there's a lot more that we could do.... The main way to make them comfortable in ER is to get them out of ER. When a patient sits in a waiting for six hours and has not seen a physician, that is not good service. There's a lot of little patchwork things that we could be doing that we're not doing (e.g. provide the patient with a warm blanket while they are waiting). We should rather be focusing on getting them out of the waiting room."

Nurses report that ER departments are so short staffed and that nurses are burnt out yet still working. ER's are "taking anybody and everybody" and are not using staff to their full capabilities.

As one Department head noted, it is difficult to even get small changes accomplished that would improve the conditions and service climate. For example:

At triage in the winter, it is cold! I asked about it and management said "have you done this, this, and this ... they said you know we can't deal with it because you're getting a new department in 2 years. I provided them with a solution: Unsynchronize the doors or leave the main door open because at nights the only door to use is the ER door. Instead have another door open and have security there to guide people. So instead of dealing with it, they gave us mittens. It's that kind of thing – management does not have a concept that there's a nursing shortage and it shows- health care sucks!

viii) Service Quality

In terms of service quality, ER's strive to meet certain standards. Hospital staff are concerned about wait times, patient responsiveness, cleanliness and when possible, comfort. One Department Head described service quality as "right place, right time, right diagnosis right treatment and until I get this right, the comfort bit is way down on my list." The best service the ER can provide is seen as being able to ensure that the "patients are not kept in the waiting room for hours. There is an awareness that

wait times are a key concern to the patient because its “all about responsiveness, wait times and service satisfaction.”

Clerks suggest that a common complaint they hear from nurses all the time is that if they had additional staff and more time they could do a better job. There is an awareness that personal skill is related to service quality but this really just entails making the patient feel cared for, and staff feeling good that they are able to do that, when the patients like the care they receive. Department Heads suggest that it would be nice to be able to provide comfort but as one department head noted: “I am not here to provide comfort” because focussing too much on a patient’s comfort would not properly address the problem the patient needs attending to.

Some managerial practices can have a negative effect on service quality. One big stumbling block is seen to be that regulations that management has put in place to deal with inpatients gets in the way of providing ER care and service. Flow problems within the ER are common in trying to get patients seen by a physician. Staff are being asked to do more, and sometimes in inappropriate locations. When there are problems, staff assume that the problem lies at the management level. As one Department Head noted: a major theme here is that any way we can “step outside the bounds of usual ER care to try and improve flow, tweak it a bit, which increases our liability, our emergency physicians don’t like that. We recognize that we are part of a continuum of care but our role has to change.”

ix) Patient Satisfaction

With regard to patient satisfaction with service, physicians are aware that patients want to be told what is wrong with them. With certain types of medical issues patients are not happy because they want a diagnosis but the ER staff cannot necessarily all of the sudden make the patient better, rather, sometimes symptoms can be treated. Physicians still have a “tendency to use the medical terminology, use words that are too big, too long, too involved. We tend to forget that we’re not talking to our colleagues, it’s difficult to switch back and forth. Have to think like a physician but talk like you’re talking to a buddy.” Physicians also tend to recognize the pace of the ER and their own limitations. Physicians do not have the time to delve into the social or economic reasons for an ER visit. Some people tend to use the ER as their family doctor. For the most part, patients want definite answers with regard to waiting times and expect hospital staff to be an authoritative and reliable source of information for them.

If a patient is not satisfied for some reason, they will tend to complain more to the nurse than they will to the physician as there is an intimidation factor with the physician. In part to achieve patient satisfaction, hospital staff also encourage people to go somewhere else other than the ER for help if possible. For example, if a patient has a problem related to their teeth, they may be encouraged to go to a dentist instead of the ER.

Those in nursing and management positions have pointed out that patient satisfaction is not always an easy measurement to gauge. With patient satisfaction surveys, it is reported that ER staff do not tend to hear the results of the surveys. Complaints from patients are followed up on a managerial level. The manager usually deals directly with the individuals involved, often by verbal discussions, but this is not widely publicized.

Patient satisfaction is affected by the amount of staff and beds being available. But one problem that needs to be considered is that if you increase the number of beds but not nurses, that extra touch that staff are sometimes able to provide will suffer. From the physician’s perspective, many feel in order

for a patient to be more satisfied with the care they receive they need to use more of a common sense approach at home and not visit the ER if not necessary or if they can find medical help from another source. Some patients use the ER more as a convenience rather than for its intended purpose of emergency care.

x) Patient Empowerment

Because they are often on the frontlines of healthcare, nurses are especially aware of some of the factors that can affect a patient's sense of empowerment. Long waiting times leaves the patient feeling as if they do not have much control, and that, coupled with a lack of understanding and communication used can explain this for the majority.

As one nurses noted "empowerment is so much more than the ER experience, the motivation that we might provide in the ER might take with some but not with others. A lot of it has to do with communication; years ago the physician was god, not so much anymore. And still sometimes [especially with the older population] when you ask what medications they're on, they say oh, I don't know, you'll have to ask my doctor. Now, more people are taking on a pro-active role with their health and well-being, but there are still many that don't/haven't, these are the ones that feel they cannot make an impact."

Nurses are also aware that communication with patients is a huge thing and that the profession falls down on this aspect because hospital staff know what's going on and patient's do not.

Physicians emphasize that patient empowerment needs to happen before the patient comes to the ER. Physicians are noticing that they now see many patients that we didn't use to see. "Some patients will come in with athletes foot, or because the hours are more convenient for them, or because they were sent by the nurse's hotline. There's an element of common sense that we're lacking not due to the health care system. The public today is use to having so much that our common sense has gotten lost.

The change in the use of the ER is worth noting because patient empowerment is not as evident as it might have been in earlier years. "It used to be where people would try and manage their illness or injury somewhat on their own. Now, we see more elderly coming into the department for social reasons (e.g. they need more care or can no longer cope at home, ...We need people to take on more advance planning). Nurses and physicians alike believe that the key to patient empowerment may be to encourage increasing a patient's competence and sense of responsibility. In the discharge process or follow up, it is important that the patient are educated about their particular medical issue and leave with some sense of responsibility for taking care of themselves in that regard.

5.4 Discussion

The purpose of the case studies was to acquire a comparative, in-depth look at the design of service in the ERs with reference to the various elements in the Service Outcome Chain.

At the individual level of analysis, the data supported the larger proposition that certain structural elements of service (e.g. ST, PD), through their impact on process (e.g. SC), have the potential to positively influence outcomes (e.g. SQ, PS, PE) in the ER. The findings lend support for the overall flow of the Service Outcome Chain, in addition support for the role of SC as an intervening systems variable (Schneider & Reichers, 1983). This research further illustrated the intervening nature of SC that is affected by a set of input or structural variables on the one hand, and influences the outcomes and performance variables on the other (Dastmalchian, 1986; Payne & Pugh, 1976).

With regard to the antecedents of SC, and contrary to the findings of BC emergency nurses, ST proved to be a direct and significant predictor of SC, as did PD. The summary of themes shed light on these findings. First of all, managers claim that some service training is available to staff however they feel that staff do not identify well with the training. Staff agree that nurses are being provided with more opportunity as far as training, but that managers really are not doing anything to promote this. Courses are available but not upfront and if there is money for education, it is often difficult to get the time off to attend because there are so few relief staff available to cover shifts. Nurses feel they could provide better service with additional training however due to the lack of staff, opportunities to attend such training are limited.

Secondly, with regard to PD, the lack of boundaries, security and control built into the design of the department affects SC. The nurse's claim there is a need to establish some boundaries within the physical space. The constant flow of traffic through the ER and the lack of security are important issues for nurses that impact S C. Nurses feel there is a lack of respect for their workspace and having them perform non-nursing duties (e.g. cleaning) takes them away from patient focused service activities.

At the organizational level of analysis, there were significant differences among the two ERs and perceptions of JS, EE, SC, and PS with service. NRGH/ER staff gave higher ratings to all ten variables in comparison with VGH/ER staff. NRGH/ER nurses also rated higher on all of the service elements in comparison with the VGH/ER nurses. NRGH/ER physicians however rated lower on all of the service elements with the exception of JD, EE, PS with service and PE. Looking at the events of the past few years with the Nanaimo physician group can help to explain these findings. There is a

strong sense of group cohesion among the NRGH/ER physicians and the NRGH/ER department. Staff realize they are responsible for bringing about change. The Nanaimo ER physician group does not need to feel satisfied in order to be empowered. Their actions over the past few years speak volumes to their high levels of individual and collective empowerment. As job design is important in establishing a feeling that one is really accomplishing something of importance, the NRGH/ER physicians feel that what they're doing is important and that they have some control over what happens with their department. Nurses on the other hand, feel powerless. They feel that they have little control and that they are fulfilling their work tasks but have really no one to back them up. The perspective of management is different yet, comments made by managers with regard to empowerment suggest that empowerment does not have much of a place in the ER or impact on ER operations simply because there are so many patients in the ER, and that can not be fixed.

Perhaps the following quotes by the department heads best explain the difference between the two ERs and their service strategy. This finding in particular is important to this research because it clearly brings forth the different values and attitudes placed on 'service' in the ER:

- "The difference between the VGH and the NRGH docs is that the VGH docs have given up, the NRGH docs are still trying. The VGH docs just want to come in, do their job and go home."
- At NRGH/ER, the Department Head is largely focused on service and "places emphasis on the little things such as proving comfort, a blanket, simple things." Physicians even note that this somewhat more welcoming or receptive service climate is not necessarily present consistently from one ER department to another. In some ER departments there is no time for, or sense of, working to comfort the patient because ... "it is a different mentality."
- At the VGH/ER, the following comment was made by the department head: "There is a huge glaring defect in our service delivery in ER. This is not an ER department, this is an admitted ward! If a patient wants good service, they need to go out of the ER, on the ward you'll get good service, but not in the ER. My priority in the ER is to get you in, make a diagnosis, and start treatment. Spending time on hand and foot is not what we do, comfort is not what we do. Yes, there's a lot more that we could do.... The main way to make patients comfortable in the ER is to get them out of the ER. When a patient sits in a waiting room for six hours and has not seen a physician that is not good service. There are a lot of little patchwork things that we could be doing that we're not doing. I feel we

should rather be focusing on getting people out of the waiting room.” The Department Head suggested that it would be nice to be able to provide comfort however followed up with the comment: “I am not here to provide comfort. We should rather address the problem that needs attending to.”

These quotes illustrate that the NRGH/ER is more focused on building a climate for service in the ER than is the VGH/ER. Upon examination of the survey data and the emerging themes from the interviews, it may be concluded that multiple and well in-grained perspectives exist in defining the elements of the Service Outcome Chain. The findings reinforce the importance of context in understanding the culture, climate, and values regarding service. The findings also drew the conclusion that the structural elements of service design, aspects of the internal work environment, appear to be the weakest links in the Service Outcome Chain.



CHAPTER 6

Service Design and Patient Empowerment

6.1 Summary

Purpose

This paper presents an overview of the patient perspective of service in ERs. Using a modified version of the Service Profit Chain this paper explores outcomes of service in terms of service quality (SQ), patient satisfaction (PS) with service, and patient empowerment (PE). This study also explores the patient's perception of the physical design (PD) of ERs. The larger proposition being that PE is largely dependent on SQ and PS with service, and that PD is a predictor of SQ and a facilitator of PE in health care. This paper explores the potential of service design in health care as a way to engage and empower patients. This has implications for both personal and organizational health outcomes. The key is to design services in a way that facilitates and supports a sense of personal empowerment in health care.

Design / Methodology / Approach

Patients ($n = 198$) from ERs within the Vancouver Island Health Authority provided their perceptions about the PD of the departments, SQ, PS with service, and PE as a result of the service provided. The data were analyzed using statistical package for the social sciences (SPSS); structural equation modelling (SEM) was implemented using linear structural relations (LISREL).

Findings

SEM showed that SQ only partially mediated the relationship between PD and PS with service. In addition, PS with service only partially mediated the relationship between SQ on one side and PE on the other side. The design of the physical setting had direct links to PS with service and PE. The findings reinforce the importance of using PD to as a means to facilitate SQ, and create an empowering service experience for patients.

Research Limitations / Implications

A limitation of this study is that the researcher used only patient data rather than patient and employee data simultaneously. Future research should be done incorporating both viewpoints. In addition, research could be carried out in other service occupations and organizations to test the invariance of the research model.

Practical Implications

The results reinforce the facilitating role that service design has on empowering patients in health care, and the importance of PD in supporting this role.

Originality / Value

The contribution of this research is that it applies a modified version of the Service Profit Chain framework to exploring the role of service in health care. In addition, emphasize the importance of PD as a means to empower patients.

Keywords

Patients, Empowerment, Service Quality, Physical Design, ERs

6.2 Background and Objectives

6.2.1 Empowerment

There is no clear way of describing empowerment, since expressions differ from person to person and within organizations (Wallerstein & Bernstein, 1988; Wahlin, Ek, & Idvall, 2006). In social theory, empowerment refers to social and political phenomena concerning underprivileged groups and their ability to control their own lives (Ward & Mullender, 1991). Organizational and management theories focus on the structure of organizations, and power is associated with standing and ability to get things done. In this environment, empowerment is described as a process in which power is distributed within the hierarchy from the top down, with increased production and effectiveness as a result (Kanter, 1979). In social psychology theory, empowerment is seen as a process of personal growth and development. Power is generated in relationships with other people. The ability to acquire information is an important prerequisite of empowerment (Kuokkanen & Leino-Kilpi, 2000; Wahlin et al., 2006).

Rappaport (1984) regards empowerment as easy to define in its absence: powerlessness, helplessness, alienation, loss of sense of control. It is more difficult to define positively because it takes different forms in different people and contexts, and thus must be described by the person involved. Empowerment is seen as a dynamic process in which power is shared, reciprocally yielded and received (Hegar & Hunzeker, 1988). Empowerment is a concept that is fundamentally positive, referring to solutions and possibilities rather than to problems and requirements. An empowered person does not pretend to have more power but instead feels more powerful (Kieffer, 1984). Empowerment can be seen as both a process and an outcome (Gibson, 1991), and is independent of a specific time or place (Reynolds, 1971). In a general sense, empowerment is viewed as a process through which people, organizations, and communities gain mastery over their own lives (Conger & Kanungo, 1988; Rappaport, 1984).

6.2.2 Patient Empowerment

Empowerment focuses on people's strengths, rights and abilities, as opposed to paternalism, which means that others take the liberty of decision making (Gray, 1999). In health care, patients often experience feelings such as powerlessness, a lack of knowledge/information, vulnerability, anxiety and distress. For this reason it is important to acquire more knowledge about the actions and attitudes that can strengthen the patient experience of empowerment. This has the potential to facilitate patient well-being and recovery.

Application of the concept of empowerment to the health care is complex and for the most part foreign due to the paternalistic nature of health care (Auerbach, 2001; Williams, 2002). Patient

empowerment (PE) requires a patient centred approach where patients and providers work together in partnership to make decisions. This approach requires developing and improving synergistic relationships between the two groups.

Across a wide variety of medical settings, patients report that they want detailed information about what is going on with regard to their condition and treatment. Studies (Auerbach, 2001; Guadagnoli & Ward, 1998) indicate that patients want to assume control if they feel involvement on their part will positively influence the outcome of their situation. Most definitions of the attributes of empowerment emphasize that patients should be given the information to make decisions and that the information be given in a way that the patient understands. Other models emphasize the attributes of the synergistic relationships that need to develop such as the provider listening actively to the patient, involving the family and other caregivers, providing ongoing support, and focusing on the development of relationships. These loosely defined attributes pose some discomfort in the traditional paternalistic health care delivery systems (Auerbach, 2001; Williams, 2002). The time investment for the provider in the partnership model is greater than the paternalistic model on the front-end of the relationship however the benefits for the provider are seen as the partnership progresses. Once the patient identifies their role as an equal partner, the dialogue between the health care provider and the patient will progress to a higher level. This is the point at which patient outcomes will improve and the patient's plan for his or her health care will be actual and realistic, not needing as much direction by the health provider.

Williams (2002) claims that an antecedent to PE is staff empowerment wherein empowerment is understood to the point it can be transferred and operationalized. Before nurses and physicians can identify what needs to be done in their settings to empower the patient, they must first have the experience of what empowerment is. Providers who have not experienced empowerment at the staff level will undoubtedly view patient empowerment as foreign, and perhaps threatening. Without the experience of empowerment, the practice of nursing and medicine will rely on the paternalistic model of health service delivery.

Consequences of PE, also known as outcomes, are poorly reported in the literature (Williams, 2002). To date, there is little empirical evidence to support the rationale that patient empowerment will have improved individual (patient) outcomes and much of the evidence that exists is within the realms of chronic disease such as with diabetes and hypertension. Anderson & Funnell (1999) describe countless self-reports from patients who are effectively managing their diabetes (as evidenced by Hgb H1AC). These stories range from patients who desired total control of their care to

patients who would comply with their physician fully, but who enjoyed the option of taking control when they felt ready.

Aujoulat, Hoore, & Deccache (2007) examined how the term 'empowerment' has been used in relation to the care and education of patients with chronic conditions over the past decade. In their study, 55 articles were analysed, using a qualitative method of thematic analysis. Their analysis showed that: (i) the educational objectives of an empowerment based approach are not disease specific, but concern the reinforcement or development of general psychosocial skills instead; (ii) empowering methods of education are necessarily patient-centred and based on experiential learning; and (iii) the provider: patient relationship needs to be continuous and self-involving on both sides. Although their analysis did not allow for the unfolding of a well-articulated theory on patient empowerment, it revealed a number of guiding principles and values.

Most of the literature that addresses PE is based on philosophical rationale rather than empirical patient outcomes. However it is important to remember that consequences of PE reach far beyond individual patient outcomes; it is believed that additional consequences include those of physician impact, nurse impact, organizational impact and policy impact.

Empowerment is a complex experience of personal change. It is guided by the principle of self-determination and may be facilitated by health care providers if they adopt a patient centred approach to service which takes time and acknowledges the patients' experience, priorities, capabilities, and fears. In order to be empowering for the patient, educational activities need to allow for the appropriation of medical knowledge and the reinforcement of psychosocial skills. As patients become empowered, they develop a greater sense of self-efficacy regarding their injury or illness and treatment related behaviours. They may express changes in life priorities and values. As a result of their empowerment process, they are expected to better self-manage not only their illness, but also their lives.

6.2.3 A Framework for Assessing Patient Empowerment

Incorporating the literatures of business and service management brings us to identifying a framework that may be applied to bridge the antecedents of PE to the consequences of PE. With a focus on 'service', application of the Service Profit Chain (Heskett et al., 1994, 1997) or a modified version of the chain (e.g. Service Outcome Chain; Steinke, 2008) may be applied to guide the design and development of service and the assessment of such relationships. Steinke (2008) applied the Service Outcome Chain in examining the mediating role of service climate (SC) in health care. Within this chain, employee empowerment (Conger & Kanungo, 1988; Thomas & Velthouse) was viewed as an antecedent of SC (Schneider et al., 2000) and PE (Auerbach, 2001; Conger & Kanungo, 1988; Thomas & Velthouse, 1990; Williams, 2002) as a consequence or outcome of SC. Service climate may be defined as employee's shared perceptions of the policies, practices, and procedures that are rewarded, supported, and expected with regard to service delivery. Much of the research in this area has been to identify antecedents within organization that promote a positive SC for employees that yields positive service-oriented behaviours towards clients, who then report positively on the quality of the service experience (Schneider et al., 1998, 2000, 2005). Steinke (2008) expanded the chain with the addition of PS with service and PE. The application of this framework to health care in general, and ERs in particular, is a means for assessing and strengthening the relationships between the structure, process, and outcomes of service in a way that facilitates an empowering experience for patients.

With regard to the structural elements of service, Steinke (2008) incorporated PD as an antecedent to SC, a measure often overlooked. The role of PD is not well understood with regard to organization studies in general (Pfeffer, 1982, and certainly not with regard to the etiology of service climate (Ashforth, 1985; Davis, 1984; Schneider et al., 2002). Organizations rarely tie PD to their business strategies or to the performance of their organizations (Heerwagen, 2002). However, growing bodies of research are acknowledging the link between the physical environment and the psychological and physiological well being of patients and evidence based design has arisen out of the need to create spaces that are beneficial for patients and staff (Ulrich, 1991, 1992; Ulrich & Zimring, 2004).

Research showing the benefits of improved design for patient empowerment is minimal (Douglas & Douglas, 2004; Douglas & Douglas, 2005; Williams, Dawson & Kristjanson, 2008) furthermore, a direct link between physical design and patient empowerment has not empirically been made. It is apparent though, that there are several indicators that can improve and possibly facilitate PE through the design of the physical service setting. An important component of

empowerment has to do with control and self-determination or autonomy. In the physical hospital environment, control may refer to the ability to manipulate immediate surroundings, (e.g. turning lights on/off, changing the temperature in the room, opening/closing window curtains/blinds, increasing accessibility to chairs, creating rooms large enough to comfortably accommodate visitors, and incorporating a sense of homeliness into the rooms to preserve normality). Lack of this is often frustrating to patients, which can cause unnecessary stress, dissatisfaction, and prolong recovery time (Ulrich, 1992; Ulrich & Simons, 1984). Thus, creating an environment in which patient control is facilitated is beneficial.

A study by Williams et al. (2008) examined the relationship between personal control and the hospital environment. The researchers interviewed and observed 56 hospital patients of varying demographics. The researchers found that patients often complained that they were unable to do things independently such as eating or even sitting up in bed. Further observations were made that patients were unable to move from their beds to access fresh air or read books in chairs because of the immobile equipment they were attached to (e.g. monitors). As a result, the researchers were able to attribute three main conditions to the feelings of control in the hospital environment: the degree to which patients felt secure, informed, and valued were linked to the degree of control they felt they had.

Lastly, Buss & Craik (1983; Faulkner, 2001) used the 'act frequency approach' to create a measure of empowerment and disempowerment in hospital environments. Researchers asked registered nurses to nominate empowering acts, of which 98 were selected. The extent to which these acts were 'control taking' or 'control giving' were then hypothetically judged by patients. The 20 highest acts in each category were then incorporated into a Patient Empowerment Scale (PES), whereby 102 patients in varying wards (mainly acute care, medical-surgical, and rehabilitation) were asked to judge how often they had encountered each act in a predetermined period of time. Some of these acts included questions such as: Does staff invade your privacy while you are performing a personal activity? Do staff make sure that you are able to perform activities by yourself? Thirdly, does staff familiarize you with your surroundings? Based upon mean scores of the PES, of the empowering acts, patients ranked the ability to access the nurse-call button and the ability to make choices (in terms of eating times and sleep patterns) most highly. Alternately, the most disempowering acts were found to be regarding the lack of control/influence over physical settings such as noise and temperature levels, not being able to find help from nurses, and nurses responding slowly when patients were in pain. It was concluded that the PES can identify environments which

place patients at risk of becoming dependent or alternately, allow patients to gain independence (Buss & Craik, 1983; Faulkner, 2001; Ulrich, 1992; Ulrich & Simons, 1984).

6.2.4 Purpose of the Research

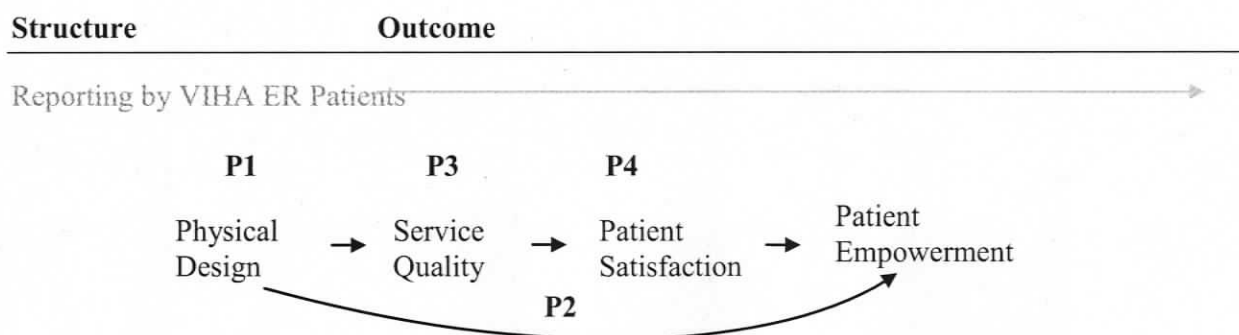
In considering the challenges facing the ER and the reality of the service provided in the ER, this research explores the patient's perspective of service in the ER with focus on determining the conditions for PE. Using a modified version of the Service Profit Chain, this paper explores outcomes of service in terms of SQ, PS with service, and PE. This study also explores the patient's perception of PD and the role it plays in creating an empowering service experience for patients. The larger proposition being that PE is largely dependent on SQ and PS with service, and that PD is a predictor of SQ and a facilitator of PE in health care.

6.2.5 Research Propositions

In essence, the researcher is applying a modified version of the Service Profit Chain (Figure 6.1) (Heskett et al., 1994) to the ER setting in health care. The larger proposition being that certain structural variables (e.g. PD) through their influence on SQ have the potential to influence outcomes in the ER (e.g. PS with service, and PE). On the basis of previous research, the following propositions were made:

- *Proposition one (P1):* PD is a predictor of SQ in health care.
- *Proposition two (P2):* PD is a facilitator of PE in health care.
- *Proposition three (P3):* SQ will mediate the relationship PD and PS with service.
- *Proposition four (P4):* PS with service will mediate the relationship between SQ and PE.

Figure 6.1. The service outcome chain (research model).



6.3 Methodology

6.3.1 Pilot Study

The researcher conducted a quantitative survey of ER patients from two ERs within one health authority in the province of BC. First, a pilot study was conducted to pre-test the instrument and acquire feedback in regard to the questions posed (e.g. to ensure the questions were relevant, clearly understood, response categories were clear, and receive feedback as to presentation style/formatting). Although less in number, the questions asked in the patient survey were the same as those asked in the CRNBC (nurses) survey which was already tested and tried. The pilot study was therefore smaller for this study.

Fourteen citizens ($n = 14$) were chosen by way of a convenience sample to pre-test the instrument. Ten ($n = 10$) of these subjects were from the province of BC and four ($n = 4$) from Alberta. The four subjects from Alberta were known to the researcher on a personal level and known to have visited ERs in the past. The ten subjects from BC consisted of fourth year nursing students from the University of Victoria. In both of these cases, access was obtained due to the researcher's familiarity with the subjects in Alberta and the organization in BC.

Initial contact was made with the subjects from Alberta by telephone to inform them of the study and request for their participation. Contact was made with the fourth year nursing students through their nursing instructor who gave her consent for the researcher to come into a class and request the student's participation. In both cases, subjects were provided with an explanation of the study and informed that participation was of a voluntary and anonymous nature and that their input would be used to make the necessary revisions to the instrument. All subjects agree to participate providing a response rate of 100%. Participants from Alberta were sent a copy of the survey and consent letter by mail; nursing student participants were hand delivered a copy of the survey and consent letter. Participants were asked to complete the survey at home and provided with a stamped, addressed, return envelope for which to submit their completed survey by mail. Participants were asked to respond to the questions in reflection on their most recent experience as a patient in an ER.

