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Internet Use and Access to Health Information among Canadians: Are the Elderly on the Sidelines?

Ernest Johnson[1] **and Shanthi Johnson C**[2,3]

[1]*Faculty of Business Administration, Canada*

[2]*Faculty of Kinesiology and Health Studies, University of Regina, Canada*

[3]*Saskatchewan Population Health and Evaluation Research Unit, Regina, Canada*

[*]**Corresponding author:** Shanthi Johnson, Faculty of Kinesiology and Health Studies, University of Regina, Saskatchewan S4S 0A2, Canada, Tel: +1 307-337-3180; E-mail: shanthi.johnson@uregina.ca

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Abstract

This study examined the use of the Internet to access health information online among Canadians and involved the secondary analysis of the Canadian household internet use survey data (n=33,832). The results showed that gender and marital status as well as the Internet use characteristics such as the location, frequency and duration were significantly related to individuals accessing health information online ($p \leq 0.05$) and age, education, occupation, income and the type of the Internet connection were not. The findings have implications for health promotion and health care delivery and provide the benchmark necessary for future trend-analyses in health information access.

Keywords: Canadian population; Health information; Internet use

Introduction

Worldwide, the Internet reaches an estimated 7.26 billion people and this growth has represented a 753% increase from the year 2000 to 2015. In the US, 88% of individuals used Internet services in the year 2011, compared to 55% in the year 2000 [1,2]. Statistics Canada has reported similar figures highlighting considerable growth on the internet use [3,4]. The internet technology has been used as an information retrieval source, as a sales tool, as a distribution channel, and as a customer support tool by businesses and customers [5,6]. The internet, which was traditionally the domain of computer science and business professionals, is being used in the health sector [7,8] and by the health professionals [9]. With the increasing Internet penetration, there has been an explosion of health information online with thousands of websites, discussion groups, and electronic resources for both professionals and consumers [10-12].

In the last decade, the internet has provided consumers with unparalleled opportunities to acquire health information [8,9,13]. Many individuals across various age groups avidly seek health information on-line [13-15] with significant growth in this last decade [16]. For example, in 2000, approximately 25% of American adults looked for health information online and this figure has increased to 80% in 2010 [16]. Given this rapid growth, professionals, policy makers and consumers claim that the Internet has great promise for the future of health and disease surveillance and health care delivery, in light of the present health care climate of budgetary constraints requiring elimination and restructuring of existing programs and services, difficulties in providing health information and services to underserved populations such as those with disabilities, those in remote and rural areas, and increased awareness of consumers to make more informed health decisions [17-20]. Many policy documents suggest technology as a way to address many of the problems facing the delivery of health care services to individuals and to save costs [21-23]. At the individual level, a majority of those who access health information online found the information useful (92%) and learned something new (81%) [24]. Online health information seekers also reported greater level of empowerment and awareness of their role in their health [3,10,24-26]. Approximately 80% sought health information online for convenience, the volume of recent health information available, and the anonymity [27]. In the context of the tremendous growth in the proportion of individuals accessing health information online and anticipated reach, this medium has been claimed to transform the health care environment [28,29].

While the Internet use has grown at a tremendous rate and it has shown great promise, questions remain about the differential access to the internet among certain segments of the population and the extent to which this medium is used to access health information [30,31]. Gilmour [32] reports significant disparities in access and use of health information has been reported based on various socio-demographic characteristics. Further, Renahy, et al. [33] describe the observed disparity as a double divide caused by social and economic inequalities preventing internet access as well as seeking health information online. In addition, they reported that individuals with recent health problems are less likely to access health information online. In Canada and around the world, research clearly shows that a higher level of health problems are observed in the older age cohorts, compared to their younger counter parts. Interestingly, Eng et al. [30] suggest that access to health information and support online is a private road rather than a public highway for population groups such as the elderly. Specifically, studies from the United States of America (USA), European countries and Japan show that only 15% to 65% of those who access to the Internet use this medium to browse health information, with elderly being least likely to do so [16,27,34-40]. A USA study of family practice clinic patients found that those greater than 65 years of age were less likely to access health information online, even after adjusting for the presence of a home computer and Internet access [40,41].

Among the 50-59 years age group, 52% had used the Internet to access health information, compared to only 15% among those over 80 years of age. A recent 2011 report shows that only 29% of American Adults over 65 years of age access health information online compared to 71% in the 18 to 29 years age cohort [16]. The 42% difference among the American younger and older cohort highlights that the digital divide still persists and warrants further investigation.

The issue of the internet use and access to health information has not been examined within the Canadian context. Most of these studies reported in the literature involve only a select group of individuals such as cardiac patients or those who visited family practice clinic within a certain period of time [42]. Limited population-based studies are available to obtain a more precise profile of the Internet use and access to health information among various age groups, including the elderly. While [43] claimed that some of the strongest growth in the Internet use will be seen among the elderly populations with nearly 50% of this group was expected to be online by 2005, the growth continues to be slow among the elderly with only 29% using this medium in 2010 [16,44]. In Canada and around the world, the elderly cohort is the fastest growing segment of the population. Given the higher level of risk for illnesses among elderly, retirement and reduced workloads, and difficulty accessing other health care providers due to limited functional mobility, remote location, and loss of social network, the cohort of elderly most likely benefit from online health information [30,45-47]. Yet, health professionals are less likely to direct an elderly person to online health information mainly due to perceptions that the elderly are less likely to be computer literate and have the capacity to access health information online and beliefs that the elderly are less likely to change and unwilling to adopt new innovation [48]. In addition, Pak, et al. report usability barriers such as spatial visualization being more pronounced for the older adults to access health information online, compared to their younger counterparts. Contrary to popular belief, the elderly has been wanting to and willing to access and use health information successfully if provided appropriate opportunities [45,46,49,50]. A recent intervention study by Chu et al. [51] showed that a five-week computer educational intervention reduced computer anxiety and enhanced computer confidence as well as self-efficacy in retrieving and evaluating online health information. Although the Internet use in general and the access to health information online promise to positively impact the health care system and different age groups, the profile of those who use this innovative medium should be examined more closely. To date, there are no Canadian studies focusing on access to health information online using a nation- wide, population-based survey and with the focus on the population of the elderly compared to their younger counterparts.

Materials and Methods

Data source and participants

We used the 2000 cycle of the household internet user survey (HIUS), which was conducted in a sub-sample of the labour force survey (LFS). The HIUS survey included the sample of civilian, non-institutionalized population aged 15 or older in the 10 Canadian provinces (n=33,832) selected using multiple staged, stratified random sampling procedures. Populations on Indian reserves, full-time members of the Canadian armed forces, residents of long-term care facilities, and residents of certain remote regions were excluded. Primary stratification was based on provinces, economic regions (geographical areas of more or less equal homogeneous economic structure formed on the basis of federal provincial agreements) and the type of area (rural, urban and remote) within each province to generate probability sample. The identified sample was representative of the Canadian population with respect to age and gender and women [52].

Measures

Data were collected from 33,832 individuals by trained statistics Canada interviewers through computer-assisted personal or telephone interviews which lasted approximately 45 minutes. In the HIUS-2000, demographic information such as gender, age, marital status, education, occupation and income was obtained using single item questions. Patterns of the Internet access and use in the past month were assessed at both personal and household levels. For this study, only personal Internet use and access to health information online were used. In particular, typical monthly use of the Internet, location of use, type of connection, duration of use and nature of use were assessed. Access to health information was assessed by asking the participants whether or not they had accessed health information online in the past month. However, the interviewees were not asked about the kind of health information, which health portals/websites they accessed. Only one member for each household who self-defined themselves as the head of that household was interviewed.

Statistical analysis

The downloadable microdata were saved in statistical package for the social sciences database, version 21 (vs 11) (PSS, 2001) for further analysis. Both descriptive and inferential statistics were used. Means and frequencies were used to describe the population in terms of their demographic characteristics and patterns of the Internet use. Subsequently, using contingency tables and logistic regression analysis, statistical associations between demographic characteristics and use of the Internet as well as use of the Internet to access health information were determined. Logistic regression analysis was used to generate odds ratios (OR).

Results

The 33,832 participants were divided into three age categories: 18 to 34 years, 35 to 64 years and over 65 years of age with a distribution of 18% (6,152), 59% (20,049) and 23% (7,631), respectively. Background characteristics of participants are presented in Table 1. Gender distribution was predominately male in all age groups. There were significant differences between groups with the middle age group having the highest percentage of males (82%) compared to the youngest (76%) and oldest (61%) age groups. Although the majority of participants in all age categories were married, there were significant differences between age groups in marital status with a greater percentage of the younger age group being single, a greater percentage of the middle age group being separated or divorced and a greater percentage of the older age group being widowed. Education also differed significantly between age groups. The majority of both the younger (68%) and middle (60%) age groups had completed high school while the majority of the older group (57%) had completed less than high school. In addition, more participants in the middle age group (23%) completed less than high school than the younger age group (15%). Employment status differed significantly between groups with the majority of the younger (80%) and middle (76%) age groups being employed while the majority of the older age group (93%) was unemployed or retired. Income differed significantly across age groups.

The majority of the older age group (79%) reported less than $40,000 while the majority of the middle age group (58%) reported more than $40,000 and the majority of the younger age group (56%) was between $22,447 and $64,999. The income of one in two elderly and one in four young adults fell close to the Canadian low income cut-off.

Age Groups	<35 years	35-64 years	65 + years	P value
Gender (n, %)				0.001
Male	(4651) 75.6	(16396) 81.8	(4683) 61.4	
Female	(1501) 24.4	(3653) 18.2	(2948) 38.6	
Marital status (n, %)				0.001
Married/common-law	(3534) 57.4	(14260) 71.1	(3903) 51.1	
Widow/widowed	(9) 0.1	(679) 3.4	(2846) 37.3	
Separated/divorced	(342) 8.9	(3036) 15.1	(484) 6.3	
Single	(2267) 36.8	(2074) 10.3	(398) 5.2	
Education (n, %)				0.001
Less than high school	(899) 14.6	(4524) 22.6	(4351) 57.0	
High school	(4199) 68.3	(12112) 60.4	(2711) 35.5	
College/University	(1054) 20.9	(3413) 17.0	(569) 7.5	
Employment status (n, %)				0.001
Employed	(4882) 79.4	(15130) 75.5	(543) 7.1	
Not employed	(1270) 20.6	(4919) 24.5	(7088) 92.9	
Income (n, %)				0.001
≤$22 446	(1535) 25.0	(4803) 18.1	(3807) 49.9	
$22 447-$39 999	(1735) 28.2	(4803) 24.0	(2208) 28.9	
$40 000-$64 999	(1735) 28.2	(5634) 28.1	(956) 12.5	
$65 000 +	(1147) 18.6	(5981) 29.8	(660) 8.6	

Table 1: Sample demographic characteristics.

In addition to the demographic characteristics, the Internet usage patterns of the study participants are summarized in Table 2. Approximately 58% of those under 35 years and 47% of those between 35 and 64 years reported using the Internet which was significantly higher than the 10% of participants over 65 years who were Internet users. Of those participants who accessed the Internet, 44% of the younger, 60% of the middle and 58% of the older age group accessed health information while browsing online. Differences across age groups reached significance. The frequency of typical internet use differed significant between groups. The highest percentage of younger participants reported daily usage (31%), while the highest percentage for the middle age group was weekly access (28%) and for the older age group the highest percentage accessed the Internet rarely (28%). Location of the Internet use also differed significantly across age groups. Home Internet usage was the commonly reported among all age groups. The Internet use at work was also frequently reported among the younger (46%) and middle (47%) age groups although not for the older age group (18%). Interestingly, school usage was also common among the middle age group (39%) and less so for the younger (24%) and older (10%) age groups. Public library, neighbour, relatives, Internet café, community access and traveling were also mentioned as locations of the Internet use. Number of locations of the Internet access differed significantly between age groups ($F=262.4$, $p \leq 0.001$). On average, the younger group accessed the Internet from 1.7 ± 0.8 (1 to 5) locations, the middle age group from 1.9 ± 0.9 (1 to 6) locations and the older age group from 1.4 ± 0.7 (1 to 6) locations. Nearly 100% of all participants reported a telephone to computer Internet connection although high speed and 'other' were also mentioned. This is most recently changing as the technology has changed and transcended wide usage. However, in several rural and remote contexts, high speed and DSL linkages are still not available to the wide extent.

The demographic characteristics of those who use the Internet to browse health information and other who did not were compared. As shown in Table 3, there were no significantly differences among age or gender distribution between those who did and those who did not access health information online. Marital status and income did differ significantly. However, education and employment status did not differ significantly. All Internet users had Internet connection at home

whether or not they used it to browse health information online. All other locations of access differed significantly between groups. Significantly more of those who accessed health information online accessed the Internet at work, school, public library, Internet café, and travelling while significant more of those who did not access health information online accessed the Internet more at relatives place or used community access. Those who used the Internet to for health information accessed the Internet from a mean of 2.1 (SD=0.9) locations while those who did not browse for health information accessed the Internet from a mean of 1.9 (SD=0.8) locations. The number of locations did differ significantly between groups ($p \leq 0.05$). As shown in Table 4, almost all in both groups connected to the Internet via a telephone line. There were no significant differences between groups in regards to high speed and 'other' Internet connections. Significant differences were also observed for type of Internet connection, frequency and duration of Internet use.

Patterns of Internet Use	<35 years	35-64 years	65+ years	P value
Internet User (n, % yes)	(3537) 57.5	(9237) 46.1	(741) 9.7	0.001
Frequency of Internet Use (n, % yes)				0.001
Daily	(69) 31.4	(118) 25.5	(9) 18.7	
Weekly	(47) 21.4	(131) 28.3	(11) 23.9	
Monthly	(63) 28.6	(115) 24.8	(12) 26.1	
Rarely	(38) 17.3	(85) 18.4	(13) 28.3	
Location of Internet Use (n, % yes)				0.001
Home	(2659) 56.4	(9183) 68.6	(808) 71.6	
Work	(2165) 45.9	(6218) 46.5	(207) 18.3	
School	(1146) 24.3	(5255) 39.3	(108) 9.6	
Public Library	(452) 9.6	(1573) 11.8	(86) 7.6	
Other (e.g., neighbor, relative, café)	(438) 9.4	(592) 4.6	(61) 5.3	
Internet Connection (n, % yes)				0.001
Telephone Line	(2102) 97.0	(7507) 98.6	(699) 98.7	
High Speed/Other	(65) 3.0	(106) 1.5	(9) 1.3	
Monthly Duration of Internet Use (n, %)				0.001
< 49 hours	(1977) 75.6	(6477) 72.3	(627) 82.0	
50+hours	(640) 24.5	(2481) 27.7	(138) 18.0	
Access to health information online (n, % yes of those who use Internet)	(1569) 44.4	(5494) 59.5	(432) 58.3	0.004

Table 2: Sample characteristics on patterns of monthly internet use.

Logistic regression analysis was used generate odds ratios (OR) for the likelihood of individuals accessing health information through online avenue based on various demographic and the Internet use characteristics. As shown in Table 5, the likelihood of individuals accessing health information online was significantly related to demographic factors such as gender and marital status as well as the Internet use characteristics such as the location, frequency and duration ($p \leq 0.05$). On the other hand, age, education, occupation, income and the type of Internet connection (via telephone versus high speed) did not relate to the likelihood of accessing health information online. Women were 32% less likely to access health information online compared to men whereas those who are single were 61% more likely to do the same in comparison to couples. Individuals who use the Internet in location more than their home connection only were 16% more likely to access health information online. Interestingly, individuals who use the Internet less often as well as for low duration are significantly more likely to access health information online. While access to the Internet from multiple locations other than ones home, and less frequent use of the Internet (weekly or less) increased the likelihood of individuals using health information online by 16% to 40%, connecting to the Internet for higher duration (more than 50 hours a month) decreased the likelihood by 26%.

Discussion

The present study involved a secondary analysis of a national survey on the patterns of the Internet use and access to health information online among Canadians. A comprehensive literature review on research databases such as MedLine, PsychLit and ABI-Inform revealed that studies on this issue with limited scope involving a smaller sample size and/or selected clinical population/age group have

been examined in the USA, European countries and Japan [2,16,27,30,31,34-38]. To date in the gerontology, e-commerce/health, psychology and sociology areas, there has not been any other study on this issue from a Canadian context or a national probability sample. The present study included access to health information data from over 33,000 individuals and one of the largest sample reported in the literature. In comparison, two recent studies from 2014 [53] and 2009 [54] included national probability samples from the US of 3,959 and 3,244 adults respectively. In addition to the large sample involved, this Canadian data set is unique in that it provided a representative national sample to investigate the Internet use and access to health information with a potential for generalizing the findings. Limited population-based studies are available to obtain a more precise profile of the Internet use and access to health information among various age groups, including the elderly. In fact, a recent agency for healthcare research and quality report (2008) confirm the paucity of studies designed to compare the elderly with the general population.

Access health information online	Yes n, %	No n, %	P value
Age distribution			0.391
<35 years	(1569) 20.9	(1084) 21.4	
35 to 64 years	(5494) 73.3	(3630) 71.5	
65 years or more	(432) 5.8	(363) 7.1	
Gender			0.494
Male	(6476) 86.4	(4365) 86.0	
Female	(1019) 13.6	(712) 14.0	
Marital status			0.001
Married/Common-law	(5931) 79.1	(3789) 74.6	
Widow/Widowed	(155) 2.1	(140) 2.9	
Separated/Divorced	(624) 8.3	(493) 9.7	
Single	(785) 10.5	(655) 12.9	
Education			0.347
Less than high school	(813) 10.8	(630) 12.4	
High school	(4775) 63.7	(3137) 61.8	
College/University	(1907) 25.4	(1310) 25.8	
Employment Status			0.239
Employed	(6002) 80.1	(4022) 79.2	
Not Employed	(1493) 19.9	(1055) 20.8	
Income			0.001
≤ $22 446	(717) 9.6	(553) 10.9	
$22 447-$39 999	(1444) 19.3	(1089) 21.4	
$40 000-$64 999	(2250) 30.0	(1620) 31.9	
$65 000+	(3084) 41.1	(1815) 35.7	

Table 3: Comparison of background characteristics of those who access health information online vs others who do not.

Access health information online	Yes	No	P value
Location of internet use (n, %yes)			
Home	(7495) 100	(5077) 100	0.999
Work	(3926) 52.6	(2310) 45.9	0.001

School	(2895) 38.9	(1868) 37.2	0.024
Public library	(834) 11.1	(431) 8.5	0.001
Other (e.g., neighbor, relative, café)	(300) 29.9	(148) 29.8	0.001
Total Internet Locations Accessed			
Mean ± SD (n)	2.1 ± 0.9 (2195)	1.9 ± 0.8 (1752)	0.001
Internet connection (n, %yes)			0.002
Telephone	(6046) 99.1	(4211) 99.1	
High speed/Other	(57) 0.9	(38) 0.9	
Frequency of internet use (n, %yes)			0.001
Daily	(5624) 75.0	(3320) 65.4	
Weekly	(1709) 22.8	(1500) 29.5	
Monthly	(125) 1.7	(189) 3.7	
Rarely	(20) 0.3	(20) 0.4	
Monthly Duration Internet Use (n, %yes)			0.001
≤49 hours	(5180) 70.2	(3873) 78.5	
≥50 hours	(2194) 29.8	(1058) 21.5	

Table 4: Comparison of the patterns of internet use of those who access health information online vs others who do not.

Statistics Canada reported in 2000 that approximately 50% of Canadians over 15 years of age access the Internet on a regular basis with similar figures in the USA [39]. Over a decade, there has been a 30% increase in internet users in both the USA and Canada [3,4,16,52,55]. Within the population groups, however, there have been different percentages of the Internet use reported. Depending on the sample involved (e.g., cardiac patients or those who have accessed primary care physician within a certain time period), 15% to 80% are reported to use the internet on a regular basis, with the elderly being least likely to do so [16,27,34-39,56]. Consistent with the literature, our study showed that access to the internet was the lowest among the elderly, compared to those less than 35 years and those between 35 and 64 years of age. This digital divide is described by Renahy, et al. [33] as a double divide related to the disparity in the level of access to the Internet and access health information based on various social and demographic characteristics such as the poor, less educated and individuals with health vulnerabilities such as the elderly, albeit the level of access among the American adults has increased from 46% in 2000 to 74% in 2009. The pew internet and American life project further confirm that those who do not have access to the Internet are likely to be poor, less educated, and over the age of 65 [27]. The findings from this Canadian national survey from 2000 show that the elderly are on the sidelines when it comes to accessing the Internet and supports the results from smaller studies in Japan, USA and some European countries. The data from the intervening years to the present time suggest that the growth has been slow among the older cohort and the status quo remains in the digital divide as related to the older population [32,33,54,56]. However, the trends-related to the internet usage needs to be tested with carefully planned time-trend analysis. Further, in this context, Gracia and Herrero [57] attest that the "older people are among the segments of the population for which the digital divide is most persistent and are considered to be at risk of losing out on the potential benefits that the information society can provide to their quality of life".

In terms of accessing health information online, a negative relationship between age and access health information online has been reported [16,27,40,41,56]. Approximately 15% to 25% of the elderly have been reported to use the Internet as an avenue to access health information. The Pew report consistently has shown that younger adults are more likely than older adults to participate and use technologies related to health for general health or specific concerns such as mental health issues, access to hospital and other health facilities and so on. While the trend was observed in our study, the percentage of individuals across the age groups was considerably higher with 58% of the elderly with access to the Internet using the medium to get health information. The age difference was not statistically significant in our study. While a relatively small percentage of elderly use the Internet, higher proportion of the elderly use this medium to access health information. The cohort of the elderly are most likely to benefit from health information as they have significant health concerns and/or to have difficulty accessing other health care providers due to limited functional mobility, remote location, and loss of social network [30,45,47]. Contrary to popular belief that the elderly have limited capacity to access health information online and beliefs that the elderly are less likely to change and unwilling to adopt new innovation [48], the elderly have been willing to access and use health information successfully [45,46,49,50,57]. A recent intervention study showed improvement in computer confidence and self-efficacy with a concomitant reduction in computer anxiety has been observed following a five-week computer educational intervention.

Sample Characteristics	Odds Ratio	CI at 95%	p
Age <65 years vs ≥65 years	1.158	0.98-1.37	0.085
Gender male vs female	0.676	0.58-0.78	0.001
Marital status couple vs single	1.605	1.42-1.81	0.001
Education high school vs college/University	1.059	0.97-1.15	0.188
Employment status employed vs not employed	0.982	0.89-1.09	0.731
Income ≤ $22,446 vs >22,447	0.918	0.81-1.05	0.198
Location of internet use home vs others	1.162	1.07-1.26	0.001
Internet connection telephone vs high speed/other	0.933	0.85-1.03	0.166
Frequency of internet use daily vs weekly/monthly/rarely	1.404	1.29-1.53	0.001
Monthly duration of internet use ≤ 49 hours vs ≥ 50 hours	0.735	0.67-0.81	0.001
Note: Reference categories were: age (less than 65 years), gender (male), marital status (couple), education (less than or equal to high school), employment status (employed), income (less than or equal to $22,446), location of Internet use (home), internet connect (telephone), frequency of use (daily), monthly duration (less than or equal to 49 hours)			

Table 5: Odds ratios and confidence intervals for the relationship of sample characteristics to the likelihood of using internet to access health information.

Also, the lower percentages reported in the literature could be related to the researchers not investigating access to health information within the context of those using the Internet on a regular basis. The present study examined the access to health information within the context of regular Internet users. Using the internet on a regular basis could potentially increase the likelihood of individuals using this avenue to obtain health information significantly. Given that a higher percentage of those in younger age groups use the Internet on a regular basis, it is critically important to control for this variable to get a more accurate picture of online health browsers among age groups.

In addition to age and the Internet use, demographic characteristics such as marital status and patterns of the Internet use such as accessing this technology from multiple locations other than ones home and using the Internet less often increased the likelihood of individuals using health information [56]. Connecting to the internet using telephone line did not influence the likelihood in a statistically significant manner. However, the long duration of the Internet use decreased the likelihood. With the changing trend in technology, more and more people are using high speed Internet connection and this may influence the use of the Internet in the future. The results have practical implications for policy makers and health professionals in developing, delivering and evaluating programs to increase the Internet use and access to health information only by various age groups. Also, while the findings provide the usage patterns in 2000, the internet use and access to health information uptake seems to be at a level lower than the projected or expected levels and this issue should be investigated further. Specifically, the challenges of accessing online health information among the older cohort resulting from the lack of age-sensitive design or perceptions by health care providers need to be further investigated. Also, based on the 2000 patterns as benchmark, it is important for future trend-analyses to examine whether the older adults are still in the sidelines in exploiting the potential of the information technology.

The limitations of the present study should be acknowledged. The cross sectional nature of the data used in this study precludes establishing a causal link. Further longitudinal studies are needed to examine the age-related changes in the patterns of the Internet use. The study also employed secondary analysis of a national database and the investigator did not have control over the nature of questions posed and the type of the response data (e.g., nominal, ordinal, interval or ratio type of data). These limitations are inherent to the secondary analysis of data. However, