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Polypharmacy Meets Polyherbacy: Pharmaceutical, Over-the-counter, and Natural Health Product Use Among Canadian Adults

Kristine Votova, PhD,¹ Régis Blais, PhD,² Margaret J. Penning, PhD,³ Malcolm K. Maclure, ScD¹

ABSTRACT

OBJECTIVES: Natural health products (NHP) are increasingly being used to supplement prescription medications (PM) and over-the-counter (OTC) products. The objective of this study was to examine patterns of overall health product use and how these patterns are associated with social and health factors.

METHODS: We used direct health measures data from the Canada Health Measures Survey (CHMS) Cycle 1.0 (2007/2009) to examine recent product use among adults aged 18-79 years (n=3,721). Latent class analyses were used to detect use (propensity) and intensity of use among users of all three product types. Associations between social and health covariates and product patterns were examined using linear and multinomial logit regression procedures.

RESULTS: Three latent classes of health product use were identified. The largest (43%) was characterized by a high probability of PM and NHP but not OTC use. Class two (37%), in contrast, had a low probability of using any of the three health products. Class three (20%) had a high probability of PM and OTC but not NHP use. Age, gender, immigrant status, household size, co-morbidity, perceived health status, and having a regular doctor were associated with these patterns of use. Analyses of intensity of product use among users revealed seven distinct classes; these were differentiated by age, household size, co-morbidity and weight (BMI status).

CONCLUSION: If defining polypharmacy or polyherbacy is based simply on number of health products used, then for Canadians under age 80 neither practice appeared to be widespread. More work needs to be done to define the “poly” in polypharmacy and polyherbacy. This will inform the conversation on appropriate product use, particularly given that about one half of Canadians used medications and NHPs concurrently.

KEY WORDS: Polypharmacy; over-the-counter drugs; dietary supplements; nonprescription drugs

La traduction du résumé se trouve à la fin de l'article.

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Polypharmacy is a term used to describe an individual's use of multiple medications. At present, there is no single established criterion for polypharmacy. However, researchers tend to operationalize it as concurrent use of 5 or more medications,¹ with “excessive polypharmacy” referring to use of greater than 10 prescription medications.² It is considered a major public health issue.³ While polypharmacy can occur in the general population, it tends to be concentrated among older adults, many of whom take multiple prescription medications to treat disease onset and progression.⁴

Ness and colleagues⁵ coined the term “polyherbacy” to describe the use of multiple natural health products (NHPs). Although there is no established criterion as to what constitutes polyherbacy, they and others⁶ flag it as an emerging public health issue. NHPs include dietary supplements, vitamins, minerals, and herbals, although some consider vitamins to be outside of the realm of NHP.⁷ Once restricted to the domain of complementary and alternative medicine (CAM) and natural health food stores, NHPs are now widely available in mainstream grocery stores, pharmacies, and through online purchasing. Most are accessible without a prescription.⁸

Similar growth is seen in the availability and accessibility of over-the-counter products (OTC). Concerns are mounting that there is excessive use of OTC products such as analgesics, at the population level generally⁹ and among older people specifically.¹⁰ These concerns are leading to calls for a thorough assessment of the need for and outcomes of OTC use across age groups.

Recent clinical research also suggests that NHP use – specifically dietary supplementation – may be detrimental to health. Researchers from the Iowa Women's Study found higher all-cause mortality risk among older women (65+) who were regular supplement users compared to women who were not users.¹¹ Another study found that male vitamin E supplement users were at greater risk of prostate cancer than male non-supplement users.¹² A related concern is the safety of NHPs. NHPs in North America are regulated as food products and are not subject to the same patient safety regulations as pharmaceutical products; consequently consumers think NHP use is safe.^{13,14} Ironically, some practitioners are recommending NHPs to decrease the risk of nutrient deficiency associated with polypharmacy,² and are inadvertently increasing the risk of adverse drug effects.¹⁴

Despite these health concerns, much of what we know about NHP use and the extent of its use with PM and OTC is anecdotal.

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In Canada, evidence of use is mainly self-reported in national surveys,^{8,15,16} small-sized or cohort samples¹⁷⁻¹⁹ and case studies.¹⁴ While PM use can be tracked using administrative claims data in most provinces, OTC and NHP use cannot. Gross under-reporting of non-prescription health products is a likely result.¹³ Furthermore, there has been little recent examination of the extent of concurrent product consumption across prescription and non-prescription products.