Based on the feedback acquired, some questions were re-worded slightly to improve clarity. For example, on the Likert scale, there were suggestions to change the word 'Uncertain' to 'Neutral' or 'Neither'. The scale was changed to 'Neither Agree Nor Disagree.' There was a suggestion to rephrase the following SQ item: 'The department provides error-free documentation/records' to 'The department keeps accurate records and documentation,' this change was made. There was also a suggestion to re-phrase some of the PD items so that they directly targeted the importance of natural

light, artificial light, and air exchange. These changes were also made. Finally, there was a formatting recommendation: to ensure that all relevant items and scale be placed on the same page, this change was made. The majority completed the survey and provided no additional feedback; it was assumed the majority felt the questions relevant and not ambiguous. Descriptive statistics, correlations, reliability analysis, and factor analysis were used to investigate the reliability and underlying factors of the measures.

6.3.2 Procedure

Case study research was conducted within ERs of the Vancouver Island Health Authority. The Vancouver Island Health Authority (VIHA) was chosen as the location for this research due to it being the location of residence for the researcher. The purpose of the case studies was to acquire a more in-depth knowledge of the service environment in ERs from the perspective of patients. Sites chosen were upon the request of VIHA Executive in their desire to better understand some of the challenges presenting in particular ERs. For the purposes of this paper, a larger patient view of service is presented rather than a comparison of sites.

A quantitative survey was used as the means for data collection. This 'patient survey' (Appendix 6.1) assessed attributes of service design in the ER including PD, SQ, PS with service, and PE. The procedure for conducting the patient survey was as follows: Patients were informed of the study through an information letter that was distributed to the each department two weeks in advance of survey distribution. The unit manager of each department posted the letter to inform at both the entrance to the department and the triage desk. The purpose of this letter was to provide a brief summary and timeline of the research and inform subjects that participation was voluntary.

The case studies and survey distribution took place over a period of 12 days. The researcher spent a total of six days at each site. The researcher chose to be physically present and distribute the surveys herself as she didn't want any additional burden placed on staff. Initially, the researcher had planned on distributing the survey to patients, letting the patients complete it on their own. For some this was fine, but for the majority - patients were more receptive to participate if the researcher physically sat down with them and they went through the survey together. The reason being that in these ERs many of the patients are older and it was difficult for them to complete the survey on their own. In addition, in most cases, patients had time on their hands as they waited for treatment or waited to be discharged and enjoyed having someone to visit with. This method also became a means for quality assurance.

Over the course of the six days, the researcher maintained a consistent schedule at each site. For example, on days one and two of survey distribution, the researcher was in the department

surveying patients between the hours of 0900-1700. For days three and four, patients were surveyed between the hours of 1100-1900. On days five and six, patient surveys took place between the hours of 1700-0100. The reason for this schedule was to target the different groups of people that come into the ER at different times of day. The surveys were only distributed to competent adults between the ages of 18 - 100 years who rated as either a level three (urgent), level four (less urgent) or level five (non-urgent) on the Canadian Triage and Acuity Scale (CTAS). Level three patients were considered at the discretion of the charge nurse or the attending physician, and were included only if they were considered stable and symptoms relieved (for example, a mild/moderate asthmatic patient who after receiving repeated salbutamol treatments was feeling improved, chest clear, vitals within norms, and awaiting discharge).

On any given day, patient numbers in these departments are between 97-132 patients per 24 hours. The target of 25 patients per eight hour shift was readjusted after the initial few days to 18 patients due to the revised methodology of survey distribution (i.e. sitting with each patient).

On each day, when the researcher arrived at the department, the first thing she did was go to the charge nurse and asked for a list of patients that met the criteria for research, preferably patients that had already been seen, already received tests and treatment and were nearing the end of their visit. The charge nurse then provided the researcher with a list that included bed location, triage score, and diagnosis. Diagnosis was provided so the researcher had some idea of the underlying conditions and could take any necessary precautions (i.e. gowning up for isolation patients). From there the researcher walked up to each patient, informed them of the study and what was required (approximately 25 minutes of their time), and asked for their participation. Upon agreement, the patient was provided with a copy of the consent letter and given the choice of either completing the survey on their own or having the researcher sit down with them and go through it. Fifty five percent (55%, $n = 108$) of patients requested that the researcher sit down with them and go through the survey, 46% ($n = 90$) of patients preferred to complete the survey on their own. For those that preferred the latter, they were provided with a writing instrument, a copy of the consent letter and survey, and an envelope for which to place their completed survey in. The researcher would depart and return 30 minutes later to pick up the completed survey. Once a survey was completed, it was placed in an envelope, the envelope sealed, and then placed in the completed survey drop box located at the triage desk.

6.3.3 Sample

Out of a population of two hundred and sixteen patients ($N = 216$), approximately two hundred patients provided their consent to participate in the research ($n = 198$), providing a response rate of 91.67%. Fifty five percent (55.10%) of respondents were female ($n = 109$), 44% male ($n = 88$), with a mean age of 56 years ($SD = 22.17$). Cumulative percent figures show that 50% of respondents were born prior to 1950 with the largest percentage (17.20%, $n = 34$) born between the years of 1920-1929. These figures illustrate the aging demographics frequenting ERs. However it is less about demographics and more about increasing need with age. Forty percent ($n = 78$) of respondents were retired, and 28% ($n = 56$) employed on a full-time, regular basis. Thirty nine percent (39%) of respondents had college or technical level education ($n = 77$), 38% claimed their highest level of education to be high school ($n = 75$). On average, respondents had lived and received health service within VIHA for 311.07 months ($SD = 241.67$ months).

During the period of study, patient diagnoses were largely within the following three domains: gastrointestinal (e.g. abdominal pain, appendicitis, ascites, bowel disorders, constipation, diarrhea, gastroenteritis, GI bleed, hernia, indigestion) at 20% ($n = 39$), cardiac (e.g. chest pain, congestive heart failure, palpitations) at 19% ($n = 37$), and orthopaedic (e.g. various fractures and dislocations) at 10% ($n = 20$). In other words, abdominal discomfort, heart problems and fractured or dislocated bones were the primary reason patients presented to the ER. For 61% of respondents, this was their first visit to the ER for their presenting condition ($n = 121$). For 37% ($n = 74$), this was a repeat visit. The majority perceived their condition to be of an emergent (CTAS 2) or urgent (CTAS 3) nature, however actual nurse triage scores revealed many were triaged as being less-urgent (CTAS 4). The findings indicate that patients often perceive their condition to be more serious than it is perceived by the triage nurse in accordance with the CTAS ratings.

For many, this was their first time to this particular ER this year (59.10%, $n = 117$). Eighty four percent (84%; $n = 167$) of respondents claimed to have visited other ERs within the past year, at least once. When questioned regarding the number of times patients had been to a medical or walk-in clinic within the past year, 61% of respondents ($n = 116$) claimed to have frequented such sites between 0-5 times, 24% of respondents ($n = 47$) visited such sites 10 or more times. Table 6.1 provides a summary of the demographic information.

Table 6.1.
Summary of Demographic Information (n = 198)

Measure	Items	n=198	%	Cumul. %	Mean	SD
Gender	Female	109	55.10%	55.30%	1.45	0.50
	Male	88	44.70%	100.00%		
	Missing	1	0.50%			
Birth year	1910-19	9	4.50%	4.80%	5.68	2.25
	1920-29	34	17.20%	22.80%		
	1930-39	24	12.10%	35.40%		
	1940-49	27	13.60%	49.70%		
	1950-59	24	12.10%	62.40%		
	1960-69	22	11.10%	74.10%		
	1970-79	22	11.10%	85.70%		
	1980-89	23	11.60%	97.90%		
	1990-99	2	1.00%	98.90%		
	2000-06	2	1.00%	100.00%		
	Missing	9	4.50%			
Education	Primary School	7	3.50%	3.60%	2.82	0.99
	Secondary School	75	37.90%	42.30%		
	College/Technical	77	38.90%	82.00%		
	Undergraduate	18	9.10%	91.20%		
	Graduate	15	7.60%	99.00%		
	Other	2	1.00%	100.00%		
	Missing	4	2.00%			
Employment status	Part-time casual	2	1.00%	1.00%	6.43	2.10
	Part-time regular	3	1.50%	2.60%		
	Full-time casual	1	.50%	3.10%		
	Full-time regular	56	28.30%	31.80%		
	On-leave	12	6.10%	37.90%		
	Self-employed	14	7.10%	45.10%		
	Un-employed	8	4.00%	49.20%		
	Retired	78	39.40%	89.20%		
	Student	15	7.60%	96.90%		
	Other	6	3.00%	100.00%		
	Missing	3	1.50%			
	Reason for coming to the ER	Allergy/asthma	3	1.50%		
Cardiac		37	18.70%	20.20%		
Consult		1	.50%	20.70%		
Diabetes		4	2.00%	22.70%		
Ear, nose, throat		1	0.50%	23.20%		
Gastroenterology		39	19.70%	42.90%		
General		10	5.10%	48.00%		
Obstetrics/gynaecology		4	2.00%	50.00%		
Haematology		4	2.00%	52.00%		
Musculoskeletal		16	8.10%	60.10%		
Nephrology		5	2.50%	62.60%		
Neurology		16	8.10%	70.70%		
Oncology		4	2.00%	72.70%		
Ophthalmology		4	2.00%	74.70%		
Orthopaedic		20	10.10%	84.80%		
Pain management		1	0.50%	85.4%		
Psychiatry		3	1.50%	86.90%		
Pulmonary		9	4.50%	91.40%		
Unknown		15	7.60%	99.00%		
Urology		2	1.00%	100.00%		
Triage score perceived	Resuscitation (1)	0	0.00%	0.00%	2.83	0.58
	Emergent (2)	50	25.30%	25.80%		

	Urgent (3)	129	65.20%	92.30%		
	Less-urgent (4)	13	6.60%	99.00%		
	Non-urgent (5)	2	1.00%	100.00%		
	Missing	4	2.00%			
Triage score actual	Resuscitation (1)	1	0.50%	0.60%	2.97	0.62
	Emergent (2)	34	17.20%	19.80%		
	Urgent (3)	112	56.60%	83.10%		
	Less-urgent (4)	30	15.20%	100.00%		
	Non-urgent (5)	0	0.0%			
	Missing	21	10.60%			
# Visits to this ED in the past year	0-1 times	117	59.10%	60.60%	1.58	0.92
	2-3 times	55	27.80%	89.10%		
	4-5 times	10	5.10%	94.30%		
	6-7 times	9	4.50%	99.00%		
	8-9 times	0	0.00%	100.00%		
	10+ times	2	1.00%			
	Missing	5	2.50%			
# Visits to other EDs in the past year	0-1 times	167	84.30%	87.40%	1.16	0.48
	2-3 times	19	9.60%	97.40%		
	4-5 times	3	1.50%	99.00%		
	6-7 times	2	1.00%	100.00%		
	Missing	7	3.50%			
# Visits to other medical or walk-in clinics in the past year	0-1 times	31	15.70%	16.20%	3.40	1.80
	2-3 times	40	20.20%	37.20%		
	4-5 times	45	22.70%	60.70%		
	6-7 times	18	9.10%	70.20%		
	8-9 times	10	5.10%	75.40%		
	10+ times	47	23.70%	100.00%		
	Missing	7	3.50%			

6.3.4 Instrument and Measures

A paper survey was used as the means for data collection. The survey, entitled 'The Service Outcome Questionnaire' (Appendix 6.1) contained 69 questions of a five point Likert scale that assessed various elements of service design, in addition 13 demographic questions, and three open ended/feedback questions. Completion time of the survey was approximately 12 minutes, participation was voluntary. The questionnaire was developed using scales previously developed and well-established in the literature by Boudreaux et al. (1999), the Department of Health (2006), Parasuraman et al. (1988), Spreitzer (1995), and Thomas & Velthouse (1990). The items were categorized and measured under the following variables or elements. Results of the principal component analyses are presented in the Appendices (Appendix 5.2).

Structural Elements

Element 1: Internal Service Quality

- Physical design (24 items, questions 1-24)

Outcome Elements

Element 2: External Service Quality

- Responsiveness (3 items, questions 25, 31, 33)
- Tangibles (3 items, questions 26, 27, 32)
- Reliability (3 items, questions 28, 29, 30)
- Assurance (3 items, questions 34, 35, 36)
- Empathy (3 items, questions 37, 38, 39)

Element 3: Patient Satisfaction

- Triage and registration (4 items, questions 49-52)
- Nursing Staff (3 items, questions 53-55)
- Physician staff (5 items, questions 56-60)
- Discharge process (3 items, questions 61-63)
- Other (5 items, questions 64-68)
- Overall patient satisfaction (1 items, question 69)

Element 4: Patient Empowerment

- Meaning (3 items, questions 40-42)
- Competence (3 items, questions 43-45)
- Impact (3 items, questions 46-48)

A description of the elements are as follows:

Physical design (PD). PD was assessed using a portion of the instrument developed by the NHS Estates (24 items, Cronbach's alpha 0.89) (Department of Health, 2006). The dimensions or sub-elements of physical design were: *Ambience*: factors that affect perceptions of and responses to the built environment (four items, Cronbach's alpha 0.75); *User-friendly*: the extent to which the built environment provides comfort to users (six items, Cronbach's alpha 0.71); *Functionality*: how accommodating and adaptable the space is in relation to purpose (five items, Cronbach's alpha 0.75); *Access*: access to amenities such as shopping for essentials, food services, banking, the outdoors, and media/technology (three items, Cronbach's alpha 0.69); *Organization*: way finding and internal and external cleanliness of the department (three items, Cronbach's alpha 0.62); and *Layout*: the way the department is laid out, enabling users to perform their duties and operate as a system (three items, Cronbach's alpha 0.59); Factor analysis with varimax rotation produced six components with eigenvalues over 1.00 explaining for 55.68% variance, the rotation converged in 15 iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Service quality (SQ). Service quality refers to the manner in which services are delivered to the patient that influences the perceived value of the service. Service quality was assessed using an adaptation of the SERVQUAL instrument (15 items, Cronbach's alpha 0.86; Babakus & Boller, 1992; Cronin & Taylor, 1992; Parasuraman et al. 1988) that measured the following dimensions: that measures the following dimensions: *Tangibles*: the appearance of the physical facilities, equipment, personnel, and communication materials (three items, Cronbach's alpha 0.43). *Reliability*: the ability to perform the promised services both dependably and accurately (three items, Cronbach's alpha 0.62). *Responsiveness*: the willingness to help clients and to provide prompt service (three items, Cronbach's alpha 0.64). *Assurance*: the knowledge and courtesy of employees as well as their ability to convey trust and confidence (three items, Cronbach's alpha 0.64). *Empathy*: the provision of caring, individualized attention to clients (three items, Cronbach's alpha 0.74). Factor analysis with direct oblimin rotation produced three components with eigenvalues over 1.00 explaining 65.22% variance. The researcher identified these three underlying constructs as: *Tangibles*: the appearance and maintenance of the physical facilities, equipment, and records (three items, Cronbach's alpha 0.52); *Responsiveness*: the ability to deliver services, willingly, politely, promptly, with understanding and empathy (nine items, Cronbach's alpha 0.87); and *Professionalism*: employees are dressed professionally, work in support of each other, and carry out services right the first time (three items, Cronbach's alpha 0.35). Although the reliabilities reported here are lower than those reported in the literature, the researcher decided to not reduce any of the items due to the items being well-established in the literature. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher perceived levels of service quality.

Patient satisfaction (PS). Patient satisfaction with service is defined as "an attitude-like judgement following a purchase act of a series of consumer product interactions" (Lovelock & Wirtz, 2004, p. 44) and was assessed using a 21 item survey (Cronbach's alpha 0.90) developed by Boudreaux, Ary, Mandry, & McCabe (1999). The items measure several domains including satisfaction with *Triage and Registration* (four items, Cronbach's alpha 0.68), satisfaction with *Nursing Staff* (three items, Cronbach's alpha 0.68), satisfaction with *Physician Staff* (five items, Cronbach's alpha 0.85), satisfaction with *Advice and Discharge Instructions* (three items, Cronbach's alpha 0.80), and satisfaction with *Other* (six items, Cronbach's alpha 0.81). Factor analysis with varimax rotation produced five components with eigenvalues over 1.00 that explained 64.85% variance. The rotation converged in 19 iterations. The researcher identified these five underlying constructs as: satisfaction with the *Care and Courtesy Provided by Staff* (9 items,

Cronbach's alpha 0.85); satisfaction with the *Physician Staff* (4 items, Cronbach's alpha 0.89); satisfaction with the *Courtesy Shown at Triage* (two items, Cronbach's alpha 0.91); satisfaction with the *Wait at Triage and Registration* (two items, Cronbach's alpha 0.49); and satisfaction with the *Wait for the Physician* (two items, Cronbach's alpha -0.26). All items were scored on a five-point rating scale ranging from one (very dissatisfied) to five (very satisfied). Higher scores were indicative of higher levels of patient satisfaction.

During the analysis of the data, two items with regard to the discharge process were excluded from the analysis, hence the 21 items were reduced to 19 items (Cronbach's alpha 0.89). The reason for this is that the majority of respondents did not answer those two questions as they were surveyed while still being a patient in the ER and were not yet discharged.

Patient empowerment (PE). Patient empowerment is increased intrinsic task motivation manifested in a set of cognitions reflecting an individual's orientation to his or her role, in this case the patients' role in achieving and maintaining optimal health and well-being. The original set of four cognitions as defined by Spreitzer et al. (1997) and Thomas & Velthouse (1990) was reduced to a set of three cognitions: meaning, competence, and impact, producing a nine-item measure of patient empowerment (Cronbach's alpha 0.83). *Meaning:* is the value of a goal or purpose, judged in relation to an individual's own ideals or standards (three items, Cronbach's alpha 0.76). *Competence:* is an individual's belief in his or her capability to perform personal health care activities with skill (three items, Cronbach's alpha 0.78). *Impact:* is the degree to which an individual feels capable of influencing their personal health outcomes (three items, Cronbach's alpha 0.88). Table 2 displays the results of factor analysis with varimax rotation, which produced three components with eigenvalues over 1.00 explaining for 72.71% variance. The rotation converged in four iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of empowerment.

Table 6.2.

Results of Principal Component Analysis of the Measure of Patient Empowerment (n = 198)

Items:	Component 1	Component 2	Component 3
Patient Empowerment	Meaning	Competence	Impact
PE Meaningful Service Important	0.72		
PE Meaningful Activities	0.75		
PE Meaningful Service	0.87		
PE Competence Confident		0.76	
PE Competence Self assured		0.77	
PE Competence Mastered		0.73	
PE Impact Health			0.78
PE Impact Control			0.87
PE Impact Influence			0.89
<i>Alpha</i>	0.72	0.75	0.88
<i>Eigenvalues</i>	3.91	1.52	1.12
<i>% Variance</i>	43.41	16.91	12.39

The intention with this research paper is to present a broad overview of patient's perceptions of service in the ER setting. Therefore, the variables will be analyzed and reported as single component solutions.

6.3.5 Data Analysis

Fit indices. The researcher used SEM methods, implemented in LISREL 8.72 (Jöreskog & Sörbom, 1993) for data analyses. Missing data was replaced with the series mean to ensure a complete sample of $n = 198$. The mean substitution was calculated for each of the 10 variables and the input for each analysis was based on a zero-order correlation matrix. The goodness of fit of the models was evaluated using absolute and relative indices. The goodness-of-fit indices calculated were (see Joreskog & Sorbom, 1993): i) the chi-square goodness-of-fit statistic, ii) the root mean-square error of approximation (RMSEA), iii) the comparative fit index (CFI), iv) the root mean square residual (RMR), v) the goodness-of-fit index (GFI), and vi) the adjusted goodness of fit index (AGFI).

Pattern matching. Three feedback sections were provided on the survey. The dominant mode for analysis for these qualitative comments was the approach known as 'pattern matching' (Yin, 1994) whereby the comments were analyzed for themes. Yin describes pattern matching as a way of linking the data to the propositions whereby several pieces of information from the same case may be related to some theoretical proposition. Such logic compares an empirically based pattern with a predicted one. If the patterns coincide, the results can help to strengthen the internal validity. The

comments provided by patients may help to understand the links in the chain and reflect insights into theory.

6.4 Results

6.4.1 Descriptive Analyses

Table 6.3 presents the mean values, standard deviations, final internal consistencies, and inter-correlations of scales. With regard to the descriptive statistics, there were low ratings for PD ($M = 2.90$, $SD = .60$), moderate ratings for SQ ($M = 3.63$, $SD = .55$), PS with service ($M = 3.66$, $SD = .61$), and higher ratings for PE ($M = 3.89$, $SD = .61$). These statistics indicate that ER patients perceive the departments as having poor physical design. Service quality and PS with service are more within the 'Neither Satisfied Nor Dissatisfied' and low end of 'Satisfied' range indicating that patient's are largely undecided as to the quality of service provided along with their satisfaction with service. However, surprisingly they perceive themselves as feeling somewhat empowered (energized or motivated) as a result of the service provided in the ER. The contribution of service on patient empowerment is confirmed in the detail of the survey items. The items targeting patient empowerment were phrased, "as a result of the service provided, do you feel (patient empowerment items)?"

Table 6.3.

Means, Standard Deviations, Internal Consistencies, and Inter-correlations (Aggregated Measures; $n = 198$)

	Variable	<i>M</i>	<i>SD</i>	α	1	2	3	4
1	Physical Design	2.90	.60	.89	1.00			
2	Service Quality	3.63	.55	.86	.43**	1.00		
3	Patient Satisfaction	3.66	.61	.89	.34**	.80**	1.00	
4	Patient Empowerment	3.89	.61	.83	.20**	.56**	.59**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

As expected, there were significant and positive correlations between all four variables. The most strongly related association was between SQ and PS with service ($r = .80$). Other strong correlations were observed between PD and SQ ($r = .43$), SQ and PE ($r = .56$), PS with service and PE ($r = .59$). In the EDs under study, the PD of the service setting is related to perceptions of SQ. SQ is strongly related to PS with service, and feelings of empowerment.

Confirmatory Factor Analyses

Next, confirmatory factor analysis (CFA) and structural equation modeling (SEM) tests were conducted using LISREL 8.72 (Jöreskog & Sörbom, 1993). Fit indices for all models are

summarized in Table 4. With regard to the model, a single-indicator model was used. Only the first model (Model: M1, Figure 2) and the third and final research model (Model: M3, Figure 3) are presented here. Model 3 presents the final LISREL analysis.

Table 6.4.

Fit Indices for Measurement and Structural Equation Models and Chi Square Difference Tests for Structural Models

Model	Figure	df	Chi Square (χ^2)	RMSEA	CFI	RMR	GFI	AGFI	$\Delta\chi^2$	Δdf
Model 1 (M1)	2	3	81.18 ($p = 0.00$)	0.34	0.75	0.21	0.85	0.50		
Model 2 (M2)	n/a	2	7.95 ($p = 0.01$)	0.12	0.98	0.03	0.98	0.90	$M_1-M_2=73.23$	1
Model 3 (M3)	3	1	.85 ($p = 0.36$)	0.00	1.00	0.01	1.00	0.98	$M_2-M_3=7.10$	1

First, the researcher tested the model (M1) which is the simplest model. Shown in Figure 6.2, this model demonstrated poor fit with the data ($\chi^2(3) = 81.18, p = .00, \chi^2/df = 27.06, RMSEA = .34, CFI = .75, RMR = .21, GFI = .85, AGFI = .50$). On the basis of the modification indices, the largest modification index being from PD to PS with service (62.55), the fit of the model could be improved by freeing up a direct path between PD and PS with service. The researcher thereby obtained a revised model (M2) that postulates PD as being a direct predictor of PS with service. This model was fitted and the fit indices improved ($\chi^2(2) = 7.95, p = .01, \chi^2/df = 3.98, RMSEA = .12, CFI = .98, RMR = .03, GFI = .98, AGFI = .90$). There was a significant change in the χ^2 value ($\Delta\chi^2(1) = 73.23, p < .01$).

The modification indices for M2 suggested freeing a direct path between PD to PE (7.35). On the basis of this, a third model (M3) was obtained in which a direct path from PD predicting PE was allowed. This modification improved the model further showing a better fit with the data ($\chi^2(1) = .85, p = .36, \chi^2/df = .85, RMSEA = .00, CFI = 1.00, RMR = .01, GFI = 1.00, AGFI = .98$). Again there was a significant change in the χ^2 value ($\Delta\chi^2(1) = 7.10, p < .01$). The standardized beta and gamma paths in M3 (Figure 6.3) reflect those from the final LISREL analysis. Model (M3) suggests that the PD has a direct impact on all three of the criterion variables (SQ, PS with service, and PE), not just mediated through SQ and PS with service. All structural paths were significant; no other modification indices would improve the fit of the model.

6.4.2 Testing the Propositions: The Research Model

According to Baron & Kenny (1986) and Judd & Kenny (1981), when a mediational model involves latent constructs, SEM provides the basic data analysis strategy (James, Mulaik, & Brett, 2006). In accordance with the four basic steps to establish mediation effects proposed by the authors, and to test propositions, the researcher fit the research model (as depicted in Figure 3) to the data. Each of the latent constructs (PD, SQ, PS and PE) was estimated with a single indicator. Information on the measurement error of these constructs was incorporated into the model by estimating the measurement error using the formula $(1 - \alpha)$ (Bollen, 1989) and assigning this value to each of the measurement error terms. The results are given in Table 4 and show that the research model (M3) fits the data, with all of the fit indices meeting the criteria. All path coefficients were significant.

In testing the four propositions, the results show that PD was a predictor of SQ in health care (M1), therefore proposition one (P1) was supported by the data. In attempting to understand this direct link, Berry et al. (2004) pose the following question, 'how do patients evaluate a service as proximate, diffuse, complex, personal, and important as health care?' The answer is that they are especially attentive to what they can see and understand so that they can interpret what they cannot see and understand. The nature and significance of health care turns its patients into inspectors looking for clues to reassure themselves of the organization's quality and competence. In other words, because patients understand the physical setting, the quality of PD is used as an indicator in determining service quality.

In addition, SQ partially mediated the relationship between PD and PS with service (M2). Proposition three (P3) therefore was partially supported by the data. In understanding this direct path, patients noted the following: "The staff far exceeds the facilities. If the facilities were better, the service would go up", and "staff just don't have the time to care about you as a person. The services leave a lot to be desired, it's not the fault of the staff, it's the lack of staff, the lack of resources, and the lack of space, they cannot look after people well."

Proposition two (P2) stated that 'PD is a facilitator of PE in health care'. This path presented in model two (M2) and was applied in model three (M3). The addition resulted in a model that showed a better fit with the data. Thus proposition (P2) was supported by the data. The standardized and statistically significant beta and gamma paths in M3 reflect this. A comment such as: "I have been forgotten a couple of times and last night I needed to use the washroom, there was no urinal, nobody came to help, they had me hooked up to the monitor, I was restricted and not able to do anything for myself," helps one to realize how the physical environment and simple tangible items like urinals and monitor cables can influence the experience of the patient and patient empowerment.

Lastly, proposition four (P4) suggested that PS with service mediates the relationship between SQ and PE. This proposition was partially supported by the data. The standardized and statistically significant beta and gamma paths in M3 reflect this. PS with service only partially mediated the relationship between SQ on the one side and PE on the other as the design of the physical setting had direct links to PS with service (M2) and PE (M3). The findings reinforce the importance of using PD to as a means to facilitate SQ, PS with service, and PE. The final research model (M3) suggested that PD has a direct impact on all three of the criterion variables (SQ, PS with service, and PE), not just mediated through SQ and PS with service. Comments relative to this finding are as follows: “They need to prioritize better. Rather than spend money on med carts to push around they need more storage space, more room ... we don't have the staff or the space to accommodate the demand. Simply stated, the issues are not being addressed”; “I return from x-ray and it's been 90 minutes now with no communication. It would be nice if people would be specific. Instead of saying ‘the doctor will be here shortly’, I've been waiting 1.5 hours now and I don't know what's going on”. A family member commented “I have been waiting over three hours in this waiting room to find out if someone is going to be kept overnight, this is unacceptable!” Others comments suggested that “staff attend to the little things like making sure the patients have water and a snack if appropriate”. Staff were urged to be more considerate of patients (e.g. if shivering, get them a blanket) and to communicate more with patients, which would facilitate a great sense of empowerment on behalf of the patient.

Such commentary sheds light on the findings from the study, generating richness to the data, and bringing forth a better understanding of the reality of the situation from the perspective of patients.

6.4.3 Collated Version of Qualitative Comments on PD

The following table (Table 6.5) presents a summary of themes extracted from patient comments included on the survey (e.g. feedback questions). The feedback questions asked the following: i) Provide an example of something you find ‘positive’ about the design of services in this department; ii) Provide an example of something you find ‘negative’ about the design of services in this department; and iii) Provide a ‘recommendation’ for improvement. The responses were aggregated and analyzed for themes, a mode of analysis known as pattern matching (Yin, 1994). As the final research model (M3) suggested that the PD has a significant and direct impact on all three of the criterion variables (SQ, PS with service, and PE), the following themes are illustrative of the

impact of PD. This summary of themes assists in understanding the links in the chain and reflects insights into theory.

Table 6.5.

Collated Version of Qualitative Patient Comments (Included in the Survey)

Physical Design	
Ambience	A comment was made: "I realize I'm not coming into a country club." The design of physical facility does not engender trust nor give off a warm, welcoming feeling.
Entrance	Comments were made with regard to the lack of signage upon entering the ER, people were unsure of where to go first. In one ER, distinctive coloured wall stripes were helpful in directing patients. Comments were also made regarding the inappropriateness of people smoking outside the entrance way to the ER.
Equipment	Patients commented on the need for more modern equipment in the ER, along with the need for more equipment in general. For example, one patient commented that he presented to the ER with a fractured leg and upon arriving at the ER, there were no wheelchairs with foot rests, he had to hold his leg up on his own.
Interior	Patients commented that the decor and ambience of the ER is poor. One patient commented "the department needs a good paint job!" Many found the decor to be cold and outdated, and provided suggestions for fresh paint - warm, brighter, happier colors. Two patients commented on the maintenance and upkeep of the department after noticing "big chunks of arborite chipped off the corners," "the walls need repairing" and "there are large holes in the floor covered with duck tape - the apparent cause leaking asbestos." Others expressed the need for stretchers to be more comfortable and longer (e.g. "I'm 5'8" and this stretcher is too short"). In addition, requests were made for more comfortable chairs in ER, preferably chairs with arms or recliner chairs for family at the bedside.
Lighting	Patients commented "the lighting is terrible, its' fluorescent. The department should switch to halogens, softer and more indirect lighting." Patients requested the addition of windows to the ERs providing for natural light/daylight.
Nursing Desk	Patients commented: "It's nice to see a central desk where staff gather, however too much noise comes from the nurse's station and the conversation is often inappropriate ...I heard two nurses laughing about putting preparation H under their eyes" ... "Staff seem to stand around a lot eating and talking unprofessionally."
Organization / Cleanliness	Many patients commented on the lack of cleanliness in the ERs. For example: The department is dirty" ... "Outside its messy, there's overflowing garbage cans at the front entrance and a thousand cigarette butts on the ground." Inside, "washrooms were poorly maintained". One patient stated, "there were dirty pull-up pants in that room and that shared washroom for those 10 beds smells pissy, the housekeeping has slipped." Patients requested for washrooms to not be co-ed and to be centrally located in the department, within easy access. Patients identified the need for more thorough housekeeping and better organization of space.
Patient Room	While one patient commented "I like the small individual rooms with walls and doors" another commented "it would be nice to have more rooms instead of being shoved in with the towels and linen." A frequent comment was how patients were being placed in stretchers directly beside an 'isolation' or infectious patient and the only thing separating them was a curtain.

Privacy	Patients commented: "there's no privacy in the department." Patients requested private rooms with doors for privacy. They requested a place for staff to discuss patients and with patients in privacy. This was also suggested as a way to cut down on the noise from the nursing station.
Proximity	Patients commented on how the department is located in close proximity to medical imaging and how patient parking is close by the entrance to the ER.
Quiet Area	Patients requested for there to be a convenient place for family to go and relax - a quiet zone, somewhere comfortable where family can go while patients are being examined, having tests or sleeping.
Space	There is a need for more space and storage area. Patients commented that the ER should be twice as big so people are not lined up in the hallways and out the door. There were requests to separate psychiatric patients from cardiac patients as this is viewed as a cause of additional stress. A cardiac patient stated "I could see what was going on with the suicidal patient which added to my stress. The general mix is not good."

6.4.5 A Final Analysis of Variance

After analyzing and interpreting the data, the researcher decided to conduct a final statistical test (analysis of variance: ANOVA) to examine the probability of there being an observed difference between PD, SQ, PS with service and PE, and some of the demographics variables (specifically: reason for presenting to the ER/diagnosis, triage score, gender, birth year/age, education, number of visits to this ER this year, number of visits to other ERs this year, number of visits to medical clinics this year, and whether the survey was self-administered or administered by the researcher). The findings that were statistically significant are presented in Table 6.6. There were no significant and observable differences noted between patients of varying acuity or triage scores.

Table 6.6.

ANOVA Table - Demographic Variables and PD, SQ, PS, and PE

Demographics	Service Elements	Sum of Squares	df	Mean Square	F	p
Gender	Physical Design	.41	1	0.41	1.15	0.29
	Service Quality	1.28	1	1.28	4.40	0.04
	Patient Satisfaction	1.62	1	1.62	4.38	0.04
	Patient Empowerment	1.30	1	1.30	3.59	0.06
Age	Physical Design	5.24	9	0.58	1.65	0.11
	Service Quality	1.63	9	0.18	.60	0.80
	Patient Satisfaction	3.01	9	0.33	.86	0.56
	Patient Empowerment	6.30	9	0.70	2.00	0.04
Survey Administration (self/researcher)	Physical Design	0.17	1	0.17	0.47	0.50
	Service Quality	0.14	1	0.14	0.45	0.50
	Patient Satisfaction	0.77	1	0.77	2.05	0.15
	Patient Empowerment	4.72	1	4.72	13.67	0.00
Visits to other ERs	Physical Design	1.47	3	0.49	1.35	0.26
	Service Quality	0.46	3	0.15	0.51	0.68
	Patient Satisfaction	2.64	3	0.88	2.32	0.08
	Patient Empowerment	3.07	3	1.02	2.80	0.04

There were significant correlations between survey administration (whether the researcher administered the survey or the survey was self-administered) and age ($r = .34$), survey administration and PE ($r = .23$), and age and PE ($r = .19$). These correlations were significant at the 0.01 level of analysis (2-tailed). There were also significant relationships between gender and PS with service ($r = .15$), and gender and SQ ($r = .15$), which were significant at the 0.05 level of analysis (2-tailed). The relationships between survey administration and age, survey administration and PE, and age and PE were thought to be the result of the older population visiting the ERs, their unfamiliarity/lack of security with ERs and the department's lack of 'homeliness.' It was felt the older population was very appreciative of their time spent with the researcher, as it brought a sense of comfort, security, and distraction to them, even if just for a short while. An interesting finding is that in comparing the mean scores of PD, SQ, PS, and PE between groups (group one: survey was administered by the researcher; group two: survey was self-administered), with the exception of SQ, the means were all higher among group two (survey self-administered) versus group one. In addition, males rated higher on all of the variables in comparison with females; and patients that had frequented 'other' ERs between six to seven times within the past year rated higher on all variables in comparison with those patients that frequented ERs much less (either their local ER or another ER). The latter finding must

be observed with caution due to the large difference in sample size. These findings are presented in the table below (Table. 6.7).

Table 6.7.

Descriptive Comparison Table of Demographic Data and PD, SQ, PS, and PE

Demographics	Survey Admin/ Researcher (n = 108)	Survey Admin/ Respond (n = 90)	Female (n = 109)	Male (n = 88)	Other ER 0-1 Visits (n = 167)	Other ER 2-3 Visits (n = 19)	Other ER 4-5 Visits (n = 3)	Other ER 6-7 Visits (n = 2)
Variables	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
Physical Design	2.87/ 0.55	2.93/ 0.66	2.86/ 0.58	2.95/ 0.62	2.89/ 0.59	2.89/ 0.67	2.69/ 1.03	3.71/ 0.41
Service Quality	3.66/ 0.53	3.61/ 0.57	3.57/ 0.54	3.73/ 0.54	3.66/ 0.54	3.54/ 0.57	3.42/ 1.10	3.83/ 0.24
Patient Satisfaction	3.61/ 0.60	3.73/ 0.63	3.59/ 0.61	3.77/ 0.60	3.70/ 0.61	3.44/ 0.60	3.02/ 1.23	4.02/ 0.04
Patient Empowerment	3.75/ 0.57	4.06/ 0.61	3.82/ 0.63	3.99/ 0.57	3.93/ 0.59	3.63/ 0.68	3.30/ 0.86	4.33/ 0.47

6.5 Discussion

In considering the challenges facing the ER, this study explored the patient's perspective of service with focus on determining the conditions for PE. Using a modified version of the Service Profit Chain, this study explored outcomes of service in terms of SQ, PS with service, and PE. This study also explored the patient's perception of PD and the role it plays in creating an empowering service experience for patients. The larger proposition being that PE is largely dependent on SQ and PS with service, and that PD is a predictor of SQ and a facilitator of PE in health care. Using data collected from ER patients ($n = 198$), principle chain relationships were explored.

The four propositions for the study were supported by the data. SEM showed that SQ only partially mediated the relationship between PD and PS with service (P3). PS with service only partially mediated the relationship between SQ and PE (P4), and the design of the physical setting had direct links to SQ, PS with service and PE. The findings reinforce the importance of PD as a means to facilitate SQ, PS with service, and PE in EDs, a finding that has implications for ERs, hospitals, and the larger health care system.

6.5.1 Linking PD to SQ

This role of PD is not well understood with regard to organization studies or practice in general. After more than a century of formal studies of organization, and despite the physical reality of organizations, there has been relatively little systematic work linking the PD of organizations into organization theory (Hatch, 1997).

In practice, organizations rarely tie PD to their business strategies or performance (Heerwagen, 2002). Practitioners will spend hundreds of thousands of dollars on new personnel training programs in the process of genuinely attempting to restructure the way in which work is organized yet the potential for the most pervasive resource in the work environment, the physical setting, to contribute to these efforts is largely ignored. There appears to be a renewed interest in PD, stimulated by sources coming from outside traditional organizational domains such as service management (Bitner, 1992), health care (Ulrich, 2004), architecture (Hamilton & Sherman, 2005), and marketing (Berry, Parker, Coile, Hamilton, O'Neil, & Sadler, 2004).

Focusing attention on SQ, the building in which patients receive service is inherently part of the service experience. It is an important and contributing factor in creating a service climate (Schneider et al. 2002) and in delivering service quality (Bitner, 1992). It is an objective and tangible object that patients use to evaluate service. In the environment of health care (and the ER) which can be a difficult place for people to be and to understand, the built environment is something that people can see and understand. The nature and significance of health care turns its patients into inspectors looking for clues to reassure themselves of the organization's quality and competence. The PD of the service setting in terms of the buildings, equipment, furnishings, signage, colours, art, landscape, linen, and other sensory stimuli offer an outpour of clues about the organization, and these clues have a disproportionate impact on the patient's evaluation of service (Berry & Bendapudi, 2003; Berry et al., 2004; Hartman, 2001). In effect, the PD of a service organization such as a hospital offers significant evidence regarding the value placed on service ... and people.

This study reinforced the importance of PD to health care, and to service delivery. As expected, the data showed significant and positive relationships between PD and SQ, SQ and PE, and PS and PE. In other words, the PD of the ER was significantly related to patient perceptions of SQ, which was strongly related to their satisfaction with service, and feelings of empowerment as a result of the service provided. The strong relationship between PD and SQ was further evident in the testing of proposition P1 using SEM which predicted PD as a facilitator of SQ. This proposition was supported by the data.

The findings of this study illustrate the importance of PD in an attempt to improve SQ in the ER. Working and receiving service in an environment of poor PD, and under the demanding conditions as seen in the ER, exerts an influence on attitudes and perceptions of SQ. At the end of the ER visit, the patient wants to leave the department with a positive health outcome, having had a quality service experience. When they reflect on the experience, ideally they want to remember the physical setting as being clean, comfortable, and accommodating; they want to remember that

service was prompt; the providers responsive; and the social interactions genuine and informative. The patient does not want to look back and remember the big chunks of arborite that were chipped off the nursing desk, or the holes in the walls, or the patient placed in the linen room due to lack of space, or the hole in the floor covered with duck tape due to leaking asbestos, or the washroom shared between 20 patients that smelled "pissy". The patient presents to the ER because their health and well-being are in jeopardy and they should be able to expect a quality service experience. As evidenced by the feedback provided in this study, a relationship exists between PD and SQ and the exploration of the relationship with the suggestion to improve is justified.

6.5.2 Are PD and PE Part of the Answer?

As a consequence of economic pressures, hospital bed closures, nurse and physician shortages, shifts away from acute care, aging demographics, increasing patient acuity and co-morbidities, ERs across Canada have experienced an increase in the number of patients visiting ERs and admitted patients being held in ERs. This situation has led to over crowding in the ER, which has become widely recognized as the most significant problem facing ERs (CAEP, 2003; Bond et al., 2007). ER overcrowding can be defined as a situation in which the demand for emergency services exceeds the ability of physicians and nurses to provide quality care within a reasonable time frame (CAEP, 2003). Closing hospital inpatient beds translates into a reduction in the system's acute care capacity and more patients being housed on stretchers and treated in corridors in the ER when previously they were admitted and placed on a ward.

The situation facing the ER and the extent to which patient satisfaction is affected is reported by the various Health Ministries through the use of patient surveys (Murray, 2007). However the extent to which the state of ERs affects perceptions of SQ and empowerment has been unknown. This study presents the first empirical examination of this relationship in the ER setting.

Empowerment may be viewed as a complex experience of personal change. It is guided by self-determination and may be facilitated by health care providers through the adoption of a patient centred approach to service provision whereby the patient is educated and informed, feels a sense of control, meaning and competence (Spreitzer et al., 1997; Thomas & Velthouse, 1990) as a result of the service experience. As patients become empowered, they develop a greater sense of self-efficacy regarding their injury or illness and corresponding treatment related behaviours. They may express changes in life priorities and values. As a result of the empowerment process, they are expected to better self-manage not only their illness but also their lives.

The current study found that despite the situation facing the ER, some patients found the service experience to be empowering while others did not. Male patients in particular claimed to

experience greater feelings of empowerment, and out of the four main variables assessed (PS, SQ, PS with service, and PE), perceptions of PE had the highest mean score. In other words, perceptions toward PE were viewed most favourably. There were also strong and significant correlations between PE and SQ, and PE and PS with service and advanced statistical analysis revealed PD as being a direct facilitator of PE in the ER setting.

Research showing the benefits of PD for patient empowerment is minimal (Douglas & Douglas, 2004; Douglas & Douglas, 2005; Williams et al., 2008) furthermore, a direct link between PD and PE has not been assessed empirically prior to this. It is apparent there are several indicators that can improve and possibly facilitate PE through the design of the physical service setting. An important component of empowerment has to do with control and self-determination or autonomy. In the physical hospital environment, control may refer to the ability to manipulate immediate surroundings, (e.g. turning lights on/off or changing the temperature in the room). Lack of this is often frustrating to patients which can cause unnecessary stress, dissatisfaction and prolong recovery time. Thus, creating an environment in which patient control is facilitated is beneficial.

So what does this mean? In an environment where service providers are tasked with such pressures and demands on their time, PE may be viewed as being part of the answer to addressing some of the challenges facing ERs and the larger health care system. Empowered patients, embody the spirit of health empowerment and take ownership of their health and well-being thereby influence personal health outcomes. Disempowerment after all is too common among patients and may add to their distress and may present as an obstacle to recovery. When a patient embodies the spirit of empowerment, there is a shift in paradigm with a move from disease management to health promotion. There is more of a reliance on the self and less of a reliance on the health care professional and the health care system. This has positive implications for the ER, hospitals and the larger health care system in terms of the demand placed on human and financial resources. The key is to design services in such a way that facilitates PE. The creation of a meaningful service experience where feelings of self-competence are increased along with the realization of their own capability in influencing their personal health outcomes are key.

6.5.3 Practical Implications

The results suggest that the physical design of the ER consequently increases appraisals of SQ, satisfaction with service and feelings of empowerment. In an area of limited research, this study has looked to ER patients, and the field of service management, to establish the links between PD, SQ, PS with service, and PE. These findings have practical implications for health care organizations.

The findings shed light on the benefits to be made by embracing the fields of service management, business and architecture and applying the knowledge gained to health care. In attempts to improve service delivery and service quality in health care, a common error or misunderstanding is to look solely within health care for solutions. What this study suggests is to look outside of health care for innovative design solutions. The application of a modified version of the Service Profit Chain, or a portion of, to health care is one such example. Not only does this framework provide a means for implementing a strategic service vision, it can also be viewed as a design tool and a measure of success.

Any service organization has to meet the quality challenge to ensure present and future success. Health care providers who interact with patients daily to provide service represent a key element in this process as do health care administrations, planners, designers and architects who make the decisions pertaining to the design of the physical facility. Actions should be taken that improve the quality of the physical service environment and strategies implemented to facilitate empowerment. Examples of such actions were provided in the Collated Version of Qualitative Comments. Empowered patients embody the spirit of health and take ownership of their individual health and well-being. This has implications for both personal and organizational health outcomes. The key is to design services in a way that supports a sense of personal empowerment in health care.

6.5.4 Strengths, Limitations and Further Research

Some of the strengths of this study are as follows: i) The researcher applied a modified version of the Service Profit Chain to exploring principle relationships of the service delivery system in the ER. The researcher developed the conceptualization of the Service Outcome Chain, applicable to public service organizations such as hospitals. The findings provide support for application of the Service Outcome Chain to health care. ii) By applying the Service Outcome Chain, the researcher assessed the patient perspective of internal, structural SQ features (specifically PD) and outcomes of service such as SQ, PS, and PE. iii) The researcher tested specific indicators of the patient service experience in ERs that are rarely assessed or often overlooked (PD and PE). iv) The researcher used SEM and aggregated scores (in contrast with previous research). v) Prior research on the

determinants of patient satisfaction has focused on the inpatient encounter. This study is different in that it focuses specifically on the ER, a setting that has received little attention in scholarly works, yet is the place where much of health care today is provided. To the extent that most organizational practices and patient service perceptions examined in this study hold relevance to inpatient services, the researcher has reason to believe the results should be transferrable to acute care rendered to inpatients in a variety of service settings (e.g. medical/surgical, palliative, long-term care). vi) Lastly with regard to the measuring instrument (the patient survey) the face, content and construct validities of the survey appeared to be adequate. The measurement instrument was specifically constructed with the study's purpose in mind.

A point to make here is that the researcher is aware of only one other study to date (Scotti et al., 2007) that applies a conceptual model for linking the work environment to SQ and PS in health care and tests their model using SEM. In this study, the authors claim that they too are aware of no other published studies that have empirically verified a chain of effects from organizational practices to SQ to PS with service in a health care setting. The linkage model tested in their study offers additional support for the substance and sequence of events that connect organizational practices with patient attitudes. Moreover, their study underscores and adds empirical weight to the role played by SQ as a variable that integrates the connections between organizational and consumer behaviour within a health care context.

The present study has some weaknesses or limitations: i) The researcher used only patient data rather than employee and patient data simultaneously in the research model, this can lead to problems arising from the common variance methods and external validity. ii) The data were analyzed at individual level of analysis (ER patients in general), the research would benefit from applying an organizational level of analysis in addition to the individual level of analysis. A comparison across the various ERs within VIHA would add meaningful insight to the data. iii) The research is lacking in qualitative input, although some qualitative commentary has been provided, a series of post-survey interviews would add richness to the quantitative data. iv) The extent to which similar results would be obtained in the private sector (private sector ERs) is unknown. v) The variables were assessed solely through perceptual measures, which are subjective rather than objective. Although it can be argued that how patients perceive service and service design may be the most valid measure to use for this inquiry, and that patients are subject matter experts on this, some readers may feel that the researcher is unable to confirm with this study how well these perceptions reflect reality. This is something that replication in other locations or settings can

confirm. vi) Finally, the research design advises caution in drawing inferences about causality, because multiple, time ordered perceptual measures necessary to establish causality were not used.

The researcher advocates for further research that examines the linkages in the Service Outcome Chain in acute care inpatient settings as well as research comparing results in private ERs, hospitals, and health care systems with those obtained in public and not-for-profit health care organizations. While most of the variables specified in the model are relevant to a range of settings, the discrete linkages quite likely vary in strength. Furthermore, future research should seek to illuminate the multi-dimensional drivers of PD, perceived patient SQ and PS with service and their relative importance. Enhanced understanding of the aspect level determinants of such assessments would offer practicing health care managers greater instruction on where and how resources should be directed.

In addition, the question remains on how or whether PD leads to superior economic returns on investment and whether PE leads to improved financial outcomes. Strategies that succeed in empowering patients should ultimately result in reduced patient costs per stay/visit and reduced demand placed on ERs, which reduced costs on the larger health care system. A practical example is in comparing the cost of a patient visit to the ER (\$530 non-resident of Canada, \$231 resident of Canada) versus the cost of a patient visit to a medical clinic (\$35) (CHR, 2008).

Further research is needed that examines the linkage between PE and financial performance and to elaborate the sequence of paths that form any such connection.



CHAPTER 7

Assessing a Measure for Physical Design

7.1 Summary

Purpose

This paper presents a detailed view of a measure that may be used to assess the physical design of health organizations in general and emergency rooms (ER) in particular. This measure was applied to assessing physical design (PD) in the three previous studies. The element of PD has been identified and defined as a structural element in the Service Outcome Chain. This study will explore the measure of PD and the service provider's perception of PD in the ER where they work. The larger proposition being that this measure is adequate for assessing the PD of the ER. In addition, it is proposed that PD is a significant predictor of SC in the ER.

Design / Methodology / Approach

Registered nurses ($n = 180$) from ERs throughout the province of British Columbia provided information about the quality of PD in the ER where they work. Furthermore, these nurses provided information on the service climate (SC) within their ER. The data was analyzed using statistical package for the social sciences (SPSS).

Findings

ER nurses gave low ratings to the PD of their ERs. There were especially low ratings for the flexibility/adaptability of the department, its user-friendliness and ambience. The findings also showed significant relationships between attributes of PD such as layout, ambience, amenities, flexibility/adaptability, user-friendliness, cleanliness and SC in the ER. User-friendliness and cleanliness proved to be the strongest predictors of SC.

Research Limitations / Implications

A limitation of this research is that only employee (nurses) data was used in the research model rather than employee and patient data simultaneously. Future research should be conducted that incorporates both viewpoints. Another limitation is the generalizability of the findings to other areas and departments within hospitals. Further research should be conducted in other departments within hospitals and other service organizations to further test the measure.

Practical Implications

The results should lend health care managers to consider the importance of PD to health service organizations and departments such the ER. The results reinforce the adequacy of using this measure to assess the PD of service organizations such as in health care and the ER.

Originality / Value

The contribution of this research is that it verifies a measure for assessing physical design in the ER, which is an area of health care that is largely unexplored.

Keywords

Physical Design, ERs, Service, Service Climate

7.2 Background and Objectives

Due to the simultaneous production and consumption of services, the buildings in which patients receive service are inherently part of the service experience, an important and contributing factor in creating a strong and positive service climate. Berry, Parker, Coile, Hamilton, O'Neill, & Sadler (2004) have researched 'how patients evaluate a service as proximate, diffuse, complex, personal and important as health care?' They found that patients are especially attentive to what they can see and understand so that they can interpret what they cannot see and understand. The nature and significance of health care turns its patients into inspectors looking for clues to reassure themselves of the organization's quality and competence.

The physical service setting is important to health organizations for several reasons. First, the physical design of the service setting in terms of the buildings, equipment, furnishings, signage, colours, art, landscape, linen and other sensory stimuli offer an outpouring of clues about the organization. These clues have a disproportionate impact on the patient's evaluation of service (Berry & Bendapudi, 2003; Berry et al., 2004; Hartman, 2001). Second, it can create and enhance moods of both customers and employees. Third, the setting may be part of the service itself and help create a memorable experience. Fourth, the setting may contribute to the creation of a 'healing environment.' The quality in design of the physical service setting can positively influence well-being, satisfaction and intention to recommend to others. In effect, the physical design of the service setting offers significant evidence regarding the value placed on service.

Health care facility design is also important for improving health outcomes, not only for patients but also for staff. A growing body of research indicates that improved design can help bring about dramatic increases in safety and quality - particularly reductions in infection, falls, errors, transfers, nurse turnover and stress, and increases in job satisfaction (Marberry, 2006; Ulrich & Zimring, 2004). Major hospitals and health care systems are embracing 'evidence based design' as they seek to enhance the quality of health care.

Health care facility design is also important in employee commitment to the organization. Design has been shown to be effective in the recruitment and retention of staff (CABE, 2004; Coile, 2002). In most cases employees do spend more time in the facilities than do patients. Hospitals are not only stressful for patients they are also demanding and stressful environments for staff - physically, mentally and emotionally. Few, if any, service industries are experiencing the skilled labour shortage as seen in health care. Few, if any, service professions are more prone to on the job 'burnout' than are health care providers. Evidence shows that health care facility design offers strong reinforcement of an organizations' value for its employees.

The purpose of this study is to verify a pre-established measure for assessing the physical design of the ER. Using data collected from front line providers in ERs throughout BC, attributes of PD and their relationship to SC are explored.

Research Propositions

On the basis of previous research, the researcher had the following expectations:

- *Proposition one (P1)*: There will be a positive and significant relationship between the attributes of PD and SC.

7.3 Methodology

7.3.1 Procedure

A letter to inform was sent out to all Unit Managers of ERs across the province of BC ($n = 109$ ERs). A listing of addresses for these facilities was acquired from the Government of British Columbia's Ministry of Health website. The purpose of this letter was to inform nurses of the study. It was hoped the Unit Managers would post the letter in a location where it would be easily viewed for the nurses of their department.

The assistance of the College of Registered Nurses of British Columbia (CRNBC) was attained for the purposes of targeting the population, generating the sample and distributing the survey. Their assistance provided for a larger, more generalized sample of BC emergency nurses and also maintained subject anonymity. The population was pulled from the CRNBC licensee database in accordance with criteria set by the researcher relative to the 2006 CRNBC Application for Registration. The criteria was as follows: (i) Member type: Registered nurse; (ii) Category: Practicing; (iii) District: Mainland Coastal, Vancouver Metropolitan, North Vancouver Island, Victoria / Gulf Islands, Fraser Valley, Northeast, Northwest, Kootenays, Thompson Columbia, Okanagan; (iv) Education Background: Diploma, bachelor's, master's, doctorate; (v) Employment position: Clinical nurse specialist, staff nurse, manager/supervisor, director/assistant/associate, chief nursing, executive officer; (vi) Place of work: Hospital, community health agency/health centre, nursing station/outpost/nurse clinic; (vii) Area of practice: Emergency care; (viii) Employment status: Employed part-time/casual basis, employed full-time/regular basis, employed part-time/regular basis, employed full-time/casual basis; (ix) Previously gave their consent to participate in research as stated on their application renewal form. This criteria generated a population of 605 ($N = 605$) registered nurses.

A mail-out survey was used as the means for data collection. The researcher provided the CRNBC with the surveys. Attached to each survey were a consent letter and a stamped, addressed, return envelope for participants to return their completed survey by mail. Participant anonymity was

maintained as the CRNBC addressed and distributed each survey. Two mail-out distributions were conducted. The initial population size was $N = 605$, however after the first distribution, five surveys were returned due to a change of address. Population size was then reduced to $N = 600$.

7.3.2 Sample

Approximately 200 emergency nurses responded to the survey ($n = 180$) producing a response rate of 30%. The data was gathered over a one month period, the first mail distribution garnered 117 completed surveys, a second mail distribution followed two weeks later and garnered an additional 63 surveys for a total of 180 completed surveys. Eighty seven percent (87.20%) of these nurses were female and the mean age of nurses was 45 years (birth year mean: $M = 1963$; $SD = 9.40$). Cumulative percent figures illustrate that seventy three percent (73.10%) of respondents were born prior to 1970 with 37.70% of those respondents born prior to 1960. These figures provide support for the literature that identifies nursing as an aging profession. Fifty three percent (52.80%) of respondents were full-time, regular employees; thirty percent (30%) were part-time, regular employees; and seventeen percent (17.20%) were employed on a casual basis. Ninety one percent of respondents were employed as a staff nurse (90.60%, $n = 163$). Fifty one percent (51.10%) were educated at the college level, twenty seven percent (26.70%) at the university undergraduate level, and twenty two percent (22.20%) at the graduate level. On average, respondents had been working in the ER setting for a period of 121.12 months ($SD = 98.75$). The mean time respondents had been working in their current ER was 85.19 months ($SD = 82.38$). Respondents claim to have been working in their current capacity, the majority working as a staff nurse, on average for a period of 82.43 months ($SD = 84.75$). The variation in working months is high due to the variation in the age of nurses and months of ER work experience.

7.3.3 Instrument and Measures

A paper, mail-out survey was used as the means for data collection. The survey, entitled 'The Service Outcome Questionnaire' (Appendix 4.1) contained 136 questions of a five point Likert scale that assessed various elements of service design. Only the items targeting PD will be discussed here.

Physical design (PD). Twenty four (24) of the items in the questionnaire were specific to measuring physical design (refer to Table 7.2). Completion time of these particular items was approximately seven minutes. These items were borrowed from an instrument used by the NHS Estates and Department of Health. This tool is available for public use. The instrument is entitled the *OnDesign Healthcare Portal: ASPECT Toolkit*. ASPECT stands for 'A Staff and Patient Environment Calibration Tool,' which is based on a database of over 600 pieces of research (DH,

2006) and deals with the way the health care environment can impact on the levels of satisfaction shown by staff and patients and on the health outcomes of patients and the performance of staff. The dimensions of physical design assessed are as follows: *Ambience* - factors that affect perceptions of and responses to the built environment (six items, Cronbach's alpha 0.86); *User-friendly* - the extent to which the built environment provides comfort to users (six items, Cronbach's alpha 0.76); *Layout* - the way the department is laid out, enabling users to perform their duties and operate as a system (four items, Cronbach's alpha 0.71); *Amenities* - access to amenities such as shopping for essentials, food services, banking, the outdoors, and media/technology (three items, Cronbach's alpha 0.62); *Cleanliness* - the internal and external cleanliness of the department (two items, Cronbach's alpha 0.76); *Adaptability* - how accommodating and adaptable the space is in relation to purpose (three items, Cronbach's alpha 0.61). Factor analysis with varimax rotation (Table 7.1) produced six components with eigenvalues over 1.00 explaining for 62.40% variance, the rotation converged in 13 iterations. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of higher levels of each item.

Service climate (SC). The measure of service climate was also assessed. Service climate refers to employees' shared perceptions of the practices, procedures, behaviours that are rewarded, supported and expected by the organization with regard to customer service and service quality (Dastmalchian et al., 1989; Schneider et al., 2002). Service climate was assessed using a seven-item global measure (Cronbach's alpha 0.81) based on the work of Schneider et al. (1998). The items in the survey refer to a collection of behavioural features or activities of organizations that focus explicitly on service quality. The wording was modified slightly to suit health care. Factor analysis with varimax rotation produced two components with eigenvalues over 1.00, explaining for 61.57% variance (Table 4.3). The rotation converged in three iterations. The first component focused on *Leadership and Communication*, the second component focused more on acquiring the *Tools and Knowledge* needed to provide quality service. The researcher decided to maintain the original global measure due to its high reliability and being well established in the literature. Items were scored on a five-point rating scale ranging from one (strongly disagree) to five (strongly agree). Higher scores were indicative of a higher level of service climate.

Table 7.1.

Results of the Principal Components Analysis for Physical Design (n = 180)

Items: Physical Design	Component 1 Ambience	Component 2 User- Friendly	Component 3 Layout	Component 4 Amenities	Component 5 Cleanliness	Component 6 Adaptability
PD Variety	0.83					
PD Interesting	0.79					
PD Color	0.79					
PD Calming	0.72					
PD Nat. Light	0.67					
PD Art. Light	0.54					
PD Suff. Furnish		0.68				
PD Comfor. Furn		0.60				
PD Relax		0.58				
PD Technology		0.57				
PD Spacious		0.54				
PD Privacy		0.45				
PD Layout			0.70			
PD Proximity			0.63			
PD Security			0.50			
PD Wayfinding			0.42			
PD Amenities				0.83		
PD Outdoors				0.65		
PD Media				0.54		
PD Ext. Tidy					0.83	
PD Int. Tidy					0.67	
PD Storage						0.72
PD Flexible						0.51
PD Isolation						0.46
<i>Alpha</i>	0.86	0.76	0.71	0.62	0.76	0.61
<i>Eigenvalues</i>	8.37	1.84	1.43	1.23	1.08	1.03
<i>% Variance</i>	34.89	7.65	5.94	5.11	4.52	4.29

Table 7.2.

Examples of Items Used in Measuring Physical Design

Physical Attributes Aspects of the physical structure that support service delivery.	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Ambience:	1	2	3	4	5
The physical appearance and layout of the department supports intuitive way- finding.					
The quantity of space with natural daylight is optimized.					
Artificial light levels are controllable by staff.					
The color scheme of the department creates a warm and comfortable ambience.					
The physical interior (e.g. furnishings, finishes) offers variety and contrast.					
The physical internal appearance of the department is calming and non-intimidating.					
The physical internal appearance of the department is tidy and well maintained.					
The physical design of the department is interesting to look at.					
Functionality:	1	2	3	4	5
The department is physically designed to be adaptable to respond to change and enable expansion.					
The physical layout facilitates both security and supervision.					
The department is located within close proximity to essentials (e.g. radiology, OR).					
The storage space is adequate in size to accommodate needs.					
The physical layout minimizes the amount of walking for staff and clients.					
The department is spacious and overcrowding is avoided.					
User-friendly:	1	2	3	4	5
I have a convenient place to relax and / or concentrate on work without being on demand.					
I have convenient access to the outdoors.					
I have convenient access to amenities (e.g. food service, banking, shopping).					
I have convenient access to educational media (e.g. literature, internet).					
The technology is up-to-date (e.g. computers, software programs, equipment).					
Comfortable furnishings are placed throughout the department (e.g. chairs).					
There are sufficient furnishings to accommodate users (e.g. chairs, stretchers).					
The treatment rooms are physically designed to facilitate complete privacy.					

7.4 Results

7.4.1 Preliminary Results

General statistical analysis of the survey data was conducted using SPSS. To test whether emergency nurses from the various health authorities in the province differed on the attributes of PD (i.e. study variables) a multiple analysis of variance (MANOVA) test was conducted where ambience, user-friendly, layout, amenities, cleanliness, and adaptability/flexibility were categorized as the dependent variables in the model and health authority as the factor. Multivariate results for health authority showed a significant Wilks' lambda multivariate coefficient (Wilks' $\Lambda = .60, p \leq .00$). In a test-between subjects effect, significance was shown between health authority and ambience ($F(5, 164) = 2.60, p \leq .05$), health authority and amenities ($F(5, 164) = 3.81, p \leq .00$) and health authority and cleanliness ($F(5, 164) = 4.19, p \leq .00$). The findings revealed significant variation between the health authorities in perceptions of the cleanliness, the ambience, and the amenities present in PD.

A second MANOVA test was conducted where SC was added as a dependent variable. Multivariate results for health authority showed a significant Wilks' lambda multivariate coefficient (Wilks' $\Lambda = .60, p \leq .00$). In a test-between subjects effect, significance was shown between health authority and user-friendliness ($F(5, 159) = 2.34, p \leq .05$), health authority and ambience ($F(5, 159) = 2.63, p \leq .05$), health authority and amenities ($F(5, 159) = 3.46, p \leq .01$) and health authority and cleanliness ($F(5, 159) = 3.85, p \leq .01$). The findings revealed that when SC is brought into the mix, the PD must be user-friendly. There was significant variation between the health authorities in perceptions of the cleanliness, ambience, amenities, user-friendliness.

An analysis of variance was conducted to examine the relationship between SC and the attributes of PD. The relationship between SC and ambience was significant ($F = 2.00, p \leq .00$) as was the relationship between SC and user-friendliness ($F = 2.80, p \leq .00$), layout ($F = 1.91, p \leq .01$), and cleanliness ($F = 2.39, p \leq .00$).

Lastly, a multiple regression was conducted using SC as the dependent variable and the attributes of PD (ambience, user-friendly, layout, amenities, cleanliness, adaptability/flexibility) as the independent variables ($F = 8.12, p \leq .00$). This model proved to be significant and multiple regression coefficients indicated that user-friendliness ($B = 0.30, p \leq .00$) and cleanliness of the department ($B = 0.30, p \leq .00$) are the strongest predictors of SC in the ERs assessed. According to the overall magnitude of the regression, 24% of the variance in SC can be accounted for by the independent/predictor variables. In other words, there are other factors that attribute to service climate aside from the design of the physical setting.

7.4.2 Descriptive Analyses

Table 7.3 shows the mean values, standard deviations, final internal consistencies, and inter-correlations of scales. With regard to the descriptive statistics, there were low ratings all of the variables that assessed PD, particularly for flexibility/adaptability ($M = 2.14$, $SD = .82$), user-friendliness ($M = 2.36$, $SD = .75$), and ambience ($M = 2.48$, $SD = .89$). In contrast, emergency nurses gave an average rating to amenities ($M = 3.19$, $SD = .83$).

Table 7.3

Means, Standard Deviations, Internal Consistencies, and Inter-correlations (Aggregated Measures; $n = 180$)

	Variable	<i>M</i>	<i>SD</i>	<i>n</i>	α	1	2	3	4	5	6	7
1	PD Ambience	2.48	.89	176	.86	1.00						
2	PD User-Friendly	2.36	.75	179	.76	.59**	1.00					
3	PD Layout	2.57	.79	178	.71	.59**	.57**	1.00				
4	PD Amenities	3.19	.83	180	.62	.30**	.45**	.32**	1.00			
5	PD Cleanliness	2.81	.98	179	.76	.56**	.47**	.45**	.27**	1.00		
6	PD Flexibility	2.14	.82	178	.61	.54**	.51**	.53**	.32**	.44**	1.00	
7	Service Climate	2.79	.69	173	.81	.27**	.42**	.34**	.25**	.38**	.21**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

As expected, there were significant and positive correlations between all of the seven variables. As such all attributes of physical design had a positive and significant relationship with service climate, proposition one was supported by the data. Service climate was most strongly correlated with user-friendliness ($r = .42$), cleanliness of the ER ($r = .38$) and layout ($r = .34$).

There were strong and significant correlations between ambience and user-friendliness ($r = .59$), ambience and layout ($r = .59$), ambience and cleanliness ($r = .56$), and ambience and flexibility ($r = .54$), User-friendliness and layout were also strongly and positively correlated ($r = .57$) as was user-friendliness and flexibility ($r = .51$).

These findings illustrate that emergency nurses perceive a clean, user-friendly and well-laid out department to be important attributes of the physical setting when designing for service. In addition, the ambience of the setting was found to have strong associations with the majority of the attributes of physical design. The ambience of the physical setting should therefore be emphasized through physical design.

The following photographs are provided to illustrate to the reader the difference between exceptional physical service design and manageable physical service design in health care.

Illustrations 7.1 to 7.12 are of a hospital in Celebration, Florida that was recently toured by the researcher. The design of this hospital is an example of exceptional physical service design. Illustrations 7.13 to 7.22 are illustrative of two local hospital ERs that are currently undergoing renovation. These pictures are illustrative of manageable physical service design. The researcher has chosen to not include commentary for each of these photographs, rather let the viewer make their own impressions.

Illustration 7.1. Celebration Health: Florida hospital.



Illustration 7.2. Florida hospital: Main entrance and concierge.



Illustration 7.3. Florida hospital: Decor at base of stairway to patient accommodation.



Illustration 7.4. Florida hospital: cafeteria.



Illustration 7.5. Florida hospital: Corridor to physician offices.



Illustration 7.6. Florida hospital: Waiting area for physician offices.



Illustration 7.7. Florida hospital: Corridor through hospital.



Illustration 7.8. Florida hospital: The ER.



Illustration 7.9: Florida hospital: Entrance doors to Seaside Imaging department.

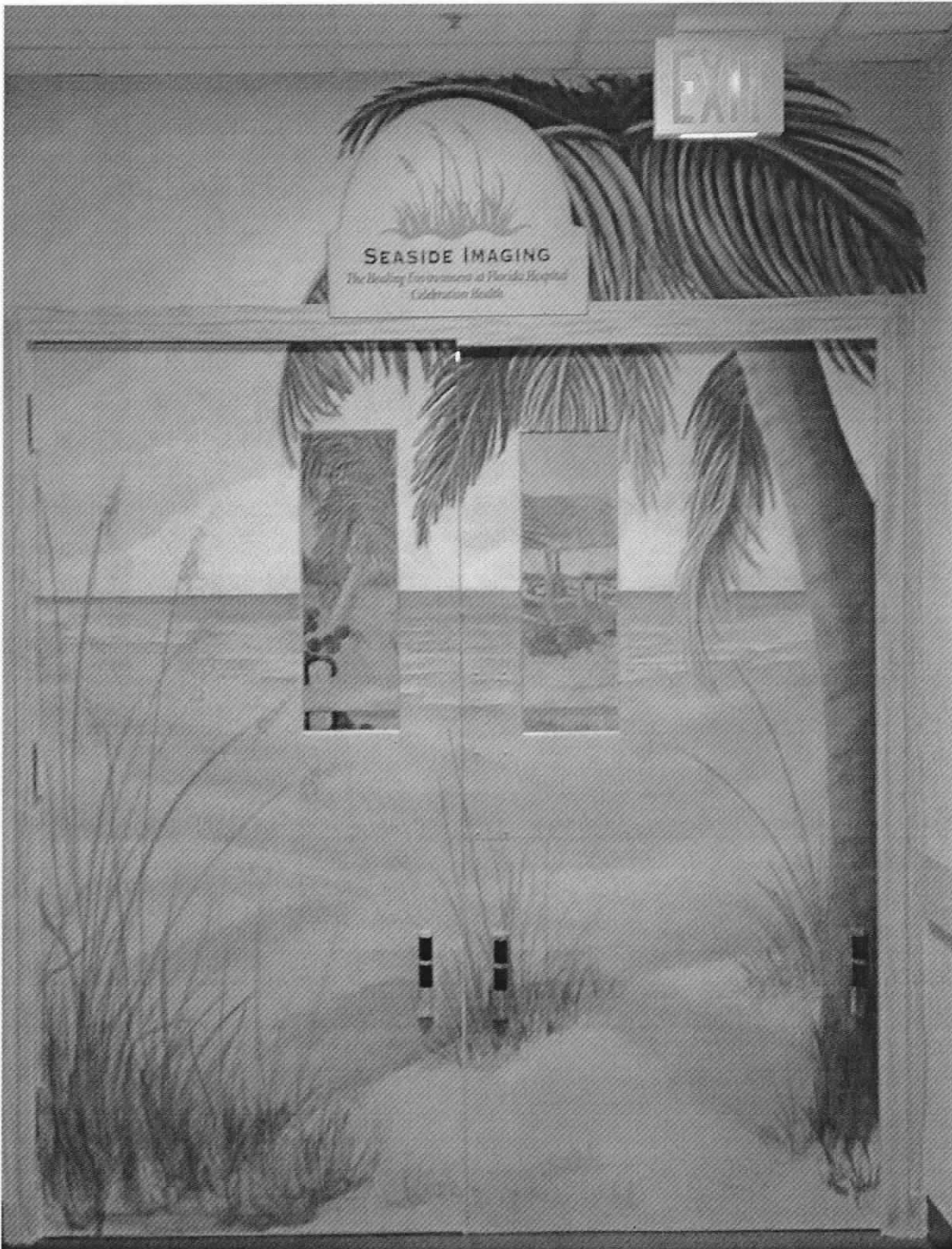


Illustration 7.10. Florida hospital: Waiting area in Seaside Imaging.



Illustration 7.11. Florida hospital: Change rooms in Seaside Imaging.



Illustration 7.12. Florida hospital: Patient treatment rooms located within Seaside Imaging.



Illustration 7.13. VIHA hospital: Main entrance area.



Illustration 7.14. VIHA hospital: ER triage desk (patients).



Illustration 7.15. VIHA hospital: ER registration desk (staff).



Illustration 7.16. VIHA hospital: ER waiting room (patients).



Illustration 7.17. VIHA hospital: ER corridor (patients and staff).



Illustration 7.18. VIHA hospital: ER shared treatment room (patients).

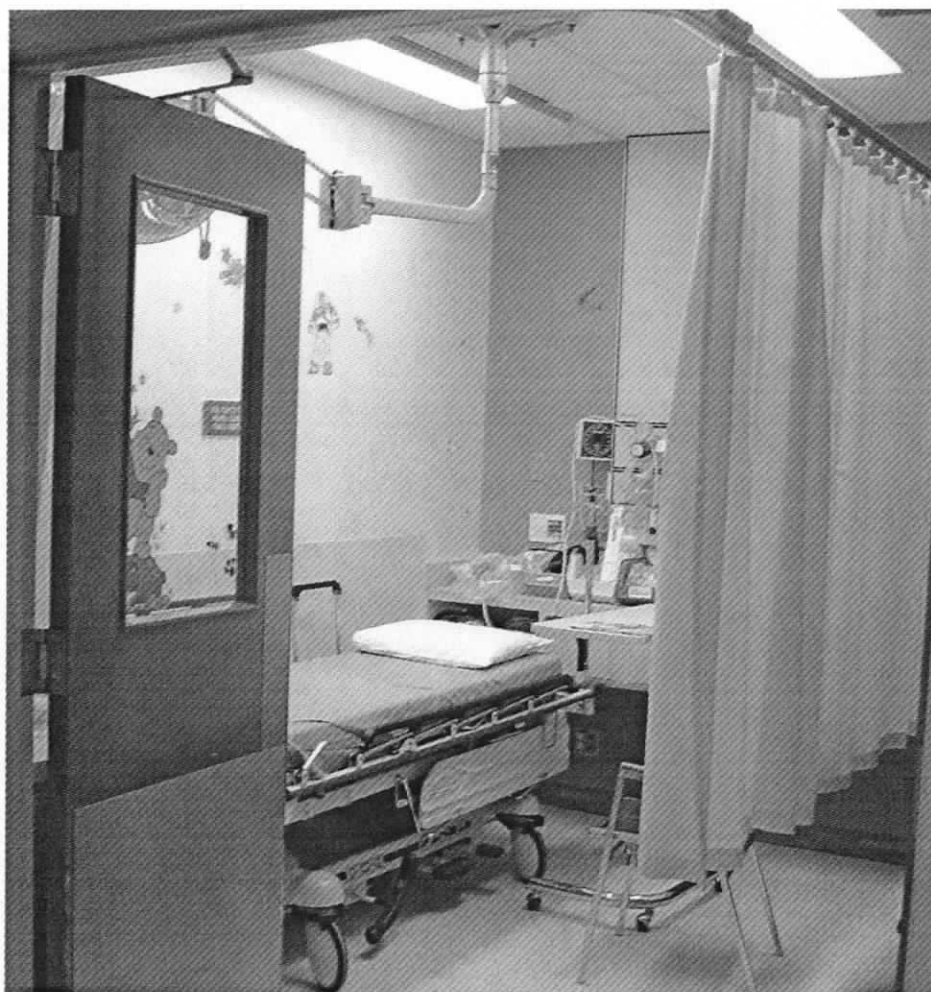


Illustration 7.19. VIHA hospital: ER private treatment room (patients).

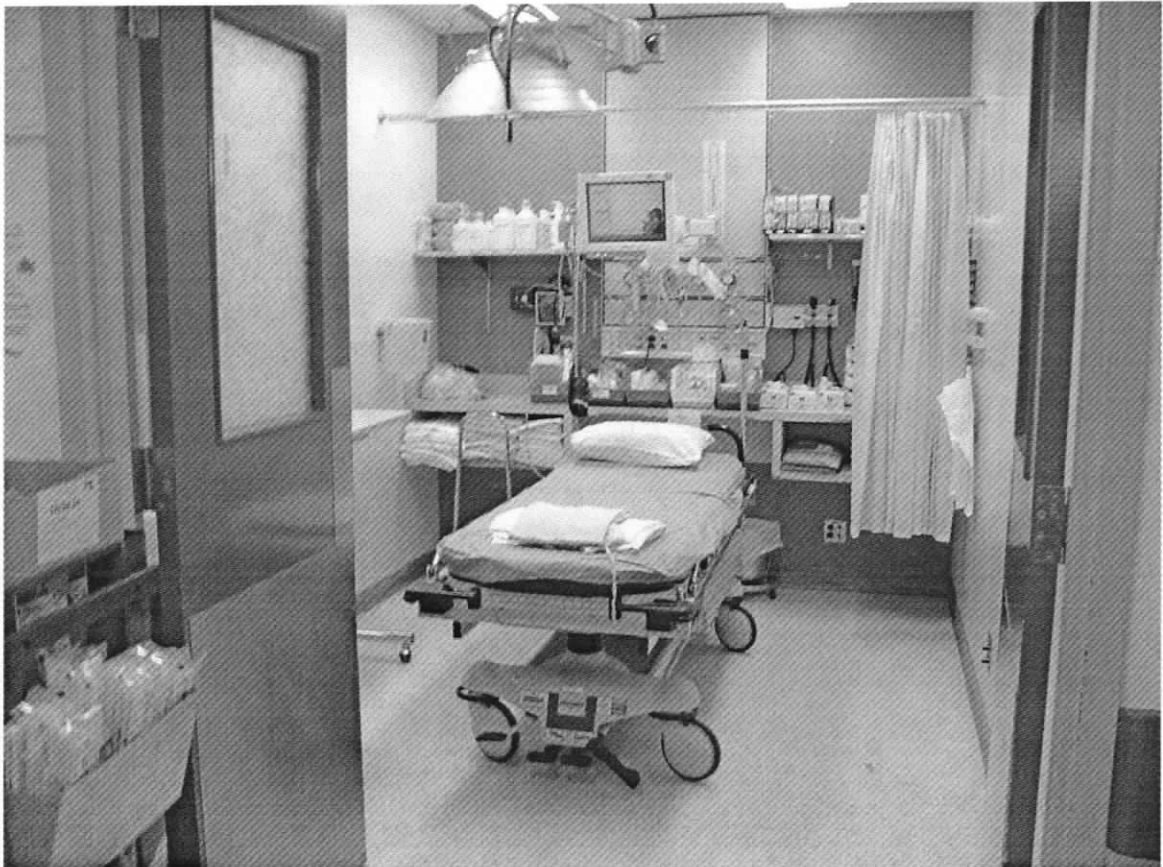


Illustration 7.20. VIHA hospital: ER medication room (staff).

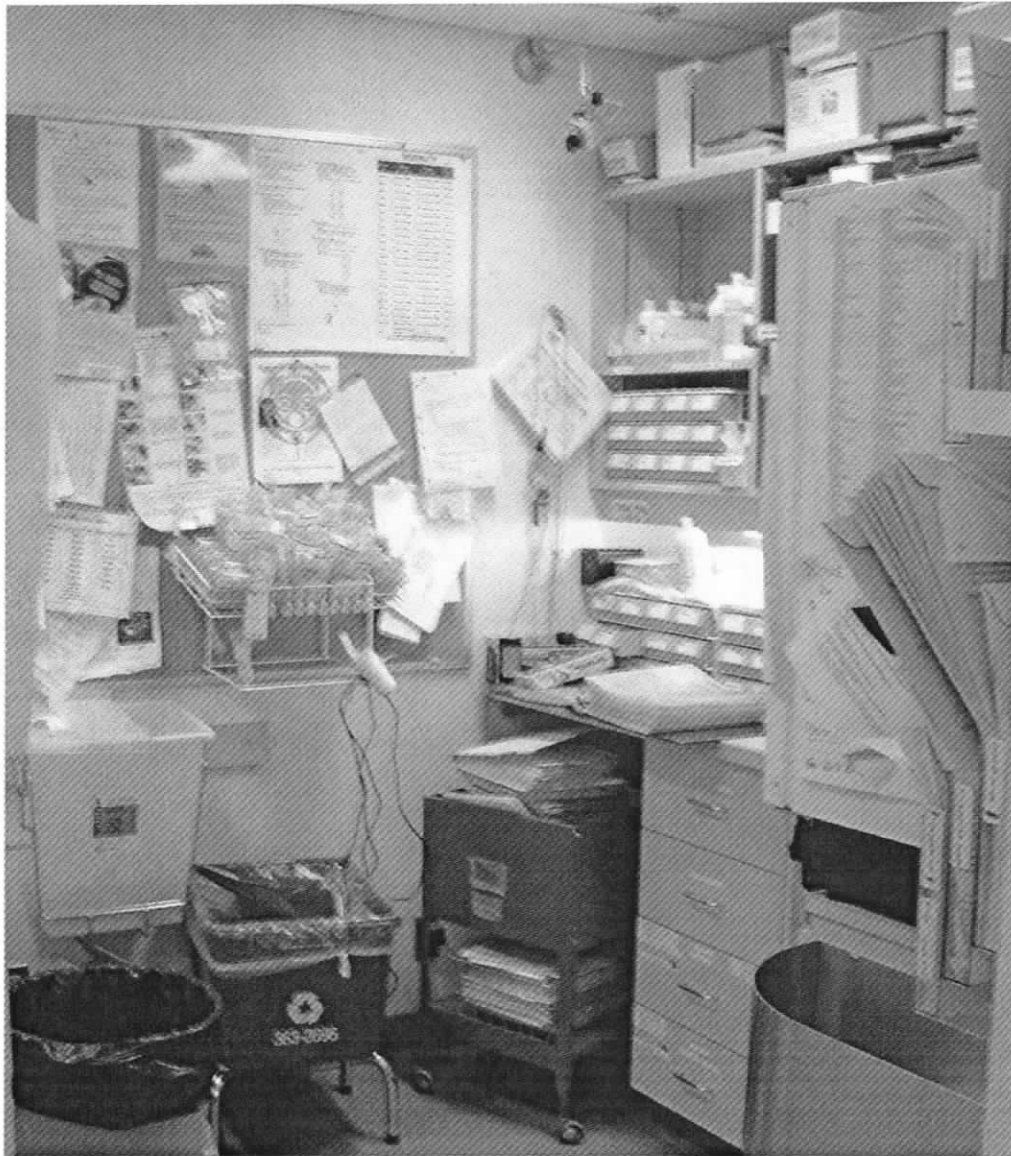


Illustration 7.21. VIHA hospital: ER clean hold/supply room (staff).



Illustration 7.22. VIHA hospital: ER staff lounge (staff).



7.5 Discussion

Health care organizations are learning important strategies from the hospitality sector that are vital in providing the setting that employees deserve and patients expect. Some examples of how improvements in the physical service setting are currently being accomplished in the health care industry have been provided as seen in the photographs of the Florida Hospital. Various photographs of the physical service setting of two ERs were provided to allow the viewer a comparison between exceptional physical service design and manageable physical service design. In addition, a measure for assessing the physical design of the ER based on the instrument 'OnDesign Healthcare Portal: ASPECT Toolkit' is provided (DH, 2006).

To the researcher's knowledge, this is the first empirical paper that verifies a measure for assessing the PD of health care organizations with focus on the ER. This empirical study found that attributes of PD in terms of ambience, user-friendliness, amenities, cleanliness of the department, layout, and adaptability/flexibility were associated with service climate.

There are a series of steps that health care organizations and/or design firms might take to improve the PD of the service setting. First, the current design needs to be evaluated by way of an occupancy evaluation in order to acknowledge and improve on deficient areas. Second, research needs to be done on ways to improve on those areas of deficiency. Third, the "healthscapes" (Hutton & Richardson, 1995) needs to be designed to create the desired client internal responses and behaviours. Various environmental components affect internal responses and behaviours of both internal and external clients in the service setting. These, in turn, can affect various individual and organizational outcomes. Finally, specifics need to be clarified on ways to create a service environment in health care. This perhaps is best accomplished by going across sectors and incorporating the fields of architecture, interior design and the hospitality/tourism industry to health care. These guidelines should assist health care organizations and designers to improve their organizational success in increasingly challenging times.

More research is needed to determine what environmental investments will provide the highest returns in terms of the satisfaction of staff and patients, perceptions of quality, soft operating costs and patient health outcomes. Undoubtedly, the answer is content specific.

Further research is also recommended to develop and test a specific valid scale to evaluate 'physical service design' in health care. A scale that is specific to this cause would be an invaluable contribution to both literature and practice.



CHAPTER 8

8.1 Discussion of the Findings

This chapter will present a summary discussion of the findings in each of the four studies as well as a discussion on the commonalities of the four studies.

Using a modified version of the Service Profit Chain (Heskett et al., 1997), the primary objective of this research was to explore various elements of service design in the ER. The Service Profit Chain is a simple conceptual framework that links internal service quality to employee satisfaction and loyalty, to patient satisfaction and loyalty, to financial performance. Although widely used by practitioners, the Service Profit Chain's series of hypothesized relationships between employee, client and financial outcomes has not been rigorously tested using data that span all components of the model (Heskett et al., 1994, 1997; Loveman, 1998; Pritchard & Silvestro, 2005).

The 'Service Outcome Chain,' is the modified version of the Service Profit Chain, adapted to suit public sector health care. It is a framework that may be viewed as a methodology for setting the service strategy and guiding the design and management of service. The framework views service design from a structural, process and outcome perspective. Within each of these dimensions, there are certain elements that are suggested as being fundamental to the goal of achieving service outcomes in the ER such as service quality. The framework also ensures that the needs of both staff and patients are simultaneously supported through every link of the chain.

In this study, principle chain relationships were explored using data collected from frontline service providers and patients in ERs. Specifically this study addressed two general research questions: One question was related to defining the elements of service design in the ER, elements that are necessary for achieving service quality. A second question related to determining the link between the structure and outcomes of service and determining how, as practitioners, we can design for improved outcomes through a focus on service.

This research was conducted using a mixed methods approach. First, the researcher conducted a large-scale quantitative survey of emergency nurses throughout BC. The survey explored their perceptions of various elements of service design in the department where they work. In addition, the survey gauged nurse's perceptions of service quality, patient satisfaction with service and patient empowerment by having them respond to questions from the vantage

point of the patient. Following the larger quantitative survey, two case studies were conducted at ERs within one health authority in the province of BC. The purpose of the case studies was to further explore and enrich the findings from the larger quantitative survey. The case studies used quantitative surveys, semi-structured interviews and photographic research to collect data from physicians, nurses, managers, support staff and patients. This approach provided for findings that could be generalized throughout the province in addition provide for an intimate look at the design of service in the ER. The remainder of this chapter will discuss the research findings which were presented in this dissertation as four separate research studies followed by a summary of the commonalities that presented in each of the studies. Each study brought forward a different perspective and depth in exploring service design however some common findings emerged.

8.1.1 Study One: The Predictors and Consequences of Service Climate

This study examined *The Predictors and Consequences of Service Climate* in the ER. Service climate was viewed as a process element in the Service Outcome Chain that mediated the relationship between the structure and outcomes of service. The general proposition being that certain structural elements (managerial practices, service training, job design, physical design) through their impact on service climate have the potential to positively influence outcomes (service quality, patient satisfaction with service, patient empowerment) in the ER.

In this study, the researcher conducted a large scale quantitative survey of emergency nurses ($n = 180$) throughout the province of BC. The researcher explored nurse's perception of service attributes in the design of the department where they work. In addition, the survey gauged the nurse's perception of service quality and patient satisfaction with service. Responses were garnered from the vantage point of the patient.

In the findings, nurses gave low ratings of approval to physical design, managerial practices, and service climate and average ratings to job design and employee empowerment. What this means is that a weak climate for service exists within the ER and neither physical design nor managerial practices are supportive of the service quality effort.

After a variety of statistical analyses, the final research model for this data illustrated direct paths between managerial practices and service climate and external service quality, and between physical design and service climate. There were partially mediated paths between job design and service climate, and service training and service climate through job satisfaction

and employee empowerment. As for the criterion variables: service quality, patient satisfaction with service, and patient empowerment, the effects of these variables were fully mediated through nurses' job satisfaction, employee empowerment, and service climate.

The main point to make with these findings is that i) the Service Outcome Chain can be successfully applied to exploring service design in the ER, and ii) this sample of BC emergency nurses have claimed that there are certain structural elements within their ERs that require renewal. After a review of the findings and the qualitative comments that were provided by nurses, the following interpretations were made. Detail has been put into these interpretations as the findings presented in this chapter set the stage for what was found in the other three studies.

Physical design. The physical design of the ER is lacking in terms of ambience, user-friendliness, layout, amenities, cleanliness and flexibility - aspects of the built environment that are important to the service quality effort. The main problems areas have to do with the lack of space, the lack of privacy for patients at triage, the general lack of privacy throughout the department, poor layout in terms of too much walking and not enough direct visualization of patients, and faulty equipment, shoddy conditions, inadequate isolation facilities, too much paper work, and not enough staff or stretchers.

Managerial practices. With regard to managerial practices, managers are not setting definite standards for high quality work and service. Nor are they recognizing and appreciating high quality work and service on the part of nurses. Much of this has to do with the fact that many of the ERs have a unit manager that is working in a remote, multi-unit capacity. Many of the comments indicated a lack of direct supervision, a lack of feedback, and a lack of recognition as being the main problem areas with management. Comments made by nurses indicated this such as: "I don't know what the manager even looks like!" and "the job is stressful, more appreciation would greatly help and feeling that we matter and make a difference." It would appear that the overall hospital management needs to be more receptive to their team. The nurses are asking for more feedback and acknowledgement from supervisors and co-workers on job performance to let them know how they're doing and where they need to improve.

Service training. The results showed that service training does not have a direct or significant influence on nurse's job satisfaction. Much of this has to do with the fact there is

little training provided in the ER and what is provided is technical skills based, not service skills based. The generalization may be made that nurses are not receiving the service training they need. As quoted by one nurse, "There's very little training here, it's pretty much sink or swim. I was just thrown into my position." From the comments made by nurses it would appear that few courses are available and what is available is done on their own time and with their own money. They claim that management tells them "there is no money" for training!

Job design. Despite these structural challenges in the internal work environment, nurses gave more favourable ratings to the design of their jobs and feelings of empowerment in their work. Nurses enjoy the autonomous, independent judgement and thinking that comes with their work. They enjoy that every shift is different and that things can change on a moment's notice. Their work is challenging, dynamic, high-adrenaline and ever-changing. The most positive aspect of their job is the feedback that they receive from patients and knowing that they helped to save a life. Emergency nurses take great pride in what they do; there is a great sense of responsibility. However with that responsibility there is "poor support" and "frustration." Nurses commented "If I could do my job (assess and treat patients) that would be great, but to tell people that are very sick or in a lot of pain to sit in the waiting room for hours is frustrating and is making me think about leaving this job." "We are constantly short-staffed, and work long shifts (12 hours) with no breaks. Because we have no time, we are task oriented, and patients feel uncared for." "With the chronic lack of staffing and the lack of support staff, I find myself working beneath my skill level and education (performing many non-nursing duties)."

Service climate. Nurses claim that a weak climate for service exists in the ER. Nurses feel they are not being provided with the support (e.g. leadership, tools, technology, communications, performance measurements) they need to deliver high quality work and service to patients. In many of the comments pertaining to service climate, nurses expressed their frustration with the overcrowding and the long wait times. The constant pressures and demands of overcrowding are extremely negative on staff and patients. When the department is busy, it limits the amount of time staff can spend explaining tests, discharge instructions or just keeping patients informed. The workload is demanding, the "patients expect drive through McDonald's service," and the staff feel that they are not getting the support they need to do their job well. This in turn, takes a toll on attitude and morale. Although the "the majority of

staff genuinely care about patients,” staff morale has deteriorated due to overcrowding and management problems.

External service quality, patient satisfaction with service, and patient empowerment (all outcome elements of service design in the Service Outcome Chain) were fully mediated through nurse’s job satisfaction, employee empowerment and service climate. The best fitting model for the data in this study had direct paths that linked managerial practices to service climate and external service quality, as well as physical design to service climate. Further exploration was done to assess what nurses were saying with regard to service quality, patient satisfaction with service and patient empowerment.

Service quality. As a result of the workload and shortages of staff, nurses perceive the quality of their services to be lacking in the areas of efficiency, flow, follow-up, personalized care, and time spent with patients. Nurses made the following comments: “When the ER is blocked with admitted patients, there is no place to work, we are seeing and treating patients in hallways, running between areas to follow patients to ensure their safety” ... “there is not enough time spent explaining anything in detail to patients. Patient teaching and explanation of treatments and tests as well as discharge instructions by both physicians and nurses are not being met due to overcrowding and decreased staff in the ER. Patients leave with more questions than answers” ... “I am often in a position that interferes with the kind of care that I’d like to deliver because of staff shortages and/or too large of patient assignment. Quality of care is sacrificed, sometimes the surface is skimmed and we don’t fully explore all patient needs.”

Patient satisfaction. Nurses feel that patients are dissatisfied with the quality of service they receive largely because of the overcrowding and wait times. “Patients often feel forgotten about in the waiting room and are often agitated and abrupt when they finally enter into a bed. Overcrowding, long wait times and irritated patients reflect onto staff, especially nurses.” Patients want faster service. The patients often ask ‘what did the doctor say?’ and the nurse has to repeat it. Nurses feel that patients need to understand the triage process and priority of care better. Nurses realize the need to keep patients better informed, explain what is happening, why things are moving so slow. They realize that they could do a better job in providing a discharge summary to patients with a clear plan but are often too overwhelmed by volume to do a good job in this area.

Patient empowerment. Some nurses felt that “there is public abuse and misuse of the ER” and that the “the general public doesn't want to take responsibility for their health.” One nurse commented that there is a greater sense of empowerment noticed at the Children’s Hospital than in adult hospitals as “most parents are highly motivated to care for their children.” In addition, “most staff are highly motivated to care for children and try hard to work with parents” as they don't want them to have to come back to the ER. Nurses emphasized the need to take time to educate patients more however many non-nursing jobs are being done by nurses leaving less time for teaching and educating patients. Nurses state that they “need more pamphlets and written instructions provided for patients upon discharge.”

The results of this study extend previous research on the predictors of SC by showing empirically that nurse’s job satisfaction and feelings of empowerment only partially mediate the structural elements of service design to the process element of service climate. The practices of management and the design of the physical setting have a greater impact on service climate than previously realized. The findings illustrate the importance of aligning physical design and managerial practices in support of the service strategy and in facilitating a climate for service in the ER.

Equally important are creating conditions in the internal work environment that satisfy and empower nurses. Working in an organization that facilitates satisfaction and empowerment exerts a powerful, collective influence on service climate. The findings also show that service climate is perceived to be a significant predictor of service quality, which has an impact on patient satisfaction with service, and patient empowerment. The findings suggest that creating a positive service climate for staff creates a quality, satisfying and meaningful service experience for patients. During this experience, feelings of self-competence are increased, along with the realization or reinforcement of the patients’ own ability in influencing personal health outcomes. A greater sense of awareness and responsibility on the part of the patient has positive implications for the ER and the larger health care system.

8.1.2 Study Two: Service Design - Structure, Process and Outcomes

The second study assessed *Service Design - Structure, Process and Outcomes: A Case of Two ERs*. The purpose of the case studies was to expand and add depth to the findings from the previous, larger quantitative survey. In this study, the general flow of the elements in

the Service Outcome Chain and their relationships with each other were tested. The general proposition being that certain structural elements (managerial practices, service design, job design, physical design) through their impact on process (job satisfaction, employee empowerment, service climate) have the potential to positively influence outcomes of service in the ER (service quality, patient satisfaction, patient empowerment). Using survey and interview methods, the perceptions of a variety of service providers ($n = 98$) were explored. This included the perceptions of physicians, nurses, managers and support staff. This approach provided for findings that could be generalized throughout the province of BC, in addition provided an intimate look at elements of service design in two select ERs.

The main propositions were largely supported. At the individual level of analysis, VIHA ER staff in general gave low ratings to managerial practices, service training, physical design and service climate. This identifies the elements of service design that are in need of attention. Staff gave moderate ratings to job satisfaction, service quality and patient satisfaction with service, and favourable ratings to job design, employee empowerment and patient empowerment. It may be concluded that the structural elements of service design, aspects of the internal work environment, are perceived as being the weakest links in the Service Outcome Chain, particular to this sample set. Not surprisingly, there were positive associations between the 10 elements of service design. The structural elements of service design (service training, managerial practices, physical design, job design) had the strongest inter-correlation with service climate.

The final research model for VIHA ER staff showed the structural elements of physical design and service training as having a direct impact on the process element of service climate, which influenced perceptions of service quality, patient satisfaction with service and patient empowerment. The study also highlighted the impact of job design on employee empowerment, employee empowerment on patient empowerment, and reinforced the impact of managerial practices on service quality. It was found that the process elements of job satisfaction and employee empowerment were not significantly impacted by the structural elements and not predictive of service climate. However, the effects of service quality, patient satisfaction with service, and patient empowerment were fully mediated through the process elements of job satisfaction, employee empowerment, and service climate. These findings provide further evidence that certain structural elements of service, through their impact on

service climate have the potential to positively influence outcomes in the ER. Once again, service climate proved to be a link between the structure and outcomes of service in the ER.

In contrast to the findings of BC emergency nurses, in the case studies service training proved to be a direct and significant predictor of service climate. The findings also indicated direct paths between job design and employee empowerment, and employee empowerment and patient empowerment. These findings are understandable given the history of the two departments, NRGH in particular.

At the unit level of analysis, there were significant differences among the two ERs and perceptions of job satisfaction, employee empowerment, service climate, and patient satisfaction with service. There were also significant differences between the work positions (e.g. physicians, nurses, unit clerks, allied health providers) and perception of the elements. Insight into these findings was gained during the semi-structured interviews however it may be best summarized as different professional cultures, experiences and expectations come into play among the different work groups/work positions and the different work settings. The context in which these groups practice cannot be ignored. It is believed that some of the work groups do not need to feel satisfied in order to feel empowered, nor do they need to feel empowered in order to facilitate a service climate. These findings emphasize the importance of the structural elements of service design in establishing a climate for service in the ER.

The unit analysis also revealed that NRGH/ER staff gave higher ratings overall to the 10 elements in the Service Outcome Chain in comparison with VGH/ER staff. This suggests that more attention is placed on the service aspect of providing health care and perhaps on an overall service strategy at NRGH/ER in comparison with VGH/ER.

The NRGH/ER nurses rated higher on all service elements in comparison with the VGH/ER nurses. The NRGH/ER physicians rated lower on the service elements with the exception of job design, employee empowerment, patient satisfaction with service and patient empowerment. The finding among the NRGH/ER physicians is not surprising due to the history of that ER. For example, in the face of physician cutbacks in the NRGH/ER and in their effort to maintain adequate staffing ratios for the community, these physicians resigned en masse. Their total withdrawal of physician services forced the governing bodies to expedite negotiations and reach a mutually acceptable agreement.

The finding among NRGH/ER nurses is a surprise to the researcher. Based on her experience in both departments, the nurses at the VGH/ER appeared more cohesive, friendly and welcoming than did the nurses at the NRGH/ER. The NRGH/ER physicians on the other hand, were more outgoing, eager and interested to learn of ways to improve their department than were the physicians at VGH/ER. Perhaps one physician at VGH/ER said it best, "the difference between the VGH and the NRGH docs is that the VGH docs have given up, the NRGH docs are still trying. The NRGH docs are more receptive, the VGH docs say "I'm just going to come in, do my job and go home."

8.1.3 Study Three: Service Design and Patient Empowerment

The third study assessed *Service Design and Patient Empowerment* in the ER from the patient's point of view. Using a modified version of the Service Profit Chain, this study explored outcomes of service in terms of service quality, patient satisfaction with service and patient empowerment. This study also explored the patient's perception of physical design in the ER. The larger proposition being that patient empowerment is largely dependent on service quality and patient satisfaction with service, and that physical design is a predictor of service quality and a facilitator of patient empowerment in the ER setting. The findings stem from data collected from approximately 200 ER patients ($n = 198$) surveyed during the case studies. Patients responded to the same set of questions offered to health providers in the previous two studies regarding the outcome elements identified in the Service Outcome Chain. Patients also responded to the same set of questions on physical design as did the health providers.

The findings revealed low ratings of approval to the physical design of the ER, average ratings for service quality and patient satisfaction with service, and higher ratings for feelings of empowerment. As expected, there were significant and positive correlations between the four elements. The strongest association was between service quality and patient satisfaction with service. Other strong correlations were observed between physical design and service quality, service quality and patient empowerment, and patient satisfaction with service and patient empowerment. In the ERs under study, the physical design of the service setting is related to the patient's perception of service quality. Service quality is strongly related to their satisfaction with service, and feelings of empowerment as a result of service.

Advanced statistical analysis revealed that physical design has a direct impact on all three of the outcome elements (service quality, patient satisfaction with service, and patient

empowerment) and is not solely mediated through service quality and patient satisfaction with service. The findings reinforce the importance of using physical design to as a means to facilitate service quality and create an empowering service experience for patients in the ER. The findings of this study revealed the potential in service design as a way to empower patients. This has implications for personal and organizational health outcomes.

The following paragraph is a summary of patient comments that reinforce the influence of the facility and PD on the overall service experience for patients:

Receiving service in an environment of poor physical design, and under the demanding conditions as seen in the ER, exerts a powerful influence on attitudes and perceptions of service quality. At the end of the visit, the patient wants to leave the department with a positive health outcome and having had a quality service experience. When they reflect on the experience, ideally they want to remember the physical setting as being clean, comfortable, and accommodating; they want to remember that service was prompt; the providers responsive; and the social interactions genuine and informative. The patient really does not want to look back and remember the chunks of arborite that were chipped off the nursing desk, or the holes in the walls, or the patient placed in the linen room due to lack of space, or the hole in the floor covered with duck tape due to leaking asbestos, or the washroom shared between 20 patients that smelled "pissy". The patient presents to the ER because their health and well-being are in jeopardy and they should be able to expect to receive a quality service experience.

As evidenced by the feedback provided in this study, a relationship exists between physical design and service quality and the exploration of the relationship with the suggestion to improve is justified.

8.1.4 Study Four: Assessing a Measure for Physical Design

The fourth and final study focused on *Assessing a Measure for Physical Design*. Physical design is identified as a structural element in the Service Outcome Chain. The purpose of this study was to provide an intimate look at the physical design of the ER from the perspective of the staff who work in them. The larger proposition was to verify the measure developed by the Department of Health (2006) in the United Kingdom as a means for assessing the physical design of ERs. It was also proposed that physical design is a significant predictor of service climate. Registered nurses ($n = 180$) from ERs throughout the province of

British Columbia provided information about the physical design in the ER where they work. Furthermore, these nurses provided information on the service climate within their ER. Photographs taken of the case study ERs ($n = 2$) reinforced the findings revealed in this study.

The findings revealed low levels of agreement with regard to the physical setting and the effectiveness of the design. There were especially low ratings for the flexibility/adaptability of the department, its user-friendliness and ambience. Emergency nurses gave an average rating of approval to the amenities. The findings also showed significant relationships between attributes of physical design such as layout, ambience, amenities, flexibility/adaptability, user-friendliness, cleanliness of the ER and service climate. User-friendliness and cleanliness proved to be the strongest predictors of service climate.

In assessing physical design, there were significant differences noted among the health authorities. The findings revealed significant variation between the health authorities in perceptions of cleanliness, ambience and amenities.

In assessing physical design together with service climate, the findings revealed that the importance of a user-friendly design to the design of a service setting. There was significant variation between the health authorities in perceptions of cleanliness, ambience, amenities and user-friendliness. There was insignificant variation between the health authorities and their perceptions of service climate.

These findings illustrate that emergency nurses perceive a clean, user-friendly and well-laid out department to be important attributes of physical design in the ER service setting. In addition, the ambience of the setting was found to have strong associations with the majority of physical attributes tested with this measure.

8.1.5 Commonalities of the Four Studies

In a review of the findings from the four research studies, some commonalities presented which have implications for both research and practice. The commonalities were gathered from a second review of the empirical findings in terms of descriptive statistics, correlations, factor analysis and structural equation modelling. These underlying commonalities were gathered from both the results section of the four research studies in addition to some of the findings presented in the appendices (e.g. factor analyses). In addition, some of the qualitative findings from the semi-structured interviews were included to assist in explaining the common themes that presented.

There were consistent low ratings of physical design and managerial practices in the two research studies that assessed the perceptions of ER staff. In general, ER staff (BC emergency nurses and VIHA ER staff combined) gave low ratings to the design of their physical facilities and of the practices exhibited by management. What this indicates is a need to renew and repair the quality of the internal work /service environment for staff in terms of physical design and managerial practices. As currently constructed, the design of the physical setting and the practices of management do not support a service quality effort.

There were consistent low ratings of service climate in the two studies that assessed the perceptions of ER staff. ER staff gave low ratings of approval to items that measured the presence of service climate. The mean rating for items that measured the presence of a service climate in the ER was weak in comparison to other measures assessed. This finding indicates that staff are not being provided with the supports necessary to delivery quality service to patients nor do they feel that patients are receiving a high quality of service in the ER. Attributes of service climate that are particularly important to staff in designing a climate for service are leadership behaviours and being provided with the tools and knowledge necessary for providing quality service to patients.

The patient ratings of service quality, patient satisfaction with service and patient empowerment were consistently higher than staff perceptions of service quality, patient satisfaction with service and patient empowerment. When comparing the mean ratings between ER patients and ER staff on the elements of physical design, service quality, patient satisfaction with service and patient empowerment, patients consistently gave higher ratings of approval and satisfaction to these elements in comparison to perceived ratings of ER staff. The feedback acquired during the semi-structured interviews added further insight to this finding. There appears to be some conflict between the expectations and reality of providing service in the ER on the part of the staff. Staff feel they should be providing a higher quality of service that what is currently being delivered however are constrained by the realities of the work environment. Patients on the other hand, appear to be accepting of the quality of service provided, they seem to understand and feel for staff and the conditions of their work environment. Attributes of patient satisfaction that were identified as being are important to satisfying patients are: ensuring their privacy and security while in the ER, providing a

courteous experience for patients at triage, providing information to patients regarding wait times, the quality of physician care, and the care and courtesy of staff.

Physical design has a direct and significant impact on perceptions of service climate, service quality, patient satisfaction with service and patient empowerment across the three studies. In each of the data sets, there were significant findings as to the impact of physical design to the process and outcomes of service in the ER. This is a significant finding in this research and an area where one of the largest contributions to the literature and to practice is made. The findings indicate that greater emphasis should be placed on the physical design of ERs in setting the stage for the implementation and success of a service strategy. The findings also indicate attributes of physical design that are important in designing for service in the ER. These attributes are ambience, user-friendliness, layout, amenities, cleanliness, flexibility/adaptability and functionality. The physical attributes of cleanliness and user-friendliness are particularly important and significant to developing a climate for service in the ER.

Managerial practices consistently had a direct and significant impact on service quality in the two studies that assessed the perceptions of ER staff. The findings from both groups of ER staff (BC ER nurses and VIHA ER staff) indicate that the current practices and behaviours of management are currently not supportive of a service quality effort. The motto of “do more with less” has negatively impacted staff perceptions of service quality and perceptions of their ability to provide quality service to patients. The findings suggest that managers strive to develop their practices in a way that promotes a climate for service within the ER in order to effectively address staff perceptions of service quality. Attributes of service quality that are important to both patients and staff in the ER are tangibles (physical design, clothing and uniforms, brochures and information materials), and the empathy, reliability/responsiveness and professionalism of staff.

The 10 elements of service design in the Service Outcome Chain are positively and significantly correlated across the three research studies. In a review of the three data sets (BC ER nurses, VIHA ER staff and VIHA ER patients), the 10 elements identified in the Service Outcome Chain were revealed as being positively and significantly correlated (in the VIHA ER patient data set, all four elements assessed were positively and significantly correlated). The strongest relationships were noted between the following service elements:

- Managerial practices and service training, job satisfaction and service climate
- Physical design and job satisfaction and service quality
- Job satisfaction and service climate
- Service climate and service quality
- Service quality and patient satisfaction with service and patient empowerment
- Patient satisfaction with service and patient empowerment.

These findings provide support for the elements and the flow of the elements identified in the Service Outcome Chain. The commonalities presented above not only set the context for measuring the design of services in health care and the ER in particular, they assist researchers and practitioners to acquire a better understanding of the elements beyond the context of health care. These findings pave the way for future research on service design.

The following chapter will present the conclusion, contributions and implications of the research, limitations of the research, and directions for future research.



CHAPTER 9

Conclusion

9.1 Conclusion

This study was designed to gain some understanding of service design in health care, with specific emphasis on the ER. The combination of the development and application of a framework and the results gained from the empirical research involving the staff and patients of ERs can be used as a base upon which further research can be built and knowledge applied.

The theoretical model developed in this research can best be described as a summary of key attributes of organization that appear across four bodies of literature and affect the process of designing service to provide quality service in health care. It has been suggested in this study that the model has a unique theoretical and practical significance (Heskett et al., 1994, 1997; Schneider & Reichers, 1983; Schneider et al., 1998, 2005) in terms of understanding how to design for service in the ER, and can be used as a framework for further research and practical application. In addition, by empirically examining these attributes of service design and viewing these attributes from a structural, process and outcome perspective, it is hoped that a further contribution has been made.

The present study provides evidence not readily found elsewhere on the structure, process and outcomes of service design in the ER. That is, this study has provided empirical evidence on the significance of these attributes in designing for quality service. It also illustrates the relationships between the attributes and illustrates how they can work together to improve the quality of the service experience for both staff and patients.

The 'service' aspect of health care is an area that is poorly understood, insufficiently explored and deserves a much higher presence. The overall lack of research evidence is particularly acute in the case of public sector hospitals and ERs in Canada. Part of this is because many people view discussions on service quality as being more relevant to private health care institutions such as in the United States. In Canada, discussions about attempts to bring basic hospitality courtesies into health care, treating patients as guests, and offering patients not just successful clinical outcomes but positive, superior total service experiences (Fottler, et al., 2002; Hendrie, 2006) are often met with some resistance. The other part of the reason for overall lack of research evidence on service design and service quality in health care in Canada is because of context. Many of the challenges facing Canada's health care

system and the corresponding impact on service quality cannot be fully understood without some understanding of the context in which these challenges occur (Schein, 1984), because these challenges have a direct impact on the various parts of the system including ERs.

By providing more empirical evidence, this research has shed light on a process for designing for quality service in health care and the ER in particular. This is an area in need of attention, as in most of the empirical work reported in the literature, there is a general inconclusiveness about how to actually design for quality service in health care. In the marketing and service management literature, there are numerous studies that empirically assess many of the relationships that were assessed in this study. However, there is very limited empirical work that assesses these relationships within the context of health care, and to the degree, in terms of the multitude of relationships, that are empirically assessed in this study. It has therefore been necessary to rely largely on empirical work borrowed from the service management and marketing literatures. This research, then, has contributed by applying a service management perspective to examining the design of service in the ER.

9.2 Contributions and Implications

In this study, principle chain relationships were explored using data collected from frontline service providers and patients in ERs throughout the province of British Columbia. Insight into defining the elements of service design and their impact on service outcomes was gained. The link between the structure and outcomes of service was revealed, which informs us of how we can design for improved outcomes through a focus on service. In addition, the significance of physical as a structural element, service climate as process element, and service quality and patient empowerment as outcomes of quality service design were revealed. The findings identified ways to improve the quality of service in the ER, in an environment fraught with significant and ongoing pressures and demands.

This research contributes to the literature and to practice in three main ways. The first contribution is with the conceptualization, development and application of the Service Outcome Chain to the ER in public sector hospitals. The Service Outcome Chain framework has a unique theoretical and practical significance (Heskett et al, 1994, 1997; Schneider & Reichers, 1983; Schneider et al., 1998, 2005) in terms of understanding service design and developing a climate for service in organization. It can be used as a framework for further research and practical application. As the Service Outcome Chain provides a framework for

developing the service strategy and designing for service, the results should lend health care managers to consider the benefits of applying the Service Outcome Chain to the design and evaluation of health services.

In addition, as both the NRGH/ER and the VGH/ER are in the process of renovation and expansion, conducting a post-occupancy evaluation of both departments using the same framework and measuring instruments, would offer valuable comparative findings. The opportunity to replicate such an extensive study after the move into a new department is rare opportunity that can be invaluable to understanding service and the health care environment. In essence, the researcher would be conducting a pre and post occupancy evaluation. Should this study be replicated, it is recommended to expand the Service Outcome Chain by incorporating measures of financial performance. Establishing a strong business case for quality service design and any service strategy for that matter is needed.

The second contribution is the emphasis on service climate and its applicability to health care in general and the ER in particular. The major work accomplished in this area is associated with Schneider and his colleagues (1980, 1985, 1998, 2005). Repeatedly they have shown that employee experiences of the service climate in which they work significantly predict and affect the client experience and perceptions of the service experience. A fundamental component of the Service Outcome Chain is service climate which has been shown in this research to be a crucial link between the structure and outcomes of service. The findings of this research give reason to believe that we can design for improved outcomes through a focus on service. This research also extends previous research in the field that delves into the predictors and consequences of service climate. Although previous work has examined organizational predictors of service climate, this study went further and included managerial practices, physical design, job design, job satisfaction and employee empowerment as predictors or antecedents of service climate.

A third contribution of this research is its emphasis on the physical design. While work emerging from the marketing perspective of service quality includes the impact of physical design on the customer experience (Bitner, 1992) and the work from the field of architecture has brought forward the area of practice and study known as evidence based design (Ulrich & Zimring, 2004), this research illustrates the importance of the physical setting in creating a climate for service in organization. More emphasis needs to be placed on the design of the

'physical service setting'. There are policy implications for doing so, for example public funding agencies could mandate that 'service building performance evaluations' be conducted prior to the distribution of funds. The research encourages health care administrators and practitioners to learn and appreciate the value of facility design as a potential tool for developing a service climate in health care.

9.3 Limitations of the Research

A limitation of this research is in the level of analysis where there is a contrast between the original model (The Service Profit Chain) and the investigation pursued here. The original model was designed to assess an organizations' service strategy at the organization or unit level of analysis. In this study, the service strategy of ERs was assessed at the individual level of analysis. For example, in this research, the researcher looked at the variation among individual ER nurses or individual ER patients rather than the variation among units or ERs. It is recommended that future research assess these variables or service elements across numerous ERs to see if similar findings are produced.

A second limitation of this research is that the provider and patient data were not combined simultaneously in the models such as in investigating the patient: provider dyad. It is expected that the combination of the data sets would produce interesting findings in terms of structural equation modeling.

A third limitation is the small sample size of BC Nurses and VIHA staff and the limitations the present with conducting two case studies within the same health region. While this has its benefits, it may also be viewed as a limitation for comparative reasons.

A fourth limitation is the generalizability of the findings beyond the ER. As the challenges facing the ER are indicators of larger system problems, one can not assume that these findings are relevant to other areas of the system. Further empirical testing of the model to others areas within health care is advised.

A fifth and final limitation of this research is that the variables were assessed solely through perceptual measures, which are subjective rather than objective. Although it can be argued that how patients perceive service and service design may be the most valid measure to use for this inquiry, and that patients are the subject matter experts on this, the researcher is unable to confirm with this study how well these perceptions reflect reality. This is something

that replication in other locations or settings can confirm and or the inclusion of more objective measures.

9.4 Directions for Future Research

The researcher advocates for further research that examines the linkages in the Service Outcome Chain in acute care inpatient settings as well as research comparing results in private ERs, hospitals and health care systems with those obtained in public and not-for-profit health care organizations. While most of the variables specified in the model are relevant to a range of settings, the discrete linkages quite likely vary in strength. Furthermore, future research should seek to illuminate the multi-dimensional drivers of physical design, service climate, and perceived patient service quality and satisfaction with service and their relative importance. Enhanced understanding of the aspect level determinants of such assessments would offer practicing health care managers greater instruction on where and how resources should be directed.

Further research on physical design and testing and refining a construct for measuring physical service design is recommended. In addition, the question remains on how or whether physical design leads to superior economic returns on investment and whether patient empowerment leads to improved financial outcomes. Strategies that succeed in empowering patients should ultimately result in reduced patient costs per stay/visit and reduced demand placed on ERs, which reduced costs on the larger health care system. A practical example is in comparing the cost of a patient visit to the ER (\$530 non-resident of Canada, \$231 resident of Canada) versus the cost of a patient visit to a medical clinic (\$35) (CHR, 2008). Further research is needed that examines the linkage between patient empowerment and financial performance and to elaborate the sequence of paths that form any such connection.



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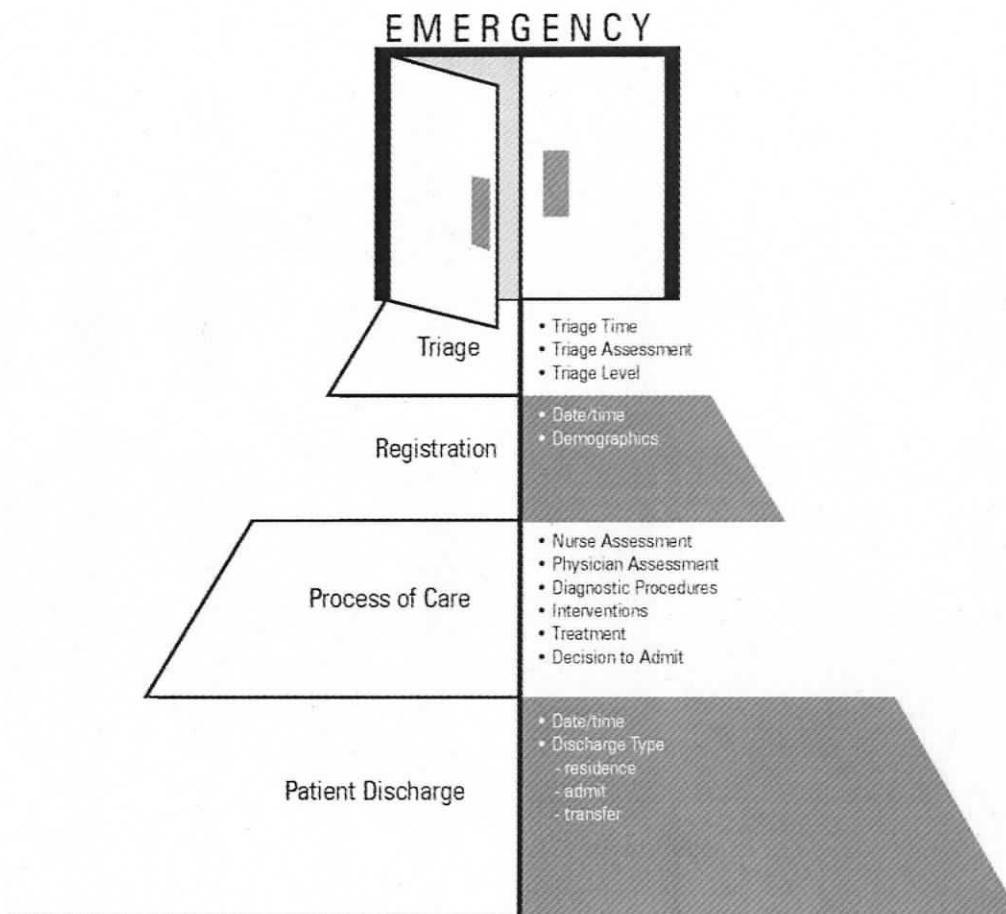


APPENDICES

Chapter 1

Appendix 1.1


Emergency Department Flow








Appendix 1.2

Canadian Triage and Acuity Scale

The Canadian E.D. Triage and Acuity Scale

Patients should have an INITIAL TRIAGE ASSESSMENT WITHIN 10 MINUTES* OF ARRIVAL 

TRIAGE LEVEL I - RESUSCITATION Time to NURSE Assessment: IMMEDIATE*  Time to PHYSICIAN Assessment: IMMEDIATE*	USUAL PRESENTATION	SENTINEL DIAGNOSIS
15	Code / Arrest Major Trauma Shock States Near Death Asthma Severe Respiratory Distress Altered Mental State (unconscious, obtunded) Seizure	Traumatic Shock Pneumothorax - Tensionic / Tension Facial Burns with Airway Compromise Severe Burns > 30% TBSA Overdose with Hypotension / Unconscious IAB ABI with Complications / CHF / Low BP Status Asthmaticus Head Injury - Major / Unconscious Status Epilepticus
TRIAGE LEVEL II - EMERGENT Time to NURSE Assessment: IMMEDIATE*  Time to PHYSICIAN Assessment: 15 MINUTES*	USUAL PRESENTATION	SENTINEL DIAGNOSIS
15	Head Injury (Risk Features + Altered Mental State) Severe Trauma Altered Mental State (lethargic, drowsy, agitated) Chemical Exposure - Eyes Allergic Reaction (Severe) Chest Pain + Visceral, Non-Traumatic + Associated Symptoms Overdose (intoxicant), Drug Withdrawal ABD Pain (Age > 50) with Visceral Symptoms Back Pain (Non Trauma, Not MSK) GI Bleed with Abnormal Vital Signs CVA with Major Deficit Asthma Severe (PEFR < 40%) Moderate / Severe Dyspnea / Difficulty Breathing Vaginal Bleeding + Acute, Pain scale > 8 + Abnormal Vital Signs Vomiting and/or diarrhea (with suspicion of dehydration) Signs of serious infection (purpuric rash, toxic) Chemotherapy or immunosuppression Fever (age > 2 months) Temp > 38.0 (rectal) Acute Psychotic Episode / Extreme Agitation Diabetes: Hypoglycemia, Hyperglycemia Headache (Pain Scale 8 - 10/10) Pain Scale 8 - 10 (CVA, Back, Eye) Sexual Assault Neonate (< 7 days old)	Head Injury Trauma, Multiple Sites, Multiple Rib Fracture, Neck Injury / Spinal Cord Atrial / Corneal Ocular Burns Anaphylaxis AMI, Unstable Angina, CHF, Chest Pain NOS, Gastroesophageal Reflux Unspecified Drug / Medication Overdose, "D.L.Y" AAA, Appendicitis, Cholecystitis Gastrointestinal Bleed, Hypertension CVA Severe Asthma COPD, Crup Spontaneous Abortion Ectopic Pregnancy / Rupture Epiglottitis, Meningitis, Sepsis Acute Psychotic Episode / Agitation Hypoglycemia, Diabetic Ketoacidosis, Hyperglycemia Migraine Renal Colic, LBP / Brain (Disc), Keratitis, Iritis
TRIAGE LEVEL III - URGENT Time to NURSE Assessment: 30 MINUTES*  Time to PHYSICIAN Assessment: 30 MINUTES*	USUAL PRESENTATION	SENTINEL DIAGNOSIS
30	Head Injury, Alert, Vomiting Moderate Trauma Abuse / Neglect / Assault Vomiting and/or diarrhea (< 2 years) Diarrhea problems Signs of Infection Mild / Moderate Asthma (PEFR > 40%) Mild / Moderate Dyspnea Chest Pain + No Visceral Symptoms (Sharp/MSK) + No Previous Heart Disease GI Bleed with Normal Vital Signs Vaginal Bleeding Acute, Normal Vital Signs Seizure, Alert on Arrival Acute Psychosis - Suicidal Ideation Pain Scale 8 - 10 / 10 with minor injuries Pain Scale 4 - 7 / 10 (Headache, CVA, Back)	Head Injury Anterior Dislocated Shoulder, Tibia / Fibula Fracture, Simple/Plat, Transverse Ankle Fracture Pyelonephritis Asthma without Status / COPD Bronchiolitis / Crup, Pneumonia Chest Pain NOS (MSK, GI, Resp) GI Bleed, No complications Spontaneous Abortion Seizure Acute Psychosis - Suicidal Ideation Migraine, Renal Colic, LBP / Brain (Disc)
TRIAGE LEVEL IV - LESS URGENT Time to NURSE Assessment: 60 MINUTES*  Time to PHYSICIAN Assessment: 60 MINUTES*	USUAL PRESENTATION	SENTINEL DIAGNOSIS
60	Head Injury, Alert, No Vomiting Minor Trauma ABD Pain (Acute) Earache Chest Pain, Minor Trauma or MSK, No Distress Vomiting and diarrhea (> 2 years old dehydration) Suicidal Ideation / Depression Allergic Reaction (Minor) Corneal Foreign Body Back Pain (Chronic) URI Symptoms Pain Scale 4 - 7 Headache (Non Migraine / Not Sudden)	Head Injury, Alert, No Vomiting Colles Fracture, Ankle Sprain Appendicitis, Cholecystitis Otitis Media / Otitis Externa Chest Pain NOS (MSK, GI, Resp), Gastroesophageal Reflux Suicidal Ideation / Depression Urticaria Corneal Foreign Body LBP / Brain URI
TRIAGE LEVEL V - NON URGENT Time to NURSE Assessment: 120 MINUTES*  Time to PHYSICIAN Assessment: 120 MINUTES*	USUAL PRESENTATION	SENTINEL DIAGNOSIS
120	Minor Trauma, Not necessarily Acute Sore Throat, No Resp Symptoms Diarrhea alone (no dehydration) Vomiting alone normal mental status (no dehydration) Menstrues Minor Symptoms ABD Pain (Chronic) Psychiatric complaints Pain Scale < 4	LBP / Brain URI Gastroenteritis Vomiting Disorders of Menses Dressing Changes Cast Changes Constipation Symptoms / Neurotic, Personality and Nonpsychotic Mental Disorders Unspecified Superficial Laceration(s)

* TIMES TO ASSESSMENT are operating objectives, not established standards of care. Facilities without onsite physician coverage may meet assessment objectives using delegated protocols and remote communication.

APPENDICES

Chapter 4

Appendix 4.1

CRNBC (Nurses) Consent Letter and Survey

**UVicBusiness**

Service Design in Health Care: An Empirical Study of Emergency Departments

SERVICE OUTCOME QUESTIONNAIRE

Registered Nurses

CONSENT LETTER

Purpose: Stories abound in the media concerning overcrowding and deteriorating levels of service, patient safety and patient satisfaction. The problem is exacerbated by the shortage of emergency providers as well as limitations on throughput from other areas. The purpose of this research is to explore the attributes of service design in health care, emergency departments in particular, using a framework entitled the Service Outcome Chain. Specifically, this research will address the following question: Is there a link between service design and outcomes in health care? The importance of this research is that it will provide the foundation for establishing a set of service design principles for health care with the goal to ultimately improve outcomes and address some of the challenges currently facing the system.

Participation: You are being asked to participate in this study because you work in an emergency department setting. The benefit is for you to have a voice in informing us of the current state of the service environment where you work, which will assist in developing a set of service design principles for health care. The results will be shared in the following ways: directly to the health authorities, directly to participants upon their request, in published articles, and in presentations at scholarly meetings. Your participation is completely voluntary, your anonymity and confidentiality will be maintained. There are no known or anticipated risks to you by participating.

Your involvement requires completing a survey that will take approximately 20 minutes to complete. You may withdraw from the study at any time without consequence or explanation. The data will be aggregated for analysis; no personally identifiable information will be published. The submission of this questionnaire implies your consent to participate.

Researcher: Claudia Steinke, a practicing emergency nurse and doctoral student at the University of Victoria, is conducting this research as part of the requirements for completing her doctoral degree (PhD). The supervisors for this research are Dr. Ali Dastmalchian (Dean, Faculty of Business, dastmal@uvic.ca) and Dr. Barton Cunningham (Professor, School of Public Administration, bcunning@uvic.ca). The University of Victoria Human Research Ethics Board has approved all aspects of this research. You may verify ethical approval or raise any concerns you might have by contacting any of the above people, including the Associate Vice-President of Research at the University of Victoria at 250-472-4545 or Dr. Peter Kirk, Regional Director of Research and Academic Development at 250-370-8620.

I ask for your participation in this important study. Please complete the following questionnaire and return in the self-addressed, stamped envelope by **November 30, 2006**.

Your input is greatly appreciated.

Sincerely,
 Claudia Steinke RN, PhD Candidate
 Principal Researcher
 Faculty of BUS / School of PADM
 University of Victoria
 E-Mail: steinke@uvic.ca



**University
of Victoria** | British Columbia
Canada

SECTION ONE - STRUCTURE

Service - may be defined as an overall performance consisting of a number of tasks, duties or work to be performed for the benefit or assistance of another (e.g. medical service). While the consumer cannot retain the actual service after it is produced, the effect of the service can be retained.

The following statements are designed to assess attributes of service design in the emergency department where you work. Please rate each statement according to where on the scale you feel your department is performing. Please mark an **'X'** in the appropriate box. Please note the scales vary. The term "client" refers to the patient.

General Attributes **Service training* refers to any training provided specific to delivering high quality service to clients (e.g. service skills training, service leadership training).	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
In my department:	1	2	3	4	5
Sufficient service training* was provided.					
Managers ask for our opinion on service training activities.					
Service training was practical.					
Learning about service has helped us to overcome obstacles at work.					
My manager sets definite quality standards of good client service.					
My manager recognizes and appreciates high quality work and service.					
My manager supports employees when they come up with new ideas on service.					
My manager works regularly with employees to discuss performance goals.					
My manager gets the people in different jobs to work together in serving clients.					
My manager works at keeping an orderly routine going in the department.					
My manager takes time to assist new employees to learn about the department and its clients.					
The leadership shown by management supports the service quality effort.					
Efforts to measure the quality of work and service are effective.					
The communication efforts to both employees and clients are effective.					
We (employees) are provided with the tools and technology to deliver superior quality work and service.					
We have the knowledge and the skills necessary to deliver superior quality work and service.					
We receive recognition and rewards for the delivery of superior quality work and service.					
The overall quality of service provided by our department is excellent.					

Feedback:

Please describe the type of service training that you've experienced while working in this department.

Physical Attributes Aspects of the physical structure that support service delivery.	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Ambience:	1	2	3	4	5
The physical appearance and layout of the department supports intuitive way- finding.					
The quantity of space with natural daylight is optimized.					
Artificial light levels are controllable by staff.					
The color scheme of the department creates a warm and comfortable ambience.					
The physical interior (e.g. furnishings, finishes) offers variety and contrast.					
The physical internal appearance of the department is calming and non-intimidating.					
The physical internal appearance of the department is tidy and well maintained.					
The physical external appearance of the department is tidy and well maintained.					
The physical design of the department is interesting to look at.					
Functionality:	1	2	3	4	5
The department is physically designed to be adaptable to respond to change and enable expansion.					
The physical layout facilitates both security and supervision.					
The department is located within close proximity to essentials (e.g. radiology, OR).					
The storage space is adequate in size to accommodate needs.					
The physical layout minimizes the amount of walking for staff and clients.					
The physical layout accommodates any necessary isolation and / or segregation of space (e.g. infectious clients, aggressive clients).					
The department is spacious and overcrowding is avoided.					
User-friendly:	1	2	3	4	5
I have a convenient place to relax and / or concentrate on work without being on demand.					
I have convenient access to the outdoors.					
I have convenient access to amenities (e.g. food service, banking, shopping).					
I have convenient access to educational media (e.g. literature, internet).					
The technology is up-to-date (e.g. computers, software programs, equipment).					
Comfortable furnishings are placed throughout the department (e.g. chairs).					
There are sufficient furnishings to accommodate users (e.g. chairs, stretchers).					

Job Attributes Characteristics of your job.	Completely Inaccurate	Somewhat Inaccurate	Neither Accurate Nor Inaccurate	Somewhat Accurate	Completely Accurate
	1	2	3	4	5
In my job:					
The tasks are a complete piece of work that has an obvious beginning and end.					
The job is simple and repetitive.					
The job is arranged so that I do not have the chance to do an entire piece of work from start to finish.					
I use a variety of skills and talents in my job.					
This job is one where many people can be affected by how well the work is done.					
The job requires me to use a number of complex high-level skills.					
The results of my work can significantly affect the lives or well being of others.					
The job denies me any chance to use my personal initiative or judgment.					
The job provides me the chance to completely finish the task I begin.					
A person working alone without talking or checking with other people can do the job.					
The job itself is not very significant in the broader scheme of things.					
The job requires a lot of cooperative work with other people.					
The actual work itself provides clues about how well I am doing.					
Supervisors often let me know how well they think I am performing the job.					
My job permits me to decide on my own how to go about the work.					
Just doing the job provides chances for me to figure out how well I am doing.					
The job gives me considerable opportunity for independence and freedom in how I do the work.					
My managers or co-workers let me know how well I am doing on the job.					
The job requires me to work closely with other people.					
The supervisors and co-workers almost never give me feedback about how well I am doing with my work.					
The job itself provides few clues about whether or not I am performing well.					

Feedback:

Please describe what you find 'positive' and/or 'not positive' about the design of your job and a recommendation for improvement. _____

SECTION TWO - PROCESS

The following statements are designed to assess various features of your work.

Work Satisfaction Intrinsic and extrinsic features of your work.	Very Dissatisfied	Dissatisfied	Neither Satisfied Nor Dissatisfied	Satisfied	Very Satisfied
	1	2	3	4	5
How satisfied are you with:					
Your opportunity to use your abilities.					
The freedom to choose your own method of working.					
The amount of variety in your work.					
The amount of responsibility you are given.					
The recognition you receive for good work.					
The attention paid to suggestions you make.					
Your chance for promotion.					
Your immediate supervisor.					
Your fellow workers.					
The relations between management and workers in your department.					
The way your department is organized.					
The physical work conditions.					
Your hours of work.					
Your rate of pay.					
Your job security.					
Taking everything into consideration, how do you feel about your work as a whole?					

Empowerment The degree to which you are energized or motivated by your work.	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
	1	2	3	4	5
In my work:					
The work I do is very important to me.					
My job activities are personally meaningful to me.					
The work I do is meaningful to me.					

Empowerment [Continuation]	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
	1	2	3	4	5
In my work:					
I am confident about my ability to do my job.					
I am self-assured about my capabilities to perform my work activities.					
I have mastered the skills necessary for my job.					
I have significant autonomy in determining how I do my job.					
I can decide on my own how to go about doing my work.					
I have considerable opportunity for independence and freedom in my work.					
My impact on what happens in my department is large.					
I have a great deal of control over what happens in my department.					
I have significant influence over what happens in my department.					

Feedback:

Can you identify a specific day or period within the past year when you came to work while ill or injured? _____ Yes _____ No

Can you describe the illness or injury? _____

What were the reasons you felt that you needed to come to work? _____

What were the difficulties you experienced while at work? _____

Was your manager informed of your illness of injury? _____ Yes _____ No

SECTION THREE - OUTCOMES

The following statements assess further attributes of service from the client's perspective.

Service Quality The manner in which service is delivered and its impact on clients. [Please respond from the vantage point of the client]	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
During the delivery of service:	1	2	3	4	5
Clients receive prompt service from employees.					
The physical facilities are visually appealing.					
Employees are well groomed and professionally dressed.					
The department provides its services at the time it promises to do so.					
The department keeps accurate records and documentation.					
The department carries out services right the first time.					
Employees tell clients exactly when services will be performed.					
The department has up-to-date equipment and technology.					
Employees are always willing to help clients.					
Clients feel secure in receiving medical service here.					
Employees are polite.					
Employees receive support from the department to do their jobs well.					
Employees provide personal attention to clients.					
The department has the client's best interests at heart.					
Employees understand the specific needs of each client.					
The service that clients receive is important to them.					
As a result of the service provided:	1	2	3	4	5
Clients are confident in their ability to restore their health.					
Clients are self-assured about their capabilities to restore their health.					
Clients have mastered the skills necessary to restore their health.					
Clients realize the large impact they have on their health.					
Clients realize they have a great deal of control over what happens with their health.					
Clients realize they have significant influence over what happens with their health.					

Service Satisfaction The degree to which clients report satisfaction with service. [Please respond from the vantage point of the client]	Very Dissatisfied	Dissatisfied	Neither Satisfied Nor Dissatisfied	Satisfied	Very Satisfied
How satisfied do you feel clients are with:	1	2	3	4	5
Courtesy of the staff at the triage / registration desk.					
Helpfulness of the staff at the triage / registration desk.					
The amount of privacy clients feel during triage / registration.					
The wait time before clients are triaged / registered.					
The care and concern shown by nurses.					
How well the nurses keep clients informed about treatment and any delays.					
The technical skill of the nurses.					
The wait time in the treatment area before a doctor sees a client.					
The care and concern shown by doctors.					
How well the doctors keep clients informed about their condition.					
How well the doctors explain tests and treatment to clients.					
How well the doctors explain 'what to expect next'.					
Advice about caring for self at home and obtaining follow-up medical care.					
How well the discharge instructions are explained.					
The reference materials provided to clients upon discharge (e.g. pamphlets specific to medical condition / treatment).					
Courtesy of the x-ray / laboratory technologists.					
The degree to which staff care about clients as people.					
Courtesy shown to the family and friends of clients.					
How well the staff keeps family and friends informed about client's condition and treatment.					
Feelings of safety and security while in the department.					
Overall, how would you rate the client's satisfaction with the services provided in this department?					

Feedback:

Describe what you find 'positive' and/or 'not positive' with the design of services where you work and a recommendation for improvement. _____

SECTION FOUR - DEMOGRAPHICS

The following demographic questions will be used for comparison measures between groups. Please mark an 'X' in the appropriate box or print your response (e.g. 1_Years) on the line provided.

Gender:

Female

Male

Level of education:College or Technical Training
University - UndergraduateUniversity - Graduate
Other: _____**Birth year:** _____**Work position and place of work:****Position**Staff Nurse
Clinical Nurse Specialist
Manager / Assistant Manager / Supervisor
Director / Assistant Director / Associate**Place of work**Hospital
Community Health Centre
Nursing Station / Outpost / Clinic
Other: _____**Current RN employment status:**Employed part-time / casual basis
Employed part-time / regular basisEmployed full-time / casual basis
Employed full-time / regular basis**Length of time working in your current position:**

_____ Years _____ Months

Length of time worked in this emergency department:

_____ Years _____ Months

Length of time worked in the emergency department setting:

_____ Years _____ Months

The health authority / employer that you currently work for:Vancouver Coastal Health
Vancouver Island Health Authority
Provincial Health Services AuthorityFraser Health
Interior Health
Northern Health**Length of time worked for this health authority:**

_____ Years _____ Months

Please indicate if you work at either of the following sites (to avoid replication of data).

Victoria General Hospital - Emergency Department
Nanaimo Regional General Hospital - Emergency Department
Not Applicable

Please provide an e-mail address if you would like to receive a summary of the results:

THANK YOU FOR YOUR PARTICIPATION AND SUPPORT.

Claudia Steinke, RN
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Appendix 4.2

Table 4.2.1

Collated Version of Qualitative Comments Regarding Managerial Practices (n = 180)

MANAGERIAL PRACTICES

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the managerial practices where you work and provide a *recommendation* for improvement.

Themes

Direct supervision	<ul style="list-style-type: none"> • Direct supervision and feedback are non-existent (only when sick/OT in department). • There is minimal support from management. • I don't know what the manager even looks like! • We are asked for input both most suggestions are disregarded. • We do not have a specific manager; no real leadership exists as we have a remote, multi-unit manager. • My manager is also the manager of the OR and that seems to be her top priority in terms of training, equipment, and staffing. She is also a senior staff member therefore seems to be on holidays a lot and unavailable. • Managers have little contact with staff nurses therefore we rely on the clinical resource manager and charge nurses. • Management rules by intimidation! I feel devalued and demoralized daily. • I dislike the lack of adequate supervisory skills my leaders have and no consistency in how supervision of the department is carried out. • We need strong leadership with vision, tenacity and managerial experience.
Feedback; the need to feel valued.	<ul style="list-style-type: none"> • The job is stressful, more appreciation would greatly help and feeling that we matter and make a difference. • We need more feedback and acknowledgement from supervisors and co-workers on job performance to let us all know how we're doing and where we need to improve. • The overall hospital management needs to be more receptive to the team. • Positive feedback is almost never given but negative feedback is always freely given. • Lack of performance evaluations by managers, goals not clearly defined.

Table 4.2.2

Collated Version of Qualitative Comments Regarding Service Training (n = 180)

SERVICE TRAINING

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the service training where you work and provide a *recommendation* for improvement.

Themes

Orientation	<ul style="list-style-type: none"> • I had one 12 hour night shift orientation, a "buddy" shift. More orientation was planned but abandoned due to short staffed. • My orientation was done by three different nurses (two day shifts and one night shift). • We need a better orientation program.
Technical training	<ul style="list-style-type: none"> • We have mandatory annual certification of the following ER specific courses: ACLS, CPR, CTAS, ENPC, NRP, TNCC, TNPC. Sometimes these courses are paid for by the hospital, most often not. Courses such as the BCIT ER Speciality Course, and ED skill specific in-services such as psychiatric triage, cardiac monitoring are voluntary.
Service training	<ul style="list-style-type: none"> • The term 'service' is completely meaningless, I'm sure your business school loves it! • There's very little training here, it's pretty much sink or swim. I was jus thrown into my position. • Few courses are available however they are done on our own time and we have to pay for it. They tell us there is no money. • Limited funding/support for education, even for courses that are a "must-have". There is no replacement staff to cover those wanting to attend. • Minimal in-servicing or training, have to ask for any training. • No service training, however lots of clinical support and in-services such as: code management, equipment training. • There is no ongoing educational plan for staff. Education is inconsistent; we often learn as we do a procedure, hands-on training. • I am in a leadership position, but not the manager, I received no training; most was practice/on the job type training. • In-services: Twice yearly we have in-services to review topics chosen by staff to update, refresh or newly educate. • We have mandatory paid 7.5 hours skill days three times a year where we review new equipment/protocols/theories and learn about research results from our department.

Table 4.2.3

Collated Version of Qualitative Comments Regarding Job Design (n = 180)

JOB DESIGN

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the design of your job and provide a *recommendation* for improvement.

Themes	
Autonomy	<ul style="list-style-type: none"> • Autonomous, independent judgement and thinking. • I enjoy the patient contact experience and the ability to self-schedule.
Dynamic	<ul style="list-style-type: none"> • Every shift is different and things can change on a moment's notice • Challenging, dynamic, high-adrenaline, ever-changing.
Feedback	<ul style="list-style-type: none"> • The most positive aspect of my job is the feedback that I receive from patients and to know that I helped save a life.
Responsibility	<ul style="list-style-type: none"> • Because nursing staff are so concerned for the welfare of their patients, they try to make-up for the short fall in resources. • Everyone is so stretched it is often not possible to do the job well. • We take pride in what we do; there is a great sense of responsibility. • Huge responsibility with poor support and team work. • If I could do my job (assess and treat patients) that would be great, but to tell people that are very sick or in a lot of pain to sit in the waiting room is frustrating and is making me think about leaving this job.
Staffing	<ul style="list-style-type: none"> • Short-staffed, work long shifts (12 hours) with no breaks; because we have no time, we are task oriented, patients feel uncared for. • Chronic lack of staffing levels in department, I find myself working beneath my skill level and education (performing many non-nursing duties) due to lack of support staff. • The inability to have patients seen and treated in a reasonable time.
Support	<ul style="list-style-type: none"> • The inability to perform tasks without interruptions. • Manager overwhelmed with "big" issues, unable to support front line staff, "big" issues like staff bullying and harassment, and intolerance of marginalized patient populations is tolerated and/or ignored. • My role is full time clinical coordinator yet half time I work as an RN and do not have enough hours in the administrative role. • Lack of security, potential threat of violence.
Teamwork	<ul style="list-style-type: none"> • Great teamwork, caring, polite, knowledgeable, competent staff despite increased workload, decreased breaks, increased frustration. • Because of my rotation, I work with the same nurses all the time. We enjoy each others company and we work well together. • Tapping into the knowledge of my colleagues, discussions with physicians and other disciplines is educational and positive.

Table 4.2.4

Collated Version of Qualitative Comments Regarding Physical Design (n = 180)

PHYSICAL DESIGN

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the design of the physical setting where you work and provide a *recommendation* for improvement.

Themes

Equipment	<ul style="list-style-type: none"> Faulty equipment, shoddy conditions, inadequate isolation facilities, too much paperwork, not enough staff. Not enough stretchers, the long term care patients are holding up the stretchers; lack of stretchers leaves patients spilling out of the department, placed in alcoves without proper staffing or supervision.
Family	<ul style="list-style-type: none"> The trauma room is set up to accommodate inclusion of the family.
Layout	<ul style="list-style-type: none"> Layout not nursing friendly. Supplies and patient load are spread out, does not allow for direct observation of patients or easy access to supplies/equipment. Because of the layout, nursing has little control over friends and family trooping through the department. Physical layout not positive, lots of walking, no visual contact with most stretchers.
Lighting	<ul style="list-style-type: none"> Natural light: there are no windows in the ER, no TVs, nothing to do.
Privacy	<ul style="list-style-type: none"> Privacy: patient privacy and confidentiality poor due to overcrowding and the layout of the department. The triage area is poorly laid out, there is no privacy, people in the waiting room can see and hear everything going on at triage. Privacy also limited due to very small rooms and close proximity between stretchers. There is no privacy for when patients lying in the hallways. Nursing desk not private, patients see staff and often interrupt our work.
Security	<ul style="list-style-type: none"> Security: security for staff is very poor especially at triage; staff are left vulnerable and exposed.
Size	<ul style="list-style-type: none"> The waiting room is small and situations escalate as people are watching each other (patients and staff). Need more space as overcrowded and too many staff in a small nursing station, easy to lose charts and not finish charting accurately.
Space	<ul style="list-style-type: none"> Workspace: not enough workspace at the bedsides. We need a larger space overall and waiting room, and isolation area.
Triage	<ul style="list-style-type: none"> The triage area needs to be better designed, updated and provide more privacy. It should be placed closer to the actual nursing desk. We have a beautiful triage area that is not being utilized because of inadequate staff and no admitting clerk.

Table 4.2.5

Collated Version of Qualitative Comments Regarding Service Climate (n = 180)

SERVICE CLIMATE

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the climate for service where you work and provide a *recommendation* for improvement.

Themes	
Attitude	<ul style="list-style-type: none"> • Most of my co-workers genuinely care about patients. • Need more positive attitude amongst staff, more time to spend with patients.
Expectations	<ul style="list-style-type: none"> • Patients expect McDonald's drive thru health care.
Feedback	<ul style="list-style-type: none"> • The fact that staff concentrates on negative feedback and we receive no positive feedback needs to be addressed.
Frustration	<ul style="list-style-type: none"> • Patients frustrated due to long wait times (2-4 hours), patients not being given regular updates as to why things are taking time (e.g. lab result), this leads to frustration. • Patients/families yell at nurses when dissatisfied for many reasons. It is a rare occasion that a parent yells at a doctor or complains about a doctor. Families consistently challenge the nurse about the process within the ER. • I love ER but have become more frustrated with the care being given to patients. The wait time is horrendous, stressful for everyone.
Morale	<ul style="list-style-type: none"> • Staff morale has deteriorated due to overcrowding and management problems. I left my previous job because of this, because I wanted to work in a more organized hospital but things aren't much different here. We all hope it will get better but when? I would not want to be a patient here.
Overcrowding	<ul style="list-style-type: none"> • The constant pressures and demands of overcrowding are extremely negative on the staff and patients.
Support	<ul style="list-style-type: none"> • Lack of support (e.g. security, physical surroundings, overcrowding, ready access to current policies and procedures, etc.)
Time	<ul style="list-style-type: none"> • When the department is busy it limits the amount of time spent explaining tests, discharge instructions or just keeping patients informed.
Workload	<ul style="list-style-type: none"> • We need a better nurse/patient ratio so that we have more time to spend with patients, keep patients updated, give explanations, etc. All we seem to have time for is to put out fires and give medications. • Long waits and high workload on nurses does not allow for patient teaching and reassurance. We're usually abrupt, short, non-caring, medical care only.

Table 4.2.6

Collated Version of Qualitative Comments Regarding Service Quality (n = 180)

SERVICE QUALITY

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with the service quality where you work and provide a *recommendation* for improvement

Themes

Efficiency	<ul style="list-style-type: none"> • Fast delivery of triage and care due to small facility. • Need shorter wait times.
Flow	<ul style="list-style-type: none"> • When the ER is blocked with admitted patients, there is no place to work, we are seeing and treating patients in hallways, running between areas to follow patients to ensure their safety.
Follow up	<ul style="list-style-type: none"> • Patients return for outpatient tests and when they return the emergency physician explains test findings, arranges consults and referrals.
Personal	<ul style="list-style-type: none"> • Small rural hospital/still community based so staff and patients interact on a more personal level, leading to increased quality of nursing care, increased patient satisfaction, great morale in our ER compared to others I've worked in.
Time	<ul style="list-style-type: none"> • Not enough time spent explaining anything in detail to patients. Patient teaching and explanation of treatments and tests as well as discharge instructions by both physicians and nurses are not being met due to overcrowding and decreased staff in the ER. Patients leave with more questions than answers.
Workload	<ul style="list-style-type: none"> • I work with many skilled people but our workload and environment is detrimental to the care we give. • More staff, lack of staff continues to affect our quality of care. • There is a lack of staff to care for the amount of patients we have. • I am often in a position that interferes with the kind of care that I'd like to deliver because of staff shortages and/or too large of patient assignment. Quality of care is sacrificed, sometimes the "surface is skimmed," reduced ability to fully explore all patient needs. • Many patients that come to the ER do not have emergency issues. The ER is backlogged with things that people should have gone to the family doctor for.

Table 4.2.7

Collated Version of Qualitative Comments Regarding Patient Satisfaction (n = 180)

PATIENT SATISFACTION

Feedback Question:

Describe what you find '*positive*' and/or '*not positive*' with patient satisfaction with service where you work and provide a *recommendation* for improvement.

Themes

Explanation and information	<ul style="list-style-type: none"> • Patients want faster service and treatment. The patients often ask "what did the doctor say?" and the nurse has to repeat it. • Patients need to understand the triage process and priority of care. • Staff need to keep patients better informed, explain what is happening, why things are moving so slow. • We could do a better job in providing a discharge summary to patients with a clear plan. We are often overwhelmed by volume to do a good job in this area.
Overcrowding and wait times	<ul style="list-style-type: none"> • Nurses at triage skilled but often overwhelmed with waiting patients and their families, many questions and demands. Even with a second triage nurse it is long and stressful. Long wait times are the most worrisome and biggest problem. • Patients dissatisfied with the wait; I am not aware of how patients perceive the services at our hospital or in our department with any accuracy. Some seem happy, some seem unhappy. A patient satisfaction survey would be nice. • Too long of wait, sometimes even one hour before getting triaged. Most parents are dissatisfied with the wait when we are busy but most are very happy to talk to with the paediatrician. • Patients often feel forgotten about in the waiting room and are often agitated/abrupt when the finally enter into a bed. Overcrowding, long wait times, irritated patients reflect onto staff.
Safety and security	<ul style="list-style-type: none"> • Improve security; currently we have Wal-Mart greeters! • Increasing violence in the workplace (interaction with patients), more staff would improve outcomes.

Table 4.2.8

Collated Version of Qualitative Comments Regarding Patient Empowerment (n = 180)

PATIENT EMPOWERMENT

Feedback Question:

Describe what you find *'positive'* and/or *'not positive'* with patient empowerment where you work and provide a *recommendation* for improvement.

Themes

Education	<ul style="list-style-type: none"> • Many non-nursing jobs done by nurses leaving less time for actual teaching and nursing. • We need more pamphlets and written instructions provided for patients upon discharge. • We need to re-train/educate the public, especially the frequent flyers.
Motivation	<ul style="list-style-type: none"> • I work at BC Children's and feel that most parents are highly motivated to care for their children. Most staff are highly motivated to care for children and try hard to work with parents, we don't want them to have to come back to the ER.
Responsibility	<ul style="list-style-type: none"> • Public abuse of ER services. The general public doesn't want to take responsibility for their health.

Table 4.2.9

Collated Version of Qualitative Comments Regarding Presenteeism/Absenteeism (n = 180)

Can you identify a specific day or period within the past year when you came to work while ill or injured?	n	%
Yes	119	66.11
No	58	32.22
Total	177/180 responded	98.33
Can you describe the illness or injury*?	n	%
Allergies	2	1.11
Cardiovascular	2	1.11
Flu/cold symptoms	44	24.44
Gastroenteritis	5	2.78
Headache/migraine	2	1.11
Respiratory (e.g. bronchitis, strep throat)	9	5
Mental illness/stress	7	3.89
Musculoskeletal (general aches, sprains, strains, arthritis)	5	2.78
Musculoskeletal (back)	24	13.33
Musculoskeletal (foot)	3	1.67
Musculoskeletal (hand)	3	1.67
Musculoskeletal (knee)	5	2.78
Musculoskeletal (leg)	7	3.89
Musculoskeletal (neck)	2	1.11
Musculoskeletal (shoulder)	10	5.56
Viral type illness	2	1.11
<i>*Many of the 64 identified multiple illnesses/injuries, all included</i>	64/180 responded	35.56
What were the reasons you felt you needed to come to work?	n	%
Concern for co-workers / hate letting down my colleagues	17	9.44
Concern for patients / longer waits	2	1.11
Felt guilty	7	3.89
Felt I could cope	5	2.78
Financial reasons	13	7.22
No relief staff	50	27.78
Not sick enough to call in	4	2.22
Pressure from management	11	6.11
Pressure from co-workers	1	.56
Short-notice	3	1.67
Short-staffed	49	27.22
Unit desperate for senior staff	3	1.67
	61/180 responded	33.89

Specific Comments:

I felt guilty about calling in sick, I was already sick for two days / The unit was short-staffed and desperate for senior staff to work / Management does not like sick calls / Was told I had no replacement and the manager was confrontational and upset / Harassed by management because I called in 12 hours in advance, was told to call in again as it got closer as I may be feeling better. I also

needed the money / Was brought into the office regarding sick time earlier / Lack of support from managers when injury reported to them and guilt that colleagues would work short-handed / Was already brought into the office for using 66 hours of sick time.

What were the difficulties you experienced while at work?	<i>n</i>	%
Didn't want to be there	1	.56
Difficulty concentrating	19	10.56
Difficulty getting through the 12 hour shift	6	3.33
Difficulty performing my work roles (e.g. heaving lifting)	14	7.78
Disorganized	3	1.67
Emotional	6	3.33
Fatigue / exhaustion	18	10
Feeling unsatisfied with my performance	2	1.11
Felt rundown, unwell	9	5
Headache	4	2.22
Heavy workload, busy floor, no breaks	13	7.22
Discomfort / Pain and/or increased pain	25	13.89
Quality of patient care jeopardized	8	4.44
Reduced mobility	4	2.22
Risk of infecting others	4	2.22
Slow to react, took longer to do tasks	4	2.22
Symptoms worsened	6	3.33
	61/180	38.89
	responded	

Specific Comments:

Feeling tired and run down / Our ED is a mess and I have lost hope that it will ever get better / Blowing nose, sneezing while at patients' bedside, passing germs / Felt lousy, no time to take breaks on busy days due to volume of patients and being short staffed / Increased lower back discomfort, lack of support from co-workers (e.g. charge nurse told me to "go hobble away") / Needed to be constantly mindful of my physical actions and less able to assist patients / Unable to concentrate, heavy workload, not able to complete all tasks, medication errors, less tolerant and sympathetic to patients as not feeling well myself. Further injury or illness because I worked instead of caring for myself / Couldn't concentrate, a certain patients' diagnosis brought me to tears and I couldn't pull myself together, I had to leave for home. / Overcapacity within dept and outside triage areas, numerous patients waiting, we had a tragic death of a 5 year old, little resources, no crisis management available, so I stayed an extra 4 hours and was denied overtime.

Was your manager informed of your illness or injury?	<i>n</i>	%
Yes	59	32.78
No	57	31.67
Total	116/180	64.44
	responded	

Table 4.2.9 (Continued)

Additional comments:	
Management	<ul style="list-style-type: none"> • What would it matter! Not a lot of support. • We do not have a manager and if we did what could she do, she is powerless to do anything as are the rest of us. • Manager is more interested in statistics, one of them being the amount of sick time taken by staff. • Management sends out messages stressing the need to reduce sick time. • The manager and I did not get along. I was afraid of showing any weakness in front of him because he could and did make my life miserable. • Irrelevant, we are all burned out. Management doesn't seem to care; we work short all the time, breaks missed/skipped/compromised. • No apparent concern for my well-being. I am a body and there to do a job/fill a line. • We are work horses as staff. I do not believe our well-being is of much importance to the manager/head nurse as long as there is a body to do the work. • Very good support from manager, union and occupational health, physio, and doctor in gradual return to work plan. • System needs to do more than recognize and research the aging nursing demographics and move more quickly to enact change. RNs need to be more supported and recognized.
Nurses	<ul style="list-style-type: none"> • Many of us come to work while ill or injured, we feel obligated. • I frequently come to work when under the weather as there is no relief staff. • Unable to take time off (e.g. banked time) due to no staff. • I know that when I take a day off due to illness, they will have difficulty replacing me. • Even though most people have sick days, you are conditioned to not phoning in sick unless you have a broken leg or something. It is almost "frowned upon". Sometimes people will even ask why you are sick when it is none of their business. • When my son was sick with the Norwalk virus, I called in sick and stated same. The charge nurse said I would have to apply for special leave and could not use my sick time. Subsequently, now if my son (4 years old) is sick, I call in and do not state reason as I was not covered for family illness. It forces me to state that I am sick, as a single mom to access my sick time. • Told to "take an advil" and "keep going", when I was already working really hard. I just would have appreciated a good break and some recognition that I wasn't feeling well. I really never take sick time! Perhaps that is why I wasn't listened to, I am taken for granted - everyone used to me working hard all of the time. • When I did go to call in sick, I was told that because of me they'd be operating short and they wouldn't be able to cover. I felt really guilty for being sick • I feel guilty when I call in sick as I know it is difficult to replace sick calls in our dept. I am also amazed at the increase in sick time over the last couple of years probably due to increased OT/hours work for regular staff. • There is a lot of peer pressure to not call in for colds. Because it ER you often hear other nurses calling patients "wimps" for complaints of colds. I do not want to be a wimp even though I wanted to stay home. • I probably would have been able to stay and function but the charge nurse wouldn't change my assignment.

Appendix 4.3

Table 4.3.1

Results of the Principal Components Analysis for Service Training (n = 180)

Items:	Component 1
Service Training	Service Training
ST Sufficient Training	0.82
ST Practical Training	0.85
ST Managers Ask	0.70
ST Training Helped	0.76
<i>Alpha</i>	0.79
<i>Eigenvalues</i>	2.47
<i>% Variance</i>	61.81

Table 4.3.2

Results of the Principal Components Analysis for Physical Design (n = 180)

Items:	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6
Physical Design	Ambience	User-Friendly	Layout	Amenities	Cleanliness	Adaptability
PD Variety	0.83					
PD Interesting	0.79					
PD Color	0.79					
PD Calming	0.72					
PD Nat. Light	0.67					
PD Art. Light	0.54					
PD Suff. Furnish		0.68				
PD Comfor. Furn		0.60				
PD Relax		0.58				
PD Technology		0.57				
PD Spacious		0.54				
PD Privacy		0.45				
PD Layout			0.70			
PD Proximity			0.63			
PD Security			0.50			
PD Wayfinding			0.42			
PD Amenities				0.83		
PD Outdoors				0.65		
PD Media				0.54		
PD Ext. Tidy					0.83	
PD Int. Tidy					0.67	
PD Storage						0.72
PD Flexible						0.51
PD Isolation						0.46
<i>Alpha</i>	0.86	0.76	0.71	0.62	0.76	0.61
<i>Eigenvalues</i>	8.34	1.81	1.39	1.19	1.11	1.04
<i>% Variance</i>	34.75	7.53	5.78	4.97	4.60	4.32

Table 4.3.3

Results of the Principal Components Analysis for Job Design (n = 180)

Items: Job Design	Component 1 Skill Variety	Component 2 Feed Agents	Component 3 Autonomy	Component 4 Feed Job	Component 5 Task Identity	Component 6 Deal Others	Component 7 Other
JD Skill Var 2	0.77						
JD Skill Var 3	0.77						
JD Task Sig 1	0.72						
JD Task Sig 2	0.68						
JD Skill Var 1R*	0.43						
JD Feed Age 2		0.87					
JD Feed Age 3R		0.82					
JD Feed Age 1		0.79					
JD Autonomy 2			0.82				
JD Autonomy 3			0.82				
JD Feed Job 1				0.85			
JD Feed Job 2				0.66			
JD Feed Job 3R				0.40			
JD Task ID 1					0.83		
JD Task ID 3					0.74		
JD Deal Others 3						0.77	
JD Deal Others 1R						0.69	
JD Deal Others 2						0.64	
JD Task Sig 3R						0.52	
JD Task ID 2R							0.81
JD Task Auto 1R							0.56
<i>Alpha</i>	0.73	0.80	0.65	0.48	0.57	0.59	0.30
<i>Eigenvalues</i>	3.51	2.69	1.88	1.59	1.24	1.12	1.01
<i>% Variance</i>	16.69	12.81	8.96	7.55	5.90	5.33	4.81

Table 4.3.4

Results of the Principal Components Analysis for Job Satisfaction (n = 180)

Items: Job Satisfaction	Component 1 Management	Component 2 Intrinsic	Component 3 Extrinsic	Component 4 Security
JS Supervisor	0.85			
JS Attention	0.78			
JS Relations	0.77			
JS Recognition	0.67			
JS Promotion	0.59			
JS Abilities		0.76		
JS Responsibilities		0.74		
JS Variety		0.72		
JS Freedom		0.69		
JS Overall	0.32	0.52	0.34	0.43
JS Pay			0.84	
JS Security			0.65	
JS Hours			0.62	
JS Physical				0.85
JS Organized				0.46
JS Colleagues				0.40
<i>Alpha</i>	0.83	0.78	0.62	0.58
<i>Eigenvalues</i>	5.42	1.76	1.27	1.87
<i>% Variance</i>	33.88	11.01	7.96	7.42

Table 4.3.5

Results of the Principal Components Analysis for Empowerment (n = 180)

Items: Employee Empowerment	Component 1 Meaning	Component 2 Competence	Component 3 Autonomy	Component 4 Impact
EE Meaningful Service Important	0.93			
EE Meaningful Activities	0.90			
EE Meaningful Work	0.92			
EE Competence Confident		0.91		
EE Competence Self assured		0.91		
EE Competence Mastered		0.81		
EE Autonomy Considerable			0.86	
EE Autonomy Decision Making			0.90	
EE Autonomy Independence			0.79	
EE Impact on Department				0.70
EE Impact Control				0.89
EE Impact Influence				0.91
<i>Alpha</i>	0.91	0.85	0.88	0.85
<i>Eigenvalues</i>	4.44	2.32	1.91	1.12
<i>% Variance</i>	36.91	19.36	15.91	9.33

Table 4.3.6

Results of the Principal Components Analysis for Service Quality (n = 180)

Items: Service Quality	Component 1 Empathy	Component 2 Reliability	Component 3 Tangibles
SQ Assurance: Polite	0.77		
SQ Reliability: Willing	0.74		
SQ Empathy: Understand	0.73		
SQ Empathy: Personal	0.70		
SQ Empathy: Best Interests	0.61		
SQ Assurance: Secure		0.44	
SQ Responsive: Prompt		0.78	
SQ Reliability: Promise		0.58	
SQ Responsive: Tell		0.55	
SQ Reliability: Right			
SQ Tangibles: Equipment			0.72
SQ Tangibles: Physical Bldg			0.64
SQ Tangibles: Staff Dress			0.53
SQ Assurance: Support			0.42
SQ Reliability: Records			0.40
<i>Alpha</i>	0.81	0.71	0.58
<i>Eigenvalues</i>	4.93	1.52	1.35
<i>% Variance</i>	32.87	10.11	8.99

Table 4.3.7

Results of the Principal Components Analysis for Patient Satisfaction (n = 180)

Items:	Component 1	Component 2	Component 3	Component 4	Component 5
Patient Satisfaction	Staff Care	MD Care	Triage/Wait	Info/Educati	Privacy/Security
PS RN Technical	0.76				
PS Courtesy Family	0.73				
PS Care Me Person	0.69				
PS RN Care	0.53				
PS X-Ray Staff Care	0.52				
PS Info to Family	0.40				
PS MD Informative		0.86			
PS MD Tests		0.86			
PS MD Explains		0.84			
PS MD Care		0.61			
PS Triage Wait			0.81		
PS MD Wait			0.79		
PS Triage Courteous			0.66		
PS Triage Helpful			0.63		
PS Overall			0.52		
PS Reference Mat.				0.80	
PS Advice				0.74	
PS Discharge				0.65	
Instructions					
PS RN Informative				0.52	
PS Triage Privacy					0.75
PS Triage					0.63
Secure/Safe					
<i>Alpha</i>	0.80	0.87	0.83	0.75	0.47
<i>Eigenvalues</i>	7.40	2.18	1.64	1.34	1.19
<i>% Variance</i>	35.26	10.37	7.80	6.39	5.68

Table 4.3.8

Results of the Principal Components Analysis for Patient Empowerment (n = 180)

Items:	Component 1	Component 2	Component 3
Patient Empowerment	Meaning	Competence	Impact
PE Meaningful Service Important	0.79		
PE Meaningful Activities	0.79		
PE Meaningful Service	0.84		
PE Competence Confident		0.65	
PE Competence Self assured		0.65	
PE Competence Mastered		0.80	
PE Impact Health			0.82
PE Impact Control			0.81
PE Impact Influence			0.81
<i>Alpha</i>	0.76	0.78	0.88
<i>Eigenvalues</i>	3.48	1.09	1.22
<i>% Variance</i>	38.72	23.22	13.57

APPENDICES

Chapter 5

Appendix 5.1

Table 5.1.1

Results of the Principal Components Analysis for Service Training (n = 98)

Items:	Component 1
Service Training	Service Training
ST Sufficient Training	0.82
ST Practical Training	0.78
ST Managers Ask	0.77
ST Training Helped	0.72
<i>Alpha</i>	0.77
<i>Eigenvalues</i>	2.39
<i>% Variance</i>	59.67

Table 5.1.2

Results of the Principal Components Analysis for Managerial Practices (n = 98)

Items:	Component 1
Managerial Practices	Managerial Practices
MP Support	0.86
MP Recognition	0.85
MP Performance Goals	0.83
MP Work Together	0.80
MP Standards	0.79
MP Orderly Routine	0.76
MP Assists New Employees	0.75
<i>Alpha</i>	0.90
<i>Eigenvalues</i>	4.56
<i>% Variance</i>	65.16

Table 5.1.3

Results of the Principal Components Analysis for Physical Design (n = 98)

Items: Physical Design	Component 1 Functionality	Component 2 Ambience	Component 3 User-Friendly	Component 4 Layout
PD Security	0.76			
PD Spacious	0.74			
PD Isolation	0.72			
PD Flexible	0.72			
PD Natural Light	0.70			
PD Wayfinding	0.66			
PD Sufficient Furnish	0.66			
PD Interior Tidy	0.65			
PD Privacy	0.62			
PD Storage	0.56			
PD Exterior Tidy	0.51			
PD Color		0.87		
PD Variety		0.76		
PD Calming		0.74		
PD Interesting		0.69		
PD Artificial Light		0.51		
PD Comfort		0.49		
PD Media			0.75	
PD Amenities			0.74	
PD Outdoor			0.56	
PD Technology			0.54	
PD Relax				0.71
PD Proximity				0.64
PD Layout				0.43
<i>Alpha</i>	0.93	0.88	0.71	0.64
<i>Eigenvalues</i>	10.64	1.84	1.34	1.21
<i>% Variance</i>	44.31	7.67	5.59	5.04

Table 5.1.4

Results of the Principal Components Analysis for Job Design (n = 98)

Items: Job Design	Component 1 Skill Variety	Component 2 Feed Agents	Component 3 Feed Job	Component 4 Task ID	Component 5 Autonomy	Component 6 Deal Others
JD Skill Var3	0.79					
JD Skill Var 2	0.79					
JD Skill Var 1	0.42					
JD Task Sig 2	0.76					
JD Task Sig 1	0.68					
JD Feed Age 1		0.87				
JD Feed Age 2		0.85				
JD Feed Age 3		0.81				
JD Autonomy 1		0.38				
JD Feed Job 1			0.73			
JD Feed Job 2			0.66			
JD Feed Job 3			0.55			
JD Deal Others 1			0.61			
JD Task ID 1				0.81		
JD Task ID 2				0.49		
JD Task ID 3				0.81		
JD Autonomy 2					0.81	
JD Autonomy 3					0.77	
JD Deal Others 2						0.52
JD Deal Others 3						0.70
JD Task Sig 3						0.65
<i>Alpha</i>	0.79	0.82	0.65	0.62	0.73	0.44
<i>Eigenvalues</i>	4.83	3.05	0.67	1.55	1.42	1.09
<i>% Variance</i>	22.91	14.53	7.96	7.39	6.76	5.20

Table 5.1.5

Results of the Principal Components Analysis for Job Satisfaction ($n = 98$)

Items: Job Satisfaction	Component 1 Management	Component 2 Intrinsic	Component 3 Extrinsic
JS Relations	0.83		
JS Recognition	0.76		
JS Supervisor	0.73		
JS Attention	0.72		
JS Physical	0.69		
JS Organized	0.66		
JS Freedom	0.56		
JS Abilities		0.81	
JS Responsibilities		0.79	
JS Variety		0.76	
JS Colleagues		0.54	
JS Security			0.81
JS Pay			0.77
JS Hours			0.62
JS Overall			0.55
JS Promotion			0.47
<i>Alpha</i>	0.87	0.79	0.77
<i>Eigenvalues</i>	5.63	1.92	1.48
<i>% Variance</i>	37.51	12.80	9.89

Table 5.1.6

Results of the Principal Components Analysis for Employee Empowerment ($n = 98$)

Items: Employee Empowerment	Component 1 Meaning	Component 2 Competence	Component 3 Autonomy	Component 4 Impact
EE Meaningful Service Important	0.92			
EE Meaningful Activities	0.96			
EE Meaningful Service	0.96			
EE Competence Confident		0.90		
EE Competence Self assured		0.88		
EE Competence Mastered		0.88		
EE Autonomy Considerable			0.84	
EE Autonomy Decision Making			0.89	
EE Autonomy Independence			0.83	
EE Impact on Department				0.68
EE Impact Control				0.89
EE Impact Influence				0.89
<i>Alpha</i>	0.97	0.87	0.87	0.82
<i>Eigenvalues</i>	4.53	2.57	1.80	1.13
<i>% Variance</i>	37.79	21.44	15.03	9.40

Table 5.1.7

Results of the Principal Components Analysis for Service Climate (n = 98)

Items: Service Climate	Component 1 Service Climate
SC Leadership	0.83
SC Measurement	0.81
SC Communication	0.85
SC Tools	0.81
SC Knowledge	0.37
SC Rewards	0.71
SC Overall	0.45
<i>Alpha</i>	0.83
<i>Eigenvalues</i>	3.55
<i>% Variance</i>	50.77

Table 5.1.8

Results of the Principal Components Analysis for Service Quality (n = 98)

Items: Service Quality	Component 1 Empathy	Component 2 Professional	Component 3 Tangibles	Component 4 Reliability
SQ Empathy Best	0.83			
SQ Empathy Understand	0.70			
SQ Empathy Personal	0.68			
SQ Responsive Willing	0.66			
SQ Assurance Polite	0.57			
SQ Assurance Secure	0.48			
SQ Responsive Prompt		0.82		
SQ Tangibles Dress		0.67		
SQ Reliability Promise		0.65		
SQ Tangibles Physical			0.78	
SQ Tangibles Equipment			0.66	
SQ Assurance Support			0.50	
SQ Reliability Records				0.81
SQ Responsive Tell				0.55
SQ Reliability Right				0.46
<i>Alpha</i>	0.80	0.69	0.61	0.53
<i>Eigenvalues</i>	4.78	1.70	1.26	1.16
<i>% Variance</i>	31.83	11.33	8.36	7.75

Table 5.1.9

Results of the Principal Components Analysis for Patient Satisfaction (n = 98)

Items: Patient Satisfaction	Component 1 Staff Care	Component 2 Physician Care	Component 3 Information	Component 4 Triage	Component 5 Privacy/Security
PS RN Technical	0.77				
PS Care Person	0.74				
PS RN Care	0.59				
PS Courtesy to Family	0.55				
PS X-Ray Staff	0.52				
PS Overall	0.47				
PS MD Explanations		0.85			
PS Advice		0.81			
PS MD Tests		0.77			
PS Discharge Instructi		0.76			
PS MD Information		0.71			
PS Reference Materials		0.53			
PS MD Care		0.42			
PS RN Information			0.82		
PS Information Family			0.71		
PS MD Wait			0.69		
PS Triage Wait				0.71	
PS Triage Courteous				0.67	
PS Triage Helpful				0.66	
PS Triage Privacy					0.69
PS Secure					0.51
<i>Alpha</i>	0.86	0.87	0.73	0.75	0.56
<i>Eigenvalues</i>	8.07	2.18	1.39	1.25	1.05
<i>% Variance</i>	38.42	10.36	6.63	5.95	5.00

Table 5.1.10

Results of the Principal Components Analysis for Patient Empowerment (n = 98)

Items:	Component 1	Component 2	Component 3
Patient Empowerment	Meaning	Competence	Impact
PE Meaningful Service Important	0.82		
PE Meaningful Activities	0.89		
PE Meaningful Service	0.85		
PE Competence Confident		0.89	
PE Competence Self assured		0.87	
PE Competence Mastered		0.61	
PE Impact Health			0.81
PE Impact Control			0.91
PE Impact Influence			0.88
<i>Alpha</i>	0.83	0.87	0.92
<i>Eigenvalues</i>	1.90	0.92	4.54
<i>% Variance</i>	21.12	10.20	50.44

Appendix 5.2

Case Study Questionnaire Semi-Structured Interview Questions

[This list reflects the questions asked during the semi-structured interviews. Not all questions were asked to each interview subject. Questions asked depended largely on work position (e.g. manager or frontline provider). In addition the questions were modified slightly to best reflect the findings from the quantitative study.]

Leadership

- How much time does top management personally spend developing and maintaining a corporate culture focused around service to clients and frontline providers?
- Have core values in the organization been clearly identified?
- Do these core values emphasize sufficiently the need to be responsive to clients and employees?
- What is done to communicate these core values throughout the organization?
- Is there sufficient recognition at all levels for those individuals whose actions characterize the core values and the resulting behaviours implied by the service outcome chain?
- Has sufficient emphasis been placed on the achievement of results through measurement and management by fact?

The Service Delivery System

- When was the last time the elements of your service delivery system were appraised in terms of the extent to which they:
 - Enhance or impede the quality and productivity of work carried out by employees.
 - Involve clients in the successful delivery of the service.
 - Provide the right amount of latitude to service providers to adapt service as needed.
 - Provide fail-safe protection at crucial points in the service delivery process.
 - Communicate a consistent message to patients about the nature of the service.

Foundation Issues - Building a Cycle of Capability

- When was the last time the strategy for frontline employee capability was reviewed for internal consistency and the degree to which it supported the overall strategy of the organization?
 - Is the organization devoting enough time and effort to the selection of new employees?
 - How are client-contact employees being selected? (Attitude, then skill?)
 - Does training reflect both the needs of the frontline job and the needs of the individual required to fill it in order to achieve advantage with both clients and potential employees?
 - Do frontline service personnel have the degree of latitude necessary to deliver on the promises made by management to both clients and the organization?
 - Does the physical design support a service strategy?

Employee Satisfaction

- How is employee satisfaction measured?
- Is it measured in ways that can be linked to similar measures of patient satisfaction with sufficient frequency and consistency to establish trends for management use?
- To what extent are measures of patient satisfaction and/or service quality used in recognizing and rewarding employees?

Employee Empowerment

- How would you define employee empowerment? Are employees empowered in this organization?
- What can be done to empower employees?

Service Climate

- What are some of the shared perceptions of the practices, procedures, behaviours that are rewarded, supported and expected with regard to service?
- Has adequate thought been given to such things as recruitment and selection, training, recognition and rewards for all participants, and design of the physical setting in emphasizing service quality?

Service Quality

- How is service quality measured?
- How is information concerning the patient's perceptions of service quality shared with those responsible for designing and delivering service?

Patient Satisfaction

- Is patient satisfaction data gathered in an objective, consistent, and periodic fashion?
- How are complaints encouraged by the organization? What are the listening posts?
- Are a majority of patient complaints made to someone who can do something about them? If not, what gets done to insure that this is the case?
- Is there such thing as fast, personalized, customized service recovery in the organization? What has been done to achieve this?

Patient Empowerment

- How would you define patient empowerment?
- How can empowerment be used to the advantage of the individual and organization?

Relating the Measures

- What are the most important relationships in the organizations' service outcome chain?
- To what extent does each measure correlate with financial targets at the frontline level?
- What impact would the adoption of the service outcome chain measure, organized in the form of a balanced scorecard, either for employee appraisal or compensation has on the organization?
- Is the importance of these relationships reflected in the rewards and incentives offered to employees?

APPENDICES

Chapter 6

Appendix 6.1

VIHA Patient Consent Letter and Survey

**UVicBusiness**

Service Design in Health Care: An Empirical Study of Emergency Departments

SERVICE OUTCOME QUESTIONNAIRE

VIHA Emergency Department Patients

CONSENT LETTER

Purpose: Stories abound in the media concerning overcrowding and deteriorating levels of service, patient safety and patient satisfaction. The problem is exacerbated by the shortage of emergency providers as well as limitations on throughput from other areas. The purpose of this research is to explore the attributes of service design in health care, emergency departments in particular, using a framework entitled the Service Outcome Chain. Specifically, this research will address the following question: Is there a link between service design and outcomes in health care? The importance of this research is that it will provide the foundation for establishing a set of service design principles for health care with the goal to ultimately improve outcomes and address some of the challenges currently facing the system.

Participation: You are being asked to participate in this study because you are a patient or client of this emergency department. The benefit of your participation is for you to have a voice in informing us of the current state of this service environment, which will assist in developing a set of quality service design principles for health care. Your participation is completely voluntary, your anonymity and confidentiality will be maintained. There are no known or anticipated risks to you by participating. You may withdraw from the study at any time. The results of this study will be shared in the following ways: directly to the organizations under study, directly to participants upon their request, in published articles, and in conference presentations.

Your involvement requires completing a survey that will take approximately 10 minutes to complete. The submission of this questionnaire implies your consent to participate.

Researcher: Claudia Steinke, a practicing emergency nurse and doctoral student at the University of Victoria, is conducting this research as part of the requirements for completing her doctoral degree (PhD). The supervisors for this research are Dr. Ali Dastmalchian (Dean, Faculty of Business, dastmal@uvic.ca) and Dr. Barton Cunningham (Professor, School of Public Administration, bcunning@uvic.ca). The University of Victoria Human Research Ethics Board has approved all aspects of this research. You may verify ethical approval or raise any concerns you might have by contacting any of the above people, including the Associate Vice-President of Research at the University of Victoria at 250-472-4545 or Dr. Peter Kirk, Regional Director of Research and Academic Development at 250-370-8620.

I ask for your participation in this important study. Please complete the following questionnaire and return in the self-addressed, stamped envelope by **December 11th, 2006**. You may submit the survey by depositing it into the secured box located at the triage desk or by placing it in the mail.

Your input is greatly appreciated.

Sincerely,

Claudia Steinke RN, PhD Candidate
Principal Researcher
Faculty of BUS / School of PADM
University of Victoria
E-Mail: steinke@uvic.ca



**University
of Victoria**

British Columbia
Canada

Service - may be defined as an overall performance consisting of a number of activities, tasks, duties or work to be performed for the benefit or assistance of another (e.g. medical service).

The following statements are designed to assess attributes of service design in this emergency department. Please rate each statement according to where on the scale you feel this department is performing. Please mark an 'X' in the appropriate box. The term "client" refers to you, the patient.

Physical Attributes The following statements refer to aspects of the physical structure that support the delivery of service in this department.	Strongly Disagree	Disagree	Neither Agree No Disagree	Agree	Strongly Agree
Ambience:	1	2	3	4	5
The physical appearance and layout of the department supports way-finding (it is easy to find my way around the department without asking for guidance).					
The quantity of space with natural daylight is optimized.					
Artificial light levels are controllable by staff.					
The color scheme of the department creates a warm and comfortable ambience.					
The physical interior (e.g. furnishings, finishes) offers variety and contrast.					
The physical internal appearance of the department is calming and non-intimidating.					
The physical internal appearance of the department is tidy and well maintained.					
The physical external appearance of the department is tidy and well maintained.					
The physical design of the department is interesting to look at.					
Functionality:	1	2	3	4	5
The department is physically designed to be adaptable to respond to change and enable expansion.					
The physical layout facilitates both security and supervision.					
The department is located within close proximity to essentials (e.g. radiology, OR).					
The storage space is adequate in size to accommodate needs.					
The physical layout minimizes the amount of walking for staff and clients.					
The physical layout accommodates any necessary isolation and / or separation of space (e.g. for infectious clients, aggressive clients).					
The department is spacious and overcrowding is avoided.					
User-friendly:	1	2	3	4	5
I have convenient access to amenities (e.g. food service, banking, shopping).					
I have convenient access to educational media (e.g. literature, internet).					
The technology is up-to-date (e.g. computers, software programs, equipment).					
Comfortable furnishings are placed throughout the department (e.g. chairs).					
There are sufficient furnishings to accommodate users (e.g. chairs, stretchers).					

Service Quality The following statements refer to the manner in which service is delivered and its impact on you, the client.	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
During the delivery of service:	1	2	3	4	5
I receive prompt service from employees.					
The physical facilities are visually appealing.					
Employees are well groomed and dress professionally.					
The department provides its services at the time it promises to do so.					
The department keeps accurate records and documentation.					
The department carries out services right the first time.					
Employees tell me exactly when services will be performed.					
The department has up-to-date equipment and technology.					
Employees are always willing to help me.					
I feel secure in receiving medical service here.					
Employees are polite.					
Employees receive support from the department to do their jobs well.					
Employees provide me with personal attention.					
The department has my best interests at heart.					
Employees understand my specific needs.					
The service I receive is important to me.					
The various activities that make up the 'service' are personally meaningful to me.					
The service that I receive is meaningful to me.					
As a result of the service provided:	1	2	3	4	5
I am confident in my ability to restore my health.					
I am self-assured about my capabilities to restore my health.					
I have mastered the skills necessary to restore my health.					
I realize the large impact I have on my health.					
I realize I have a great deal of control over what happens with my health.					

Service Satisfaction The following statements refer to the degree of satisfaction you feel with the service(s) provided in this department. Please note the change in scale.	Very Dissatisfied	Dissatisfied	Neither Satisfied No Dissatisfied	Satisfied	Very Satisfied
How satisfied do you feel with:	1	2	3	4	5
The courtesy of the staff at the triage / registration desk.					
The helpfulness of the staff at the triage / registration desk.					
The amount of privacy you feel during the triage assessment / registration interview.					
The wait time before you are triaged / registered.					
The care and concern shown by nurses.					
How well the nurses keep you informed about treatment and any delays.					
The technical skill of the nurses.					
The wait time in the treatment area before a doctor sees you.					
The care and concern shown by doctors.					
How well the doctors keep you informed about your condition.					
How well the doctors explain tests and treatment to you.					
How well the doctors explain 'what to expect next'.					
Advice about caring for yourself at home and obtaining follow-up medical care.					
How well the discharge instructions are explained.					
The reference materials provided to you upon discharge (e.g. pamphlets specific to your medical condition and / or treatment).					
The courtesy of the x-ray / laboratory technologists.					
The degree to which staff care about you as a person.					
The courtesy shown to your family and friends.					
How well the staff keeps your family and friends informed about your condition and treatment.					
Your feelings of safety and security while in the department.					
Overall, how would you rate your satisfaction with the service(s) provided in this department?					

ADDITIONAL FEEDBACK

Provide an example of something you find 'positive' about the design of services in this department.

Provide an example of an 'area for improvement' in the design of services in this department.

DEMOGRAPHIC QUESTIONS

The following demographic questions will be used for comparison measures between groups. Please mark an 'X' in the appropriate box or print your response on the line provided (e.g. 1 Years).

Gender:

| Female

| Male

Birth year: _____**Level of education:**

| Primary School

| University - Undergraduate

| Secondary School

| University - Graduate

| College or Technical Training

| Other: _____

Current employment status:

| Employed part-time / temporary basis

| Self-employed

| Employed part-time / permanent basis

| Un-employed

| Employed full-time / temporary basis

| Retired

| Employed full-time / permanent basis

| Student

| On-leave (e.g. disability, maternity)

| Other: _____

What is the reason for your visit to this emergency department today? _____

How would you classify your visit to this emergency department today?

| Emergent

| Less-urgent

| Urgent

| Non-urgent

Is this a first or repeat visit for your present illness or injury?

| First visit

| Repeat visit

What do you perceive to be your entire length of time spent in this department today?

_____ Hours _____ Minutes

Were you discharged from this department or did you leave prior to being seen by a physician?

| I was discharged.

| I left prior to being seen by a physician.

From the time that you were triaged and registered, how much time did you spend in the waiting area before being taken to a treatment room?

_____ Hours _____ Minutes

How much time did you spend in the treatment room before being seen by a physician?

_____ Hours _____ Minutes

After being seen by a physician, how much time did you spend waiting to receive treatment (whether it be having your cast removed, having an intravenous line started, being administered a medication, etc.)?

_____ Hours _____ Minutes

Do you feel the overall wait time in this department (in both the waiting and treatment areas) was appropriate to your illness or injury? | Yes | No

Please explain: _____

In general, how would you rate your health before receiving service from this department?

Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5

In general, how would you rate your health now after receiving service from this department?

Poor	Fair	Good	Very Good	Excellent
1	2	3	4	5

Compared to how you presented at triage, how would you rate your health in general now?

Much Worse Now	Somewhat Worse Now	About The Same	Somewhat Better Now	Much Better Now
1	2	3	4	5

In the past year, how many times have you sought service from this emergency department?

0-1 times	4-5 times	8-9 times
2-3 times	6-7 times	10 + times

In the past year, how many times have you sought service from other emergency departments?

0-1 times	4-5 times	8-9 times
2-3 times	6-7 times	10 + times

In the past year, how many times have you sought service elsewhere?

(e.g. medical or walk-in clinics. Please do not include emergency departments)

0-1 times	4-5 times	8-9 times
2-3 times	6-7 times	10 + times

How long have you lived in this community?

_____ Years _____ Months | Not Applicable

Please indicate the site where you received service today.

| Victoria General Hospital - Emergency Department
| Nanaimo Regional General Hospital - Emergency Department

Please provide an e-mail address if you would like to receive a summary of the results:

THANK YOU FOR YOUR PARTICIPATION AND SUPPORT.

Appendix 6.2

Table 6.2.1

Results of the Principal Components Analysis for Physical Design (n = 198)

Items: Physical Design	Component 1 Ambience	Component 2 User-Friendly	Component 3 Functionality	Component 4 Access	Component 5 Organization	Component 6 Layout
PD Color	0.76					
PD Variety	0.75					
PD Calm	0.67					
PD Nat. Light	0.49					
PD Privacy		0.58				
PD Suff. Furn		0.57				
PD Com. Furn		0.55				
PD Art. Light		0.54				
PD Interest		0.52				
PD Technol.		0.49				
PD Isolation			0.72			
PD Flexible			0.63			
PD Spacious			0.57			
PD Relax			0.55			
PD Storage			0.40			
PD Amenities				0.77		
PD Media				0.69		
PD Outdoor				0.53		
PD Ext. Tidy					0.73	
PD Int. Tidy					0.61	
PD Wayfind					0.52	
PD Proximity						0.75
PD Layout						0.75
PD Security						0.47
<i>Alpha</i>	0.75	0.71	0.75	0.69	0.62	0.59
<i>Eigenvalues</i>	7.03	1.54	1.42	1.21	1.10	1.06
<i>% Variance</i>	29.30	6.43	5.93	5.04	4.57	4.43

Table 6.2.2

Results of the Principal Components Analysis for Service Quality (n = 198)

Items: Service Quality	Component 1 Responsive	Component 2 Tangibles	Component 3 Professionalism
SQR Willing	0.83		
SQE Understand	0.77		
SQA Polite	0.76		
SQE Personal	0.71		
SQE Best	0.70		
SQA Secure	0.65		
SQR Prompt	0.64		
SQRL Promise	0.61		
SQR Tell	0.56		
SQT Equipment		0.77	
SQT Physical		0.71	
SQRL Records		0.57	
SQT Dress			0.65
SQA Support			-0.55
SQRL Right			-0.41
<i>Alpha</i>	0.87	0.52	0.35
<i>Eigenvalues</i>	5.41	1.45	1.06
<i>% Variance</i>	36.05	9.65	7.07

Table 6.2.3

Results of the Principal Components Analysis for Patient Satisfaction (n = 198)

Items: Patient Satisfaction	Component 1 Care/Courtesy	Component 2 Physician	Component 3 Triage Courtesy	Component 4 Triage Wait	Component 5 MD Wait
SS Courtesy Family	0.83				
SS Information Family	0.76				
SS RN Technical	0.63				
SS RN Information	0.62				
SS Staff Care	0.61				
SS Safety and Security	0.51				
SS Overall	0.48				
SS Xray Courtesy	0.43				
SS RN Care	0.42				
SS MD Tests/Treatm.		0.85			
SS MD Information		0.85			
SS MD Explain		0.81			
SS MD Care		0.72			
SS Triage Helpful			0.89		
SS Triage Courtesy			0.88		
SS Triage Privacy				0.75	
SS Triage Wait				0.74	
SS MD Wait					0.41
SS Reference Material					0.81
<i>Alpha</i>	0.85	0.89	0.91	0.49	-0.026*
<i>Eigenvalues</i>	6.94	1.89	1.39	1.13	1.01
<i>% Variance</i>	36.51	9.73	7.34	5.97	5.29

* This value is negative due to a negative average covariance among items. Item codings were checked.

Table 6.2.4

Results of the Principal Components Analysis for Patient Empowerment (n = 198)

Items: Patient Empowerment	Component 1 Meaning	Component 2 Competence	Component 3 Impact
PE Meaningful Service Important	0.72		
PE Meaningful Activities	0.75		
PE Meaningful Service	0.87		
PE Competence Confident		0.76	
PE Competence Self assured		0.77	
PE Competence Mastered		0.73	
PE Impact Health			0.78
PE Impact Control			0.87
PE Impact Influence			0.89
<i>Alpha</i>	0.72	0.75	0.88
<i>Eigenvalues</i>	3.91	1.52	1.12
<i>% Variance</i>	43.41	16.91	12.39

