Major Project:

Going Home after Transcatheter Aortic Valve Implantation; meeting the education and self-care needs of the frail elderly patient undergoing a minimally invasive cardiac intervention.

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A project submitted in partial fulfillment of the requirements for the degree of Masters in Nursing in the School of Nursing, Faculty of Human and Social Development, University of Victoria

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Abstract

Transcatheter aortic valve implantation (TAVI) provides new hope for enhanced quality of life for frail elderly aortic stenosis patients who are deemed prohibitively high risk for open heart valve surgery. While the field of minimally invasive cardiovascular intervention grows rapidly, patient education has failed to keep pace. Patient education is vital for knowledge, and knowledge was identified by Orem (1995) as a key requisite of self-care. The frail elderly present unique challenges in terms of patient education, a responsibility entrusted to the nursing profession. The purpose of this project was to review current literature on elderly patient education to produce recommendations for how nurses may assess elderly patients' knowledge and plan, implement, and evaluate education for the patient and family. Themes that emerged include health literacy, patient and family-centred care, geragogy, and humanism. These findings were applied to the TAVI patient population and recommendations for practice were made.

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As a nurse who has spent her entire career to date working in cardiovascular care, I have been exposed to a vast array of patient populations, conditions, and diagnostic and interventional procedures. Cardiology is a rapidly growing field, and cardiovascular nursing is evolving in response to these changes. Such advancements are apparent nowhere more so than in the specialty of interventional cardiology. The development of more complex and yet less invasive procedures means better treatment options for older, more frail patients who were, until recently, managed with medications and lifestyle limitations.

These advancements are a major milestone in the cardiovascular care of the elderly, and are a step toward enhanced quality of life for elderly patients. Patients only need to remain in hospital a brief time, for example four or five days, and then are discharged to the comfortable familiarity of their own homes. However, along with the benefits of such new interventional procedures comes a caveat; rapid post-procedure discharge means less time for patient education. The frail elderly already present a unique challenge in terms of patient education; new procedures and brief hospitalization compound the issue. As vital members of interdisciplinary health care teams, nurses are charged with the challenging task of educating patients and preparing them to care for themselves at home. The majority of patient education literature is focused on younger adults, and thus underpinned by numerous assumptions about health literacy, cognition, processing time, sensory input, and memory. These assumptions often result in ineffective elderly patient education. In order for interventional cardiovascular procedures to be truly successful and result in long-term benefit to patients, thorough and effective nurse-patient education must take place.

In this paper I will explore how nurses can best support the frail elderly through education on adequate self-care after undergoing a minimally invasive cardiac intervention called transcatheter

aortic valve implantation (TAVI; discussion to follow). Initially I set out to review the literature on this topic, but soon found little had been written on this specific focus. Thus I expanded my focus to an examination of literature on topics such as frailty in cardiovascular patients and patient education of the elderly. As my topic matured it became evident that specific principles must be understood by nurses in order to allow effective education of the elderly patient. It has become clear that regardless of specific content, the method of delivery of education with the frail elderly is vital. Thus, for this paper I reviewed current literature on elderly patient education and discussed how my findings may be applied to the elderly cardiovascular patient undergoing TAVI, a minimally invasive cardiac procedure. I begin with a brief discussion of the key terms and concepts to be defined and discussed. Following this background discussion is a review of current literature on patient education and the elderly. Lastly I applied the findings of my review to the TAVI patient population and discuss practice implications and areas for further investigation.

I wrote this paper from the ontological perspective that the frail elderly are a marginalized population, nowhere more so than in cardiac care. Today's health care system, with its rapid paced processes of admission, intervention, and discharge, has positioned self-care at the forefront of nursing literature. Patient education is one of the key requisites for adequate and effective self-care. For the frail elderly population, education is a challenge that is often overlooked by health care professionals. This may indicate marginalization of the frail elderly in cardiac care. It is my hope that this project provides some insight into educating the elderly cardiac patient, including not only what information is needed but how nurses may best deliver it.

Background

Aortic stenosis

Aortic stenosis (AS) is a condition that affects 2 - 5% of older adults in Canada, and is the third most diagnosed cardiovascular disease after coronary artery disease and hypertension (Pibarot & Dumesnil, 2007). Blood pumped out of the heart and to the body passes through the aortic valve. A normal, healthy aortic valve opens widely and closes entirely with each beat of the heart. A stenotic aortic valve is stiffened and does not fully open. As a result, the heart must work harder to eject blood. Over time, this results in heart failure. Symptoms of heart failure include dyspnea/shortness of breath, angina/chest pain, presyncope/dizziness, and syncope/fainting. These symptoms are debilitating and greatly reduce the quality of life for those living with aortic stenosis and heart failure (Spaccarotella, Mongiardo, & Indolfi, 2011). The vast majority of patients with aortic stenosis are elderly. In fact, in 2012 nearly 5% of adults 75 years of age and older suffered from AS (Chiam & Ruiz, 2009).

Traditional treatment for AS is open heart valve surgery in which the heart valve is repaired or, more often, replaced. This surgery is effective and works well for most patients. However, many AS sufferers are considered too high risk for surgery and are therefore managed, often suboptimally, with medication. Indeed, the "onset of symptoms (of AS) heralds a rapid decline with medical therapy alone" (Holmes et al., 2012). TAVI offers this unique patient group a chance to greatly enhance their quality of life by undergoing a minimally invasive procedure to replace their diseased aortic valve with a new, properly functioning mechanical aortic valve (Chiam & Ruiz, 2009) .

Transcatheter Aortic Valve Implantation

The 2012 expert consensus on transcatheter aortic valve implantation (Holmes et al., 2012) provides detailed information about TAVI. Here I very briefly outline the procedure for the reader. Due to the high risk nature of open heart valve replacement in the frail elderly patient population, the TAVI procedure was born in 2000. Much work has been and continues to be done in the development and application of both the percutaneous valves as well as the procedure itself. Currently the most common approach is via the femoral artery. The device is delivered and deployed at the native aortic valve via transcatheter approach. Patients are usually under general anesthesia but rarely require cardiopulmonary bypass as in open heart surgery. Admission protocols vary by site; patients may be admitted on the day of the procedure or up to two days prior to the procedure. Post procedure management includes early extubation and mobilisation, as well as careful attention to potential problems including bleeding, stroke, and hemodynamic instability. Generally patients remain in hospital for less than one week post-procedure before being discharged home, and are followed in the community by a cardiologist.

Frailty

A discussion of TAVI would not be complete without addressing its unique patient population. As mentioned above, TAVI is reserved for patients who are considered too high risk for surgery, often due to advanced age and multiple comorbid conditions. A review of available literature indicates a lack of consensus on the definition of frailty. Generally, frailty is described as increased vulnerability to stressors and is related to a decrease in physiologic reserves and decline in overall function (Afilalo et al., 2009; Singh et al., 2008). For the purposes of this project I have chosen to define frailty based on the work of Fried and colleagues (2001) as it is the most widely cited and tested definition, particularly in cardiovascular research (Gary, 2012). Fried et al (2001) define frailty based on five simple criteria: shrinking or weight loss, weakness,

exhaustion, slow gait speed, and low energy expenditure (Fried et al., 2001). The literature also indicates a strong relationship between frailty and cardiovascular disease (Gary, 2012). Compared with a general older population, patients with cardiovascular disease have a higher prevalence of frailty (Singh et al., 2008). Considering this, what becomes clear is the urgent need for patient education and care guidelines that meet the needs of this patient population. As a patient group, the frail elderly have very specific health care needs, in particular when it comes to self-care and education. As such, nurses must be mindful of these needs and be prepared to teach and empower patients and families in ways that are effective and meaningful.

Self-Care

The literature on self-care is vast and a thorough discussion on it is far beyond the scope of this project. For my purposes, I have selected Orem's (1995) theory as a way of conceptualizing self-care. Orem defines self-care as "the practice activities that…persons initiate and perform…in the interest of maintaining life, healthful functioning, continuing personal development, and well-being" (p. 461). Self-care agency is explicated as "the complex acquired ability…to know and meet (one's) continuing requirements for deliberate, purposive action to regulate their own human functioning and development" (p. 461). Orem's work has become one of the most prevalent and widely applied self-care nursing theories. I selected it because of its fit with my experiences, observations, and beliefs about nursing and, specifically, this project. It holds particular relevance to TAVI patients because it acknowledges that patients themselves may not be providing self-care alone; family members are often involved in self-care, especially when it comes to the frail elderly patient. While I find parts of Orem's theory redundant and lacking in clarity, it remains relevant to this project in so far as it outlines the vital importance of knowledge to self-care. Other theories, such as Erickson et al.'s Theory of Modeling and Role

Modeling (2009), emphasize factors such as behaviour and motivation as important to self-care. While I agree that other factors play a role in adequate self-care, I posit that no other single factor is as important as education.

That patients and families required knowledge of a health condition in order to live well with it is not new. However, the frail elderly present unique challenges in terms of knowledge acquisition and patient education. I explore the idea that older adults' cognition, memory, sensory perception, and level of health literacy must be considered in planning, developing, and implementing teaching and education materials for both the patient and family.

Patient education

Education is vitally important to patient self-care. *Writing Health Information for Patients and Families* (Harper, Hutchings & Wizowski, 2008) is a comprehensive resource that guides health professionals through the planning and development of written patient education materials. The authors also explain common issues with patient education literature. Most patient education is carried out verbally by nurses in acute care. However, research has shown that patients forget up to 80% of information given verbally, and recall about half of the information incorrectly (Wizowski et al., 2008). As such, written materials play an important role in patient education, but they must be appropriate and useful. Patient literacy, in particular health literacy, must be considered in the development of education materials. For example, more than half of Canadian adults over the age of 65 have level one prose skills, defined as a few basic reading skills, and have difficulty with printed materials. In fact 82% of Canadian seniors have difficulty with reading, with skills falling below the level that is considered the minimum necessary to meet life's demands. Further, age-related changes in sensory perception (i.e., hearing and vision)

must also be considered in both the development of educational materials and the teaching-learning process. Indeed, patient education in the frail elderly is a unique challenge that I shed light on in this project.

Method

A search of EBSCO (including databases such as CINAHL, academic search complete, and psychinfo) using the terms “transcatheter valve” and “patient education” yielded no relevant articles. According to Notar and Cole (2010), new topics such as TAVI “require a review of any literature related in some essential way to the problem to provide a conceptual framework or rationale to the study” (p. 2). Further, “no project starts without showing (how it) builds upon what has already been done and contributes to the forward movement of the field in some significant manner” (p. 2). As such I refocused my search of CINAHL, and subsequently ancestry searching, using various combinations of the terms frail, elderly, geriatrics, and patient education. I included articles published since 2000 and written in English. Further, I carefully examined abstracts for key terms and concepts. In order to qualify for inclusion, each article had to focus on elderly patient teaching, learning, cognition, recommendations for practice, or a combination of these. This specific requirement for inclusion resulted in a high exclusion rate.

For the purposes of this project I have selected the integrative review method, as it is “the only approach that allows for review of a combination of diverse methodologies” (p. 546) and has been widely applied in nursing research and literature. I reviewed each carefully selected article using appraisal tools from Johns Hopkins University Hospital (2012). I selected these appraisal tools because they allow for both research and non-research based evidence, providing a standard against which both types of literature can be held. Many of my peers have had success

using other review methods and appraisal tools, but after careful inspection and consideration, I realized that my project demanded a different approach. I found the Johns Hopkins tools a perfect fit for my project. Each article, whether research or non-research based, was quality ranked high (A), good (B), or low/major flaws (C) according to clear criteria included in the tools, which can be found in Appendix A.