The aim of this study was to examine prescription medication, over-the-counter and natural health product use by Canadian adults using direct health measures data that have verified the individual's self-reported use of any of these products. The main research questions included: i) Are there discernible patterns in health product use among Canadian adults that span PMs, OTCs and NHPs, both in terms of the propensity for and intensity of use? ii) What are the social and health profiles of users?

METHODS

Data

Data were drawn from the Canada Health Measures Survey (CHMS), Cycle 1 (2007/2009). It is the only national database currently available that provides clinical information on health product use that includes the Drug Identification Number (DIN), product name and dosage. The survey includes a household interview, which contains the key socio-demographic, environmental/housing and health data necessary to describe the individual (lifestyle) and social context of health product use. It also includes a clinical interview, which provides anthropometric measures and other direct health markers. As public-use files are not available for the CHMS, data access was secured through a Statistics Canada Research Data Centre.

The study sample (n=3,721) included respondents aged 18-79. Those under 18 were excluded in order to capture the health practices of adults. The CHMS excludes individuals aged 80 and older. The overall sample, when weighted, represents Canadians aged 18-79 in 2006 (N=24,508,134).*

Measurement

Three dependent variables were measured. Respondents were asked "In the past month, from [date] to yesterday, did you take prescription medications?"; "In the past month, from [date] to yesterday, did you take over-the-counter medications?"; and "In the past month, from [date] to yesterday, did you take any health products or herbal remedies?" Responses were dichotomous (yes/no) and represent the propensity or likelihood that health products were used. Among users, the intensity of use was also measured based on the following question "How many different ...prescribed medications... did you take?" The question was repeated for over-the-counter medications and health products/herbal remedies. Respondents were asked to confirm the type and number of products used and to show the drug product(s) to the interviewer, who then verified dosage and DIN. Twelve covariates were included in the analyses to represent selected social and health factors. Age, education, household annual income, household size, number of chronic conditions, perceived physical health, weight (Body Mass

* Weighting is done to ensure that estimates are representative of the population and not just the sample itself. That is, every one survey respondent aged 18 to 79 in 2006 corresponds to 6,586 people in the population as a whole.

Table 1. Demographic and Health Characteristics of the Canada Health Measures Sample (2007, 2009), Aged 18-79 Years, Weighted Sample (n=24,508,134)

Covariates	%	
Male	49.3	
Mean age (years)	44.56	SD=17.32
Marital status		
Married/common-law	66.2	
Divorced/widowed/separated	11	
Single, never married	22.7	
Mean household size	2.74	SD=1.24
Mean household income (\$)	\$41,808.56	SD=35,894.64
Respondent highest education		
Less than high school	12.7	
Graduated high school	18.8	
Other post-secondary	9.4	
Graduated post-secondary	59.1	
% with family doctor	84.3	
Self-rated health status		
Fair/poor	10.9	
Good	35.6	
Very good/excellent	53.5	
Mean no. of chronic conditions	1.28	SD=1.53
% with chronic condition	60.2	
% immigrated to Canada	23.8	
Mean age at immigration to Canada	25.08	SD=12.49
Body Mass Index*		
Underweight	1.5	
Normal	37.8	
Overweight	36.8	
Obese	15.1	
Very/severely obese	8.8	

Source: Canada Health Measures Survey, Cycle 1 (2007/2009).

* Body Mass Index (BMI) norms for adults aged 18+ was used.

Index or BMI), and physical activity index (PAI) were treated as numeric (ordinal or continuous) variables. BMI was calculated using anthropometric measures taken during the clinic interview (weight (kg)/[height (m)]²) and classified according to the Health Canada/WHO international categories. The remaining covariates (gender, immigrant status, marital status and has a regular doctor) were categorical.

Analysis

To detect and measure the relationships among the health product indicators, latent class analysis (LCA) was used in two unrestricted models. The first model examined the propensity (yes or no) to use any one of the three health product groups (PM, OTC, and NHP) and the second model examined the intensity (if yes, how many) of product use among users of *all three* health product groups (i.e., tri-users of PM, OTC and NHP). We chose LCA because it offers a unique approach to obtaining rates of usage in populations.²⁰ It is different than traditional epidemiologic methods, which tend to start with well-defined groups and subgroups (classes that people generally think about when they think of populations) and then look at patterns of drug use in those groups. In contrast, LCA starts by defining groups and subgroups using non-standard combinations of drug use that emerged out of the data. In essence, LCA is a means by which to empirically validate assumptions in data where both the number and form of the groups are not known *a priori*.²⁰

Modal probability is used to allocate cases into discrete groups or classes, where each case is assigned to a class with the highest (modal) posterior probability of being in that class. A series of repeated runs with random start values was used to reduce the likelihood of obtaining a local maximum rather than the global best solution.²¹ All of the covariates regardless of scale were treated as active when defining the latent classes, meaning their inclusion in

Table 2. Mean Rates (Indicator Variables) and Multinomial Logit Regression Coefficients* for the Canadian Population (Aged 18-79) Who Used At Least One of Each of the Three Health Product Groups (Prescription Medications (PM), Over-the-counter (OTC), and Natural Health Products (NHP)) in the Previous Month, by Latent Class, Weighted Sample (N=24,508,134)

	Class 1 (43%)	Class 2 (37%)	Class 3 (20%)	Wald	P-value
Indicators					
PM					
Yes	1.47	-1.88	0.41	51.46	0.00
No	-1.47	1.88	-0.41		
OTC					
Yes	-0.16	-0.29	0.46	42.58	0.00
No	0.16	0.29	-0.46		
NHP					
Yes	0.19	-0.12	-0.07	49.60	0.00
No	-0.19	0.12	0.07		
Social covariates					
Age	0.06	0.00	-0.07	62.54	0.00
Gender					
Male	0.30	0.52	-0.82	47.48	0.00
Female	-0.30	-0.52	0.82		
Household income	0.00	0.00	0.00	2.83	0.24
Respondent education†	-0.13	-0.05	0.17	3.23	0.20
Has a regular doctor	0.29	-0.31	0.02	24.98	0.00
	-0.29	0.31	-0.02		
Canadian immigrant					
Yes	0.29	0.37	-0.66	11.75	0.00
No*	-0.29	-0.37	0.66		
Household size (persons)	0.04	0.10	-0.14	6.12	0.05
Marital status					
Married/Common-law	0.03	-0.01	-0.02	2.40	0.66
Divorced/Separated/Widowed	0.19	0.07	-0.26		
Single, never married	-0.22	-0.06	0.28		
Health covariates					
No. of chronic conditions	0.43	-0.78	0.35	98.31	0.00
Self-perceived health					
Fair/poor	0.44	-0.05	-0.40	11.97	0.02
Good	-0.09	-0.05	0.14		
Very good/excellent	-0.35	0.10	0.25		
Body Mass Index					
Underweight	0.11	0.15	-0.25	5.55	0.85
Normal weight	0.02	0.07	-0.09		
Overweight	-0.03	0.01	0.01		
Obese	0.30	-0.03	-0.26		
Very obese	0.26	0.03	-0.29		
Severely obese	-0.65	-0.23	0.88		
Physical Activity Index‡	-0.11	-0.04	0.15	1.49	0.47

Source: Canada Health Measures Survey (CHMS), Cycle 1 (2007/2009).

* Regression coefficients are effect coded.

† Respondent education was treated as a continuous variable in the propensity model.

‡ Physical activity index was treated as a continuous variable in the propensity model.

the model influenced model parameters and the definition of the latent classes. Once the optimum solution was identified, logistic and multinomial logit regression models were used to test for associations between latent classes and covariates.

Missing values on income were treated with mean (single) imputation because the percentage of missing data was >5%. Missing cases on any of the indicators and the other covariates were deleted on a case-by-case basis using listwise deletion.

All LCAs were computed using LatentGold version 4.5 (Statistical Innovations Inc., Massachusetts, Boston) software. Default settings were used for LCA, random seeds were set at 10 and iterations values were set to 50. All data were weighted using CHMS sample weights and then rescaled to the original sample size in order to avoid artificially inflating tests of statistical significance in the analyses.

RESULTS

The study sample is described in Table 1.

Prevalence of health product use

Fifty-eight percent of Canadian adults aged 18-79 took at least one PM in a given month, whereas 74.2% of Canadians took at least

one OTC and 38% consumed at least one NHP. The mean number of health products taken in the previous month was highest for PMs (2.69, SD=1.77), followed by NHPs (2.25, SD=1.44) and OTCs (2.01, SD=1.30).

Defining patterns in health product use among Canadian adults

When propensity of use was assessed, three latent classes were detected (Bayesian information criterion (BIC), $L^2 = -16962.7$; $nPar=47$; Wald=51.46, $p<0.001$), indicating that there are three distinct profiles of product use. In Class 1 (representing 43% of all respondents), the conditional probability of PM and NHP but not OTC use was high, relative to Class 2 (37%), which had a low probability of any product use, and to Class 3 (20%), which had a high probability of PM and OTC but not NHP use.

The coefficients from the multinomial logit regression of the probability of membership in each of the three latent classes and the social and health covariates are reported in Table 2. Among the social covariates, age, gender, immigration status, household size and having a regular doctor were significant predictors of class membership. Significant health factors included co-morbidity (no. of chronic conditions) and self-perceived health status.

Table 3. Mean Rates (Indicators) and Linear Regression Coefficients* (Covariates) for the Canadian Population (Aged 18-79) Who Used At Least One of Each of the Three Health Product Groups (Prescription Medications (PM), Over-the-counter (OTC), and Natural Health Products (NHP)) in the Previous Month, by Latent Class and Covariates, Weighted Sample (n=4,656,545)

	Class 1 (34%)	Class 2 (20%)	Class 3 (14%)	Class 4 (11%)	Class 5 (10%)	Class 6 (8%)	Class 7 (3%)	Wald	P-value
Indicators									
PM (mean no.)	3.05	3.91	1.00	1.00	4.04	4.17	2.00		
OTC (mean no.)	1.00	2.66	1.98	2.23	2.00	4.01	2.51		
NHP (mean no.)	2.61	1.00	1.00	3.37	3.42	3.13	2.07		
Covariates									
Age (years)	0.03	0.02	-0.01	-0.01	0.03	0.04	-0.09	13.67	0.03
Gender									
Male	-0.03	-0.22	0.18	-0.22	-0.26	-0.20	0.75	9.22	0.16
Female	0.03	0.22	-0.18	0.22	0.26	0.20	-0.75		
Respondent education†									
< than secondary	0.07	0.86	-0.05	0.09	0.58	0.03	-1.57	20.93	0.28
Graduated secondary	0.89	0.87	0.81	0.58	0.73	0.78	-4.66		
Some post-secondary	-0.16	-1.20	0.05	-0.28	-0.75	-0.52	2.86		
Graduated post-secondary	-0.80	-0.54	-0.81	-0.39	-0.56	-0.28	3.37		
Household income	-0.20	-0.28	-0.15	0.10	0.16	-0.27	0.24	7.09	0.31
Canadian immigrant									
Yes	-0.18	0.01	-0.01	0.59	-0.25	-0.18	0.03	11.69	0.07
No	0.18	-0.01	0.01	-0.59	0.25	0.18	-0.03		
Has a regular doctor									
Yes	-0.14	-0.26	-0.35	-0.39	-0.03	0.17	1.02	4.47	0.61
No	0.14	0.26	0.35	0.39	0.03	-0.17	-1.02		
Household size (persons)	-0.04	-0.05	0.10	-0.28	-0.42	-0.34	1.03	14.36	0.03
Marital status									
Married/Common-law	-0.46	-0.26	-0.35	-0.35	-0.76	-0.14	2.33	8.75	0.73
Divorced/Separated/Widowed	0.86	0.93	1.00	0.66	1.16	0.80	-5.41		
Single, never married	-0.39	-0.67	-0.66	-0.31	-0.40	-0.66	3.08		
No. of chronic conditions	0.14	0.37	-0.48	-0.58	0.56	0.47	-0.48	57.20	0.00
Self-perceived health									
Fair/poor	0.15	0.59	-0.45	0.03	-0.34	0.07	-0.06	18.19	0.11
Good	0.02	-0.24	0.18	-0.42	0.17	0.10	0.18		
Very good/excellent	-0.18	-0.35	0.27	0.39	0.17	-0.18	-0.12		
Body Mass Index (BMI)									
Underweight	-0.09	-5.38	1.72	1.89	-3.70	2.02	3.53	44.88	0.04
Normal weight	-0.18	0.43	-0.62	-0.41	1.64	-0.15	-0.72		
Overweight	-0.05	0.61	-0.79	-0.59	2.01	0.62	-1.81		
Obese	0.24	1.74	0.06	0.35	1.45	0.97	-4.81		
Very obese	0.33	2.23	-0.12	-3.50	3.26	1.99	-4.18		
Severely obese	-0.26	0.37	-0.24	2.25	-4.66	-5.45	7.99		
Physical Activity Index‡									
Active	-0.03	0.29	-0.08	0.29	-0.43	0.19	-0.24	15.09	0.24
Moderately active	-0.13	-0.33	-0.16	0.14	0.14	0.03	0.30		
Inactive	0.15	0.04	0.24	-0.43	0.29	-0.22	-0.06		

Source: Canada Health Measures Survey, Cycle 1 (2007/2009), Statistics Canada.

* Regression coefficients are effect coded.

† Respondent education was treated as a categorical variable in the intensity model.

‡ Physical activity index was treated as a categorical variable in the intensity model.

Membership in Classes 1 (high PM, NHP and low OTC) and 2 (low PM, NHP and OTC) was significantly predicted by being older and male. Younger individuals and females were more likely to be in Class 3 (high PM, OTC and low NHP). Canadian immigrants were more likely to be in Classes 1 and 2 but not 3; Canadian-born individuals had a greater propensity to use OTC products than immigrants. Individuals in Classes 1 and 3 were more likely to have a regular doctor, whereas individuals in Class 2 were less likely to have one. Class 3 membership was also significantly related to smaller household size, suggesting that these individuals were more likely to live alone or with one other person. In terms of the health covariates, co-morbidity was significantly associated with membership in Classes 1 and 3 but not 2. Thus, having no or few chronic conditions was related to low health product use overall. Last, fair/poor health was significantly associated with being in Class 1, while good overall health predicted membership in Class 3, and very good or excellent health predicted membership in Class 2. Thus, poor health indicators were associated with a greater propensity to use PM and NHP but not OTCs.

Defining patterns among tri-product users

In the second model, the intensity of health product use was examined (see Table 3). To test for evidence of combined polypharmacy and polyherbacy, only individuals who used at least one of each of the three groups of products were examined. This resulted in 19% (n=696) of the sample being classified as tri-product users. Within this group of users, seven distinct types emerged (BIC, LL=-4407.85; nPar=147; Wald=10.09, p<0.12*). The largest group of users (Class 1, 34%) took at least 3 PM, 3 NHP and 1 OTC monthly. Class 2 (20%) and Class 7 (3%) could be characterized as conventional product users, as both have higher probability of PM and OTC relative to NHP. Class 3 (14%) and 4 (11%), in contrast, have a higher probability of NHPs relative to conventional medical products (PM and OTC). Class 5 (10%) and Class 6 (8%) have high overall rates of consumption of PMs, OTCs and NHPs, relative to the other five classes.

Class membership for each of the seven classes was significantly correlated with age, household size, co-morbidity (no. of chronic

* In analyses with large numbers of parameters (nPar), the p-value is no longer a good indicator of statistical significance for model fit. Reduction in the BIC-log likelihood is selected as the indicator in place of p-values.

conditions) and BMI status. Older individuals were more likely to belong to Classes 1, 2, 5 and 6, while younger individuals were more likely to be in Classes 3, 4 and 7. The overall pattern was that younger tri-users had drug-use profiles characterized by fewer PMs and more NHPs relative to the other four classes. Classes 3 and 7 were associated with larger household sizes, whereas the other five classes had fewer people living in the same household. Intensity of tri-product use was much greater for individuals in co-morbid states, as indicated by the significant relationship between increasing number of chronic conditions and membership in all of the latent classes except for Classes 3, 4 and 7. Last, there was no clear pattern overall for BMI and drug intensity.

DISCUSSION

The purpose of this study was to provide an overview of the current health product consumption patterns of Canadian adults, including prescription medications (PM), over-the counter (OTC) and natural health products (NHP). This included an examination of health product use in a two-stage process. The first stage examined propensity to use health products and the second stage examined intensity of use among product users. Correlates of use were assessed in both stages.

A main finding of this study was that in 2007/2009, almost one half (43%) of the Canadian adult population under the age of 80 had a propensity to use PMs and NHPs but were less likely to use OTCs in a given month. In addition, almost one in five adults consumed at least one of all three types of health products during this period of time; for these Canadians, the potential for drug-herb contraindications was high. Among these tri-product users, there were at least seven distinct profiles of drug use. Heavy product use characterized about 20% of tri-users, with each taking an average of four PMs, between two and four OTCs, and about three NHPs in the same time period.

The rates of product use were generally consistent with those reported elsewhere. We found that 58% of Canadian adults took at least one PM in a given month. This is somewhat higher than the 47% reported by Esmail.²² However, his study examined self-reported use and use over a longer period, therefore increasing the likelihood of subject recall on two fronts. Our finding that 38% consumed at least one NHP in the previous month is similar to the 41% reported by Troppmann, Johns and Gray-Donald.⁸ Finding a comparable rate of OTC use in the literature is challenging.

Age was a significant predictor of both product use (propensity) and, among users, the number of products taken (intensity). PM and OTC use was greater among older adults for both models. This is consistent with other studies.^{4,9} Among tri-users (i.e., the intensity model), the highest average NHP use was found in Classes 4, 5 and 6, with membership in the latter two classes predicted by increasing age. For Class 4, however, younger ages predicted membership. This latter finding is more consistent with previous research that finds a curvilinear age effect whereby NHP use is greater among late-middle-aged (45-64) groups relative to older adults.^{8,15,23}

Our finding that gender predicted the propensity to use health products, with men characterized by low product use, is also consistent with previous findings. However, our study did not find that women were more likely to be NHP users, which is somewhat contradictory to the bulk of research that finds that women are more

likely to use NHPs relative to their male counterparts of all ages.^{8,15,24,25} It is possible that physicians recommended (or prescribed) supplements for women, in accordance with public health guidelines regarding daily intake of vitamins and minerals. As a result, these women may be reporting their supplement use as PMs or OTCs rather than NHPs.

The lack of association between income and product use was also somewhat surprising, given that medications are not universally covered in Canada, and that OTC and NHP products tend to involve out-of-pocket expenses.²⁶ However, some private insurers have begun to offer limited coverage for some NHP products.²⁷ Furthermore, provincial variations in drug coverage plans²⁸ suggest that there is inequity across provinces in terms of reimbursement.

Education also was not a significant predictor of health product use. Yet, having a regular doctor did predict membership, such that people without a regular doctor had higher probability of being in Class 2, characterized by a low probability of all product use. Therefore, it is possible that medical doctors are serving as conduits of information for patients to use (or not use) products, regardless of how many years of education these patients have.²⁹

A surprising finding is that household size was significantly associated with both the propensity and intensity of health product use. Individuals living in smaller households were characterized by a high probability of PM and OTC use and low NHP use. Yet among tri-users, living in larger households was significantly associated with membership in two classes characterized by low mean rates of overall health product consumption. These two classes were also significantly associated with younger age, providing further support for the inverse relationship between health product use and age.

We also found that immigrant status was a significant predictor of health product use, with Canadian immigrants more likely to belong to two latent classes characterized by high probability of PM and NHP but not OTC use. It may be that there is less familiarity with OTC products among individuals not born in Canada. For some ethnic groups, what they would consider traditional medicines are actually classified as NHPs in Canada. Future analyses that include a measure of years in Canada since immigration and country of origin may provide a better contextual background against which to interpret such findings.

It is also clear across both analyses that the number of chronic conditions an individual has increased both the likelihood that health products would be used (propensity) and the intensity of use among tri-users. This finding is consistent with the literature on PM,³⁰ OTC,¹⁰ and NHP use.¹⁶ What is interesting to note is that among product users in this study, the relationship between number of chronic conditions and NHP is opposite to that found for chronic conditions and either PM or OTC use. This suggests that there may be some degree of wellness care taking place for NHP users, lending support to the notion that the spectrum of health product use may be "for my wellness, not just my illness".⁷

Study limitations

Our study was limited by the CHMS sampling frame, which excluded adults older than age 79. As a result, our study clearly underestimated the extent of polypharmacy and/or polyherbacy among Canadians. Seniors frequently use medications and this use tends to increase with age. For example, daily medication use is greater

among those aged 75+ than it is among seniors aged 65-74 years of age.³¹ Further, while NHP use tends to be concentrated in cohorts aged 35-50,¹⁵ there is research indicating that the number of old-old (85+) NHP users is increasing.¹⁸ Additionally, there may be some degree of overlap across health products that we could not control for. For example, some respondents may have been prescribed OTCs by their physicians and consider aspirin, for example, a PM, when it is typically classified as an OTC. A related issue is that combination products, such as multivitamins, are counted as one product. This too would lead to underestimating product use. We also did not evaluate product use for potential drug-herb interactions so our findings cannot speak to the frequency of drug-herb or drug-drug interactions. However, they do suggest that given the prevalence of concurrent drug use found in this sample, the potential for drug-herb interactions is high. Last, we used number of health products as an indicator of polypharmacy/polyherbacy. Some would argue that *appropriateness* of drug use is a more important consideration than sheer volume of use. Yet, it was not possible for us to measure aspects of appropriate use, which include dosage, duplication, duration, drug-drug interactions, and drug-disease interactions, in addition to provider-prescribing practices and patient non-adherence.³²

CONCLUSION

This research established a baseline estimate of health product use with direct measures drawn from health survey data. It did so using a two-stage analysis process (focusing on propensity and intensity) and thus highlighted distinct patterns related to use *within* and *across* the three groups of health products examined here. We found that almost one half of Canadians are supplementing medication use with NHPs, and that one in five Canadians use at least one PM, NHP and OTC regularly. These Canadians are often older and have complex health conditions and are potentially at risk of drug-herb interactions. This suggests that further research should establish a criterion for what constitutes the “poly” in polypharmacy and polyherbacy in order to inform the conversation on appropriate product use between provider and patients. This should be seen as a priority within the context of an aging population in an era of chronic illness.

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RÉSUMÉ

OBJECTIFS : Les produits de santé naturels (PSN) sont de plus en plus utilisés comme suppléments aux médicaments d'ordonnance (MO) et aux produits en vente libre (VL). L'objectif de cette étude était d'examiner les patrons d'usage de l'ensemble des produits de santé et comment ces patrons sont associés à des facteurs sociaux et sanitaires.

MÉTHODES : Nous avons utilisé les données du cycle 1.0 (2007-2009) de l'Enquête canadienne sur les mesures de la santé (ECMS) afin d'examiner l'usage récent de produits chez les adultes âgés de 18 à 79

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ans (n=3721). Des analyses de classes latentes ont été utilisées pour détecter l'usage (propension) et l'intensité de l'usage chez les utilisateurs des trois types de produits. Les associations entre les covariables sociales et sanitaires et les patrons d'usage des produits ont été examinées à l'aide d'analyses de régression logistique linéaire et multinomiale.

RÉSULTATS : Trois classes latentes d'usage des produits de santé ont été identifiées. La plus grande classe (43 %) était caractérisée par une forte probabilité d'usage de MO et de PSN mais pas de VL. Par contre, la 2^e classe (37 %) avait une faible probabilité d'utiliser l'un ou l'autre des trois produits de santé. La 3^e classe (20 %) avait une forte probabilité d'utiliser les MO et les VL mais pas les PSN. L'âge, le genre, le statut d'immigrant, la taille du ménage, la comorbidité, l'état de santé perçue, et le fait d'avoir un médecin régulier étaient associés avec ces patrons d'usage. L'analyse de l'intensité d'usage des produits chez les utilisateurs a permis d'identifier sept classes distinctes; celles-ci variaient selon l'âge, la taille du ménage, la comorbidité et le poids (indice de masse corporelle).

CONCLUSION : Si la définition de la polypharmacie et de la polyherbacie est basée seulement sur le nombre de produits consommés, alors aucune des deux pratiques ne semble répandue chez les Canadiens de moins de 80 ans. Plus de travaux sont nécessaires pour définir la « poly » dans la polypharmacie et la polyherbacie. Ceci alimentera la discussion sur l'usage approprié des produits, surtout qu'environ la moitié des Canadiens consomment des médicaments et des PSN en même temps.

MOTS CLÉS : polypharmacie; médicaments en vente libre; suppléments diététiques; médicaments sans ordonnance