Through a search and appraisal of current literature on patient education for the elderly, several key themes emerged as being important for nurses engaging in teaching the frail elderly patient. In the following section I present the literature organized thematically. I indicate the frequency with which each theme occurred in the literature. A summary of included articles, including quality rating and evidence level, can be found in Appendix B.

Review of the Literature

Eight articles met the inclusion criteria for this literature review. Each contains valuable insights and recommendations regarding patient teaching and the frail elderly. As I carefully read, reviewed, and critiqued each study using a standardized appraisal tool, very clear themes emerged. In this section I present the literature, organized according to the following themes: health literacy; patient and family-centred care; geragogy; and humanism.

Health Literacy

Literacy and, more specifically, health literacy, was an overarching theme found throughout much of the available literature. The Public Health Agency of Canada (PHAC) (http://www.phac-aspc.gc.ca/ph-sp/literacy-alphabetisme/literacy2-eng.php) defined health literacy as, “the ability to access, understand and act on information for health.” More complex than education or reading level, health literacy has a major impact on health outcomes. Most of

the articles appraised discussed at least briefly the importance of health literacy to health outcomes and its vital importance to patient education. The elderly pose unique challenges in patient education, especially in terms of health literacy. In Canada people over 65 are among the highest risk for low health literacy (PHAC). In fact, according to PHAC, "Canadian research estimates up to 88% of people over age 65 cannot cope on their own with modern health information demands." This may be due to lower education levels in the elderly as well as a reduction in cognitive function. This reality indicates a need for a specialized approach in consideration of teaching the elderly patient.

When considering the above definition in terms of geriatric patient education, some specific issues became apparent. First is access to information. The elderly require information that meets their learning needs not only in terms of content but also in delivery and design. In order for an elderly patient to understand information provided by a health care provider, it must be tailored to meet their individual needs. Next follows the comprehension aspect of health literacy. In order for the elderly to understand health information it must be delivered in individualized and effective ways. Only once information is accessed and understood action may occur. When an elderly patient learns accurate and effective information, and has the supports he or she needs from family and other networks, acting on health needs is possible.

Much of the available literature framed teaching elderly patients in terms of the nursing process. All but three articles addressed the concept of health literacy, and half (four) of the articles emphasized the importance of performing a literacy assessment on elderly patients prior to engaging in teaching and learning sessions.

The traditional nursing process of assess, plan, implement, and evaluate was highlighted in the work of Best (2001) and Pearson (2011). Best (2001) explained "elderly persons may have limited formal schooling in their youth and are functionally illiterate (reading on a fourth to fifth-grade level or less)" and may be embarrassed to ask questions or participate meaningfully in educational sessions (p. 48). Pearson (2011) further stated that "up to 45% of today's elderly people have either no formal education" or a minimal amount (p. 12). Best suggested carrying out a thorough assessment of both the educational and reading level of the patient, as actual reading level may be significantly lower than reported education; this discrepancy between education level and reading level was echoed by Pearson and Nigolian and Miller (2011). One example of a literacy level assessment tool, suggested by Best as well as Rajda and George (2009), is the Rapid Estimate of Adult Literacy in Medicine (REALM). This assessment tool takes only two minutes to complete and is designed to "measure recognition and comprehension of medical terminology" (Rajda and George, 2009, p. 118). Another literacy assessment tool, suggested by Nigolian and Miller (2011), is the Newest Vital Sign, which uses a nutritional label for ice cream and related questions to assess literacy. Rajda and George further recommended asking elderly patients how comfortable they are with filling out medical forms, as many will concede a problem filling out forms before they will admit an inability to read. The goal, according to Rajda and George, is to assess literacy effectively without causing embarrassment.

The literature revealed superiority of basic over more advanced information for elderly patients, especially post procedure. Murphy et al. (2011) carried out an intervention study comparing the effectiveness of two patient education booklets, one basic and the other more detailed. Results did not reach significance, possibly due to the small sample size, but nonetheless indicated superiority of basic over more detailed information for the elderly after a

medical procedure, with the authors suggesting that lower literacy levels in the elderly can have a negative effect on patient education and health outcomes.

Nigolian and Miller (2011) echoed the above link between low health literacy and poor health outcomes, and further caution nurses to carefully differentiate between noncompliance and knowledge deficit, reiterating how common low health literacy levels are in the elderly. This may mean knowledge deficits persist despite previous teaching attempts by health care workers.

Another specific recommendation that arose frequently in the literature was to assess appropriateness of written patient education materials. Readability, content, format, and representativeness of the target audience (in this case the elderly) should all be considered in assessment of written/printed education materials as all play a role in success of patient education.

Patient and Family-Centred Care

Not surprisingly, the literature confirmed the importance of individualisation of patient teaching. Most experts emphasized the importance of goal-setting, motivation, and a focus on the patient and family as learners. A one-size-fits-all approach is not effective in any area of nursing, and patient education for the elderly is no exception.

Nigolian and Miller (2011) explicated the "crucial role of the (family) caregiver" (p. 52). Hospitalization is not only a great stressor in the life of an elderly person and his or her family, but also an opportune time for nurses to provide vital education to both patient and family. Intensive education that meets the unique needs of both patients and their family caregivers contributes to better health outcomes and safety after discharge (p. 53). Further, according to Nigolian and Miller, patients and families who are actively involved in health care decision

making and education tend to adhere to treatment goals and plans of care after discharge. The nurse plays a vital role in educating the patient and family not only prior to discharge but throughout the course of hospitalization.

For nursing care and education to be patient and family-centred, specific challenges must be considered and addressed. Nigolian and Miller (2011) urged nurses to consider cultural and language differences as well as nonverbal signals. Cultural preferences and practices play a major role in receptiveness and learning of new information. When patients and families sense criticism or judgment of cultural practices, they are not in a position to learn as they might in a more accepting environment. The importance of cultural awareness was echoed by Best (2001). In terms of language, Nigolian and Miller (2011) stressed that family interpreters are not ideal and should be used only as a last resort. Ideally, an official/professional interpreter should be engaged in situations of language barriers, because this is only way the nurse can assess the accuracy of information provided to the patient. In terms of nonverbal signals, it is important for nurses and all health care team members to be aware of the wide variety of nonverbal cues between different cultural groups. Nodding, for example, may indicate understanding in one cultural group while meaning only politeness in another. While it is unrealistic for nurses to be aware of all nonverbal signals worldwide, Nigolian and Miller suggested a minimum of awareness and sensitivity in dealing with patients and families of diverse cultural backgrounds.

Additional key components of patient and family centred care are motivation and goal setting, as “adults are more motivated to learn when they need the information” (Nigolian and Miller, 2011). While goals and motivation vary between individuals, motivation in the lives of the elderly and their families commonly centres on values such as quality of life and maintenance of independence. For example, Pearson (2011) contended that fear of being forced to live in a

nursing home proves great incentive for many elderly patients to learn the health-related information needed to maintain independence. Further, Best (2001) explained that elderly patient teaching is most effective when mutually agreed upon, individualized goals are "attainable and encourage independence" (p.49). According to Nigolian and Miller (2011), when forced to choose between health-related needs and the desire to have a life, an elderly patient and/or their family caregiver might chose the latter. Thus it is important for nurses to work with elderly patients and their family caregivers to find compromises that strike a balance between lifestyle and optimum health.

Several articles explicated the varying learning styles possessed by individuals and families. Best (2001) described the variance in learning styles from one individual to another, explaining that some "learn best by visualisation, others by listening, or by active participation in the learning process" (p. 47). Further, some may prefer structured, formal education sessions while others opt for less formal environments. Still others learn content in specific details while some prefer a general overview. In teaching elderly patients, according to Best, individual changes in "cognitive, psychomotor, and affective domains of learning" must be assessed and addressed in the planning and implementation of patient education (p. 47).

With regard to individualization of teaching for the elderly, Pearson (2011) posited that "a method proven effective for one person can have disastrous results for another" and thus careful assessment and planning are vital to safe, effective education for elderly patients (p. 14). This principle is reinforced by Murphy (2011), who stated that "not all patients should necessarily receive the same (educational) materials" and that information must cater to the individual elderly patient's needs. Further, according to Pearson (2011), lack of individualisation of teaching often results in comprehension deficiencies. Careful assessment of the patient and

family's knowledge, education and literacy levels, learning styles and ability, and motivation may assist the nurse in providing education that is relevant and meaningful, and thus patient and family centred.

Geragogy

Teaching and learning theory emphasize such terms as pedagogy and androgogy, which focus on education for children and adults, respectively. Less commonly discussed, and revealed in the literature on elderly patient education, is the term *geragogy*, which refers specifically to teaching and learning with and for the elderly. While only a small number of the articles reviewed use this term specifically, all addressed the elderly as a unique population in terms of teaching and learning.

Geragogy is defined as "the transferring of essential information that has been specifically designed, modified, and adapted to the physiologic and psychologic changes of the elderly" (Pearson, 2011). Much of the literature refers to the elderly (those aged 80 years and older) as a challenging population in terms of patient education, due to factors such as low literacy as well as the impact of age-related changes on learning style, rate, and ability. Geragogy, then, is an important concept for nurses, who are the primary educators for elderly patients. The literature provides guidance for nurses in the assessment, planning, implementation, and evaluation of geragogy.

Assessment. Pearson (2011) recommended that nurses assess the elderly patient's individual status, physical status, and socioeconomic status. Best (2001) suggested assessment of age-related changes and education level, as well as existing knowledge of the topic at hand. Specific areas needing assessment include cognitive status, sensory ability, and literacy (discussed

above). The nurse must also assess the patient and family's existing knowledge of the topic of focus, to identify areas needing clarification and further education.

Through careful assessment the nurse is able to identify sensory limitations in the elderly patient and family. Hearing and vision loss are important barriers in elderly patient education and must be identified early on in order for the nurse to minimize their impact on teaching and learning (Best, 2001; Nigolian & Miller, 2011). Other indicators of cognitive or functional impairment may present themselves through general nursing assessment. For example, low energy levels indicate the need to stagger teaching in brief sessions and at optimum times. Lack of focus may indicate cognitive impairment or pain; careful assessment will help the nurse to determine cause and possible interventions to maximize learning potential.

In addition to assessing the elderly patient and family, the nurse must also assess the suitability of written materials to be utilized in the teaching process. Rajda and George (2009) urged nurses to evaluate written patient education materials using tools such as the Suitability Assessment of Materials, Medicaid Checklist, Fleisch-Kincaid Grade Level Formula, and SMOG (Simple Measure of Gobbledygook) index. Further, they recommended dark print on a white background, the use of bullets rather than paragraphs, simple pictures or graphics, and large print. Nigolian and Miller (2011) echoed these recommendations, adding that education materials should be written at a maximum of fifth grade level to account for low literacy.

Planning. Following thorough assessment of the elderly patient and family, the nurse may begin to plan the teaching session. Time is limited during hospitalization, so nurses must carefully plan teaching in order to make the most of available opportunities (Nigolian and Miller, 2011). Part of planning involves ensuring the patient is in a suitable state for learning; for example, a tired or

hungry patient, or one who is in pain, is not an ideal candidate for education until these basic needs are addressed. Further, if possible nurses should plan teaching during times when family is present (Rajda and George, 2009).

One aspect of planning involves the content of information to be delivered. In response to careful assessment, the nurse plans the delivery method(s) and content of patient education for the elderly. Assessment reveals the elderly patient's existing knowledge and literacy level, and in response the nurse plans teaching to meet the individual patient and family's learning needs and education level.

Also important to consider is timing. Some elderly patients may learn successfully during a longer education session, while many require shorter and more frequent teaching. The nurse must consider timing in the planning of patient education, and ensure an appropriate amount of time is available to engage patients and families (Rajda and George, 2009).

Not to be overlooked in the planning of elderly patient education is the importance of goals. Through assessment the nurse learns about the patient and family's values and priorities, which carry over into the goal-setting process. The nurse helps the patient and family to identify goals such as maintenance of independence and the ability to remain at home. In planning the nurse considers the elderly patient's goals and incorporates them into teaching, as the elderly are more likely to learn when the content is related to their goals (Best, 2001).

Implementation. With a teaching plan in place, the nurse begins the actual patient and family education session. This may be formal or informal; it is the principles of geragogy that make the teaching effective. Best (2001) provided a list of practical tips for nurses teaching elderly patients and their families. Primary points are: provide basic information first, followed by more

complex information only once the basic information is understood; and reinforce and clarify information. The need to begin with basic information first is logical and aligns with the recommendation by Murphy et al. (2011), who postulated that during the often stressful period of hospitalization, detailed or advanced information might be too complex. For this reason, combined verbal and written teaching methods are ideal, according to much of the literature (Best, 2001; Cutilli, 2008; Heinrich & Karner, 2011; Murphy et al., 2011). By using a combination of verbal and written teaching tools, elderly patients and their families are more likely to learn effectively.

Rajda and George (2009) listed some further recommendations for nurses engaging in teaching elderly patients. In addition to Best's (2001) suggestions, these authors encourage nurses to use only plain language words of no more than two or three syllables, and "keep information short and to the point" (p. 118). Further, Rajda and George suggested that nurses review medications at every interaction and also review all written materials, rather than simply handing them to patients. Finally, nurses are advised to emphasize expected outcomes and behaviours.

Not to be forgotten when engaging in teaching the elderly patient and family is the environment. Hospitals tend to be noisy and rife with distraction. Best (2001) recommended that nurses consider the noise level, lighting, and potential for distraction during the teaching session and address such issues as they are able. For example, soft light with minimal glare is optimum for elderly eyes (Best, p. 48). A quiet space, although perhaps difficult to come by in the hospital environment, is ideal for the diminished hearing that is a reality for many elderly individuals. Further, minimizing distractions by closing the door, posting a sign, and ensuring no other health

care team members or visitors interrupt enables the elderly patient to focus on learning necessary information during brief but frequent education sessions (Best, p. 48).

Evaluation. It cannot be assumed that learning is the automatic result of teaching. The literature revealed a consensus among authors and experts that teaching must be evaluated to ensure adequate learning and understanding. According to Nigolian and Miller (2011), in terms of patient teaching, "the single biggest problem in communication is the illusion that it has occurred" (p. 57). Thus, after the delivery of patient education for the elderly, the nurse must evaluate the effectiveness of the education session and materials.

One of the most commonly recommended methods of teaching/learning evaluation in the literature is called Teach Back (Best, 2001; Pearson, 2011; Rajda and George, 2009; Nigolian and Miller, 2011). As the name suggests, Teach Back is a simple way for nurses to evaluate whether those at the receiving end of teaching have indeed understood what they have been taught. Rather than a test or a quiz, it is a way for nurses to ask questions in a nonshaming way to get a sense of patient understanding. Nigolian and Miller (2011) offered an example of a question to ask a family caregiver when assessing understanding; "We've talked a lot about your wife's condition. I want to be sure I explained everything clearly. What changes in her condition will you call the physician about?" This wording is less threatening and more specific than, for example, "do you understand?" The importance of posing such open-ended rather than closed questions is echoed by Best (2001). In addition to Teach Back, nurses can evaluate patient teaching by observing return demonstrations of specific skills such as dressing changes, insulin administration, etc. (Best, 2001; Pearson, 2011).

In terms of evaluating patient education materials, Best (2001) posed several key questions nurses can utilize to assess written materials prior to employing them in education with elderly patients and their families. The questions are as follows: "Are the written materials easily understood? Is the material culturally appropriate? Are the fonts and colors appealing and appropriate for the elderly? Are posters/flip charts easily visible and not cluttered? Is the information presented in an organized method from the basic to the complex? Do written materials reinforce verbal instructions? Does the patient's behaviour change for a period of time following the teaching?" (p. 51). By asking these questions the nurse can evaluate whether education materials are appropriate for the elderly and, if not, work to change them to meet the specific learning needs of this unique patient population.

Humanism

One major tenet of the nursing profession is an emphasis on the value of people as self-determining agents. I consider humanism to be an ontology that prizes human value, capacity and worth. It is of particular importance to elderly patient education as it rejects the notion of the older person as unable to learn or incapacitated in some way, instead placing emphasis on the individual's strengths, value, and capacities.

Half of the articles I reviewed included a discussion of specific strengths possessed by the elderly as a population in terms of learning. Best (2001) described the value of vast life experience as a "resource to the learning process" (p. 47). Cutilli (2008) built on this idea, describing not only the normal cognitive decline that occurs in aging but also the cognitive gains often experienced by the elderly. One such gain is the concept of wisdom, or the "knowledge that comes with life experiences" (p. 198).

Heinrich and Karner (2011) explored the methods used by the elderly to learn health information. As one of two articles reviewed that involve focus groups of elderly patients, this study is valuable in its very nature as descriptive of patient perspectives. In this study, elderly participants shared insights into the various facilitators they employ to understand information provided to them by their health care providers. Perseverance, preparedness, and a general positive relationship with the health care provider were the overarching themes reveal in the focus group settings. Participants also identified barriers to understanding health information, which included: time (feeling rushed), unanswered questions, fragmented care (different messages from different health care providers), hearing difficulties, and mental health concerns (such as depression and anxiety leaving patients unable to focus and learn). This study is valuable to nurses engaging in teaching with elderly patients as it provides insight into not only the barriers limiting learning but also the strengths possessed by the elderly that facilitate learning. These findings confirm statements in other articles reviewed, regarding both barriers and strengths.

Frank (2003) is the second of two authors in this review who carried out focus groups with elderly individuals, exploring perceptions of communication with health care providers and how these perceptions impact self-care behaviours. Referring to Orem's Self-care Nursing Theory, Frank describes the importance of positive, effective nurse-patient communication to elderly patients who need to engage in self-care behaviours to manage a given condition. Frank found that the focus group participants "value independence, desire respect, want information about their health, and are very motivated" (p. 24) to perform self-care behaviours.

Like the study by Heinrich and Karner (2011), Frank (2003) found that elderly patients possess certain strengths used to facilitate learning toward a goal of self-care. Persistence

emerged as a theme in this study, as did self-trust (for example, using one's own judgment and relying on past experiences to make decisions). This aligns with Heinrich and Karner's (2011) findings. Interestingly, also revealed in Frank's (2003) study as a strategy was that of omission; elderly patients shared that they sometimes withhold certain information from their health care provider due to fear of disagreement or disapproval (for example, patients who use home remedies). Participants in Frank's (2003) focus group study also shared their impressions of key characteristics of positive relationships with health care providers, including trust, honesty, compassion, and humour (p. 25).

Discussion

In this section I draw from the literature and my own experiences and perspective to present my understanding of how nurses can best support the frail elderly in going home after TAVI. As discussed earlier in this paper, Orem's (1995) self-care theory provides a foundation for nurses to understand the key role knowledge plays in self-care, and further emphasizes the common involvement of family as assistant or provider of self-care in dependent individuals such as the frail elderly. The literature confirms Orem's belief in knowledge as vital to self-care and also her suggestion that family plays a vital role in self-care activities. This viewpoint, combined with recent, relevant literature on elderly patient education, provides a solid foundation upon which nurses can plan and implement individualized patient education for elderly patients and their families.

The past decade of literature on elderly patient education reveals clear themes and recommendations for nurses engaging older patient in teaching and learning. Using the above themes as underlying principles will assist in the development and implementation of patient

education for frail elderly patients undergoing transcatheter aortic valve implantation (TAVI). Further research is needed specific to the content of TAVI patient education, but for now the following recommendations may be helpful as a resource for cardiovascular and geriatric nurses working with these elderly patients and their families.

With the point of access for TAVI being percutaneous or via vascular cut-down, important attention must be paid to care of the access site (Holmes et al., 2012). Depending on length of hospitalization, patients may be discharged home within a few days of their TAVI procedure. The patient and family are, in this case, responsible for monitoring and care of the access site. They must be taught about signs and symptoms of infection, as well as how to recognize and respond to bleeding that may occur. Further, the need for adequate rest and avoidance of any strenuous activity must be emphasized.

An important factor to consider in frailty status is decrease in body mass due to poor nutrition (Afilalo, et al., 2009). Nutrition plays an important role in healing and recovery, so nurses must teach patients and families about the importance of increasing caloric and protein intake as a way of facilitating and enhancing healing. Adequate nutrition also plays an important role in energy storage, which is vital for physical activity and, eventually, cardiac rehabilitation.

A common misconception among health care providers is that cardiac rehabilitation is impossible or unnecessary in elderly patients. In fact, research has shown benefit of cardiac rehabilitation in all age groups, including the elderly (Davies, 2010). Patients undergoing TAVI are generally extremely limited in their exercise tolerance prior to their TAVI procedure due to severe aortic stenosis. With their new valve, however, exercise tolerance often increases and heart failure symptoms improve. This enhancement in general function and quality of life is the

major benefit of TAVI, and patients can and should be referred for specialized cardiac rehabilitation if and when possible. When formal cardiac rehabilitation is not feasible, the nurse can still instruct patients and families about methods of beginning and increasing physical activity in and around the home. TAVI patients and their families may be so accustomed to severe limitations in activity tolerance that they do not believe they will ever be capable of exercise. However, careful teaching that is tailored to the individual will help overcome this assumption, resulting in enhanced quality of life for TAVI patients.

Virtually all TAVI patients have at least one, but often multiple, coexisting medical conditions. Diabetes and lung disease are two examples of comorbidities that exist in significant numbers of TAVI patients (Holmes et al., 2012). Thus a discussion of post-TAVI patient education would not be complete without mention of the importance of adequate management of comorbid conditions. As revealed in the literature, although patient teaching may have taken place on multiple occasions for elderly patients, knowledge deficits may still persist. That is why the nurse in caring for the post-TAVI patient must take the prime opportunity to educate the patient, likely in multiple sessions, about the importance of managing all medical conditions after the TAVI procedure. Assessment of exiting knowledge will provide a starting point for these teaching sessions. Asking the patient or family to bring all medications with them to hospital will allow the nurse to educate the patient and family about existing conditions and how this new heart valve factors in. Many nurses are surprised to learn that patients often do not know what their medications are for or how to take them properly. Hospitalization, although it can be a stressful time for patients and families, can prove a crucial opportunity for patient and family education to take place.

Recommendations

TAVI can be conceptualized as a unique procedure that is carried out with a unique patient population. Until recently, the frail elderly were excluded from heart valve repair or replacement due to prohibitive surgical risk. Innovative procedures such as TAVI have begun to minimize the marginalization of the elderly in cardiovascular intervention and care. Along with medical and surgical innovation, however, must come health promotion through patient education. Consider the following interaction I had on this issue with a physician colleague of mine. As I explained this project to him, he looked at me strangely and said, "What patient education do they need? They get their new valve and then they go home." While medicine makes enormous strides in development and innovation in terms of procedures and intervention, it falls on the nursing profession to develop timely and effective patient education interventions to meet the education and self-care needs of patients and families. Further research is needed to identify the physiological, psychological, and education needs of TAVI patients.

Conclusion

I originally set out to develop patient education materials for TAVI patients. As I searched and reviewed available literature, I realized the paucity of literature available on post-TAVI patient care and education needs. I learned that the frail elderly are a unique patient population who have been marginalized in terms of invasive procedures, possibly due to factors such as prohibitive surgical risk or, sadly, simple age-based discrimination. I realized that while much attention has been paid to the learning needs of the adult, little literature is available on patient education specific to the elderly. Thus my topic gradually evolved to focus on the *how* of elderly patient education rather than the *what.*

After briefly defining key terms and concepts - namely aortic stenosis, TAVI, frailty, self-care, and patient education – I presented a review of the most recent decade of elderly patient education literature. Organized and presented thematically, this review provides clear recommendations and insight into the unique learning needs and styles of elderly patients. It is clear that individualization is of vital importance in elderly patient teaching, as is careful assessment of health literacy prior to teaching and of understanding after teaching. As the marginalization of the elderly in interventional procedures lessens, nurses have a crucial responsibility to provide the education necessary for patients and families to provide adequate self-care as they go home after TAVI.

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Appendix A

JHNEBP Non-Research Evidence Appraisal

Evidence Level:_____

ARTICLE TITLE:			NUMBER:
AUTHOR(S):			DATE:
JOURNAL:			
☐ Systematic Review	☐ Clinical Practice Guidelines	☐ Organizational (QI, financial data)	☐ Expert opinion, case study, literature review

Does review/expert opinion address my practice question?	☐ Yes	☐ No
If the answer is No, STOP here (unless there are similar characteristics).		
Systematic Review		
• Is the question clear?	☐ Yes	☐ No
• Are search strategies specified, and reproducible?	☐ Yes	☐ No
• Are search strategies appropriate to include all pertinent studies?	☐ Yes	☐ No
• Are criteria for inclusion and exclusion of studies specified?	☐ Yes	☐ No
• Are details of included studies (design, methods, analysis) presented?	☐ Yes	☐ No
• Are methodological limitations disclosed?	☐ Yes	☐ No
• Are the variables in the studies reviewed similar, so that studies can be combined?	☐ Yes	☐ No
Clinical Practice Guidelines		
• Were appropriate stakeholders involved in the development of this guideline?	☐ Yes	☐ No
• Are groups to which guidelines apply and do not apply clearly stated?	☐ Yes	☐ No
• Have potential biases been eliminated?	☐ Yes	☐ No
• Were guidelines valid (reproducible search, expert consensus, independent review, current, and level of supporting evidence identified for each recommendation)?	☐ Yes	☐ No
• Are recommendations clear?	☐ Yes	☐ No
Organizational Experience		
• Was the aim of the project clearly stated?	☐ Yes	☐ No
• Is the setting similar to setting of interest?	☐ Yes	☐ No
• Was the method adequately described?	☐ Yes	☐ No
• Were measures identified?	☐ Yes	☐ No
• Were results adequately described?	☐ Yes	☐ No
• Was interpretation clear and appropriate?	☐ Yes	☐ No
Individual expert opinion, case study, literature review		
• Was evidence based on the opinion of an individual?	☐ Yes	☐ No
• Is the individual and expert on the topic?	☐ Yes	☐ No
• Is author's opinion based on scientific evidence?	☐ Yes	☐ No
• Is the author's opinion clearly stated?	☐ Yes	☐ No
• Are potential biases acknowledged?	☐ Yes	☐ No
PERTINENT CONCLUSIONS AND RECOMMENDATIONS		
Were conclusions based on the evidence presented?	☐ Yes	☐ No
Will the results help me in caring for my patients?	☐ Yes	☐ No

Quality Rating (scale on back):

Basic quality rating of the study under review (check one)	☐ High (A)	☐ Good (B)	☐ Low/major flaws(C)

JHNEBP Research Evidence Appraisal

Evidence Level:_____

ARTICLE TITLE:					NUMBER:
AUTHOR(S):					DATE:
JOURNAL:					
SETTING:				SAMPLE (COMPOSITION/SIZE)	
☐ Experimental	☐ Meta-analysis	☐ Quasi-experimental	☐ Non-experimental	☐ Qualitative	☐ Meta-synthesis
Does this study apply to my patient population?				☐ Yes	☐ No

If the answer is No, STOP here (unless there are similar characteristics).

Strength of Study Design		
• Was sample size adequate and appropriate?	☐ Yes	☐ No
• Were study participants randomized?	☐ Yes	☐ No
• Was there an intervention?	☐ Yes	☐ No
• Was there a control group?	☐ Yes	☐ No
• If there was more than one group, were groups equally treated, except for the intervention?	☐ Yes	☐ No
• Was there adequate description of the data collection methods	☐ Yes	☐ No
Study Results		
• Were results clearly presented?	☐ Yes	☐ No
• Was an interpretation/analysis provided?	☐ Yes	☐ No
Study Conclusions		
• Were conclusions based on clearly presented results?	☐ Yes	☐ No
• Were study limitations identified and discussed?	☐ Yes	☐ No
PERTINENT STUDY FINDINGS AND RECOMMENDATIONS		
Will the results help me in caring for my patients?	☐ Yes	☐ No

Evidence Rating (scales on back)

Strength of Evidence Rating			
Quality Rating (check one)	☐ High (A)	☐ Good (B)	☐ Low/major flaws(C)

STRENGTH OF EVIDENCE

LEVEL 1 (HIGHEST)

EXPERIMENTAL STUDY (RANDOMIZED CONTROLLED TRAIL OR RCT)

- Study participants (subjects) are randomly assigned to either a treatment (TX) or control (non-treatment) group.
- May be:
  - Blind: neither subject nor investigator knows which TX subject is receiving.
  - Double-blind: neither subject nor investigator knows which TX subject is receiving.
  - Non-blind: both subject and investigator know which TX subject is receiving; used when it is felt that the knowledge of treatment is unimportant.

META-ANALYSIS OF RCTS

- Quantitatively synthesizes and analyzes results of multiple primary studies addressing a similar research question
- Statistically pools results from independent but combinable studies
- Summary statistic (effect size) is expressed in terms of direction (positive, negative, or zero) and magnitude (high, medium, small)

LEVEL 2

QUASI-EXPERIMENTAL STUDY

- Always includes manipulation of an independent variable
- Lacks either random assignment or control group.
- Findings must be considered in light of threats to validity (particularly selection)

LEVEL 3

NON-EXPERIMENTAL STUDY

- No manipulation of the independent variable.
- Can be descriptive, comparative, or relational.
- Often uses secondary data.
- Findings must be considered in light of threats to validity (particularly selection, lack of severity or co-morbidity adjustment).

QUALITATIVE STUDY

- Explorative in nature, such as interviews, observations, or focus groups.
- Starting point for studies of questions for which little research currently exists.
- Sample sizes are usually small and study results are used to design stronger studies that are more objective and quantifiable.

META-SYNTHESIS

- Research technique that critically analyzes and synthesizes findings from qualitative research
- Identifies key concepts and metaphors and determines their relationships to each other
- Aim is not to produce a summary statistic, but rather to interpret and translate findings

QUALITY RATING (SCIENTIFIC EVIDENCE)

A High quality: consistent results, sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.

B Good quality: reasonably consistent results, sufficient sample size, some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C Low quality or major flaws: little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn.

STRENGTH OF EVIDENCE

LEVEL 4

SYSTEMATIC REVIEW

- Research review that compiles and summarize evidence from research studies related to a specific clinical question
- Employs comprehensive search strategies and rigorous appraisal methods
- Contains an evaluation of strengths and limitations of studies under review

CLINICAL PRACTICE GUIDELINES

- Research and experiential evidence review that systematically develops statements that are meant to guide decision-making for specific clinical circumstances
- Evidence is appraised and synthesized from three basic sources: scientific findings, clinician expertise, and patient preferences.

LEVEL 5

ORGANIZATIONAL

- Review of quality improvement studies and financial analysis reports
- Evidence is appraised and synthesized from two basic sources: internal reports and external published reports.

EXPERT OPINION, CASE STUDY, LITERATURE REVIEW

- Opinion of a nationally recognized expert based on non-research evidence (includes case studies, literature review, or personal experience).

QUALITY RATING (SUMMATIVE REVIEWS)

A High quality: well-defined, reproducible search strategies; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies, and definitive conclusions

B Good quality: reasonably thorough and appropriate search; reasonably consistent results, sufficient numbers of well-designed studies, evaluation of strengths and limitations of included studies, with fairly definitive results

C Low quality or major flaws: undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results, conclusions cannot be drawn

QUALITY RATING (EXPERT OPINION)

A High quality: expertise is clearly evident.

B Good quality: expertise appears to be credible.

C Low quality or major flaws: expertise is not discernable or is dubious.

Appendix B

Article Reference	Strength of Evidence (Research Articles Only)	Quality Rating
Best, J. T. (2001). Effective teaching for the elderly: Back to basics. *Orthopaedic Nursing, 20*(3), 46-52.	**N/A**	**A**
Cutilli, C. C. (2008). Teaching the geriatric patient: Making the most of "cognitive resources" and "gains". *Orthopaedic Nursing, 27*(3), 195-200.	**N/A**	**A**
Frank, D. I. (2003). Elderly clients' perceptions of communication with their health care provider and its relation to health deviation self care behaviors. *Self-Care, Dependent-Care & Nursing, 11*(2), 15-30.	**3**	**B**
Heinrich, C., & Karner, K. (2011). Ways to optimize understanding health related information: The patients' perspective. *Geriatric Nursing, 32*(1), 29-38. doi: 10.1016/j.gerinurse.2010.09.001	**3**	**A**

Murphy, S., Conway, C., McGrath, N., B., O'Leary, B., O'Sullivan, M., P, & O'Sullivan, D. (2011). An intervention study exploring the effects of providing older adult hip fracture patients with an information booklet in the early postoperative period. *Journal of Clinical Nursing, 20*(23), 3404-3413. doi: 10.1111/j.1365-2702.2011.03784.x	**2**	**B**
Nigolian, C.,]., & Miller, K., L.(2011). Teaching essential skills to family caregivers. *American Journal of Nursing, 111*(11), 52-58. doi: 10.1097/01.NAJ.0000407303.23092.c3	**N/A**	**A**
Pearson, M. (2011). Gerogogy in patient education--revisited. *Oklahoma Nurse, 56*(2), 12-17.	**N/A**	**C**
Rajda, C., & George, N. M. (2009). The effect of education and literacy levels on health outcomes of the elderly. *Journal for Nurse*	**N/A**	**A**

Practitioners, *5*(2), 115-119.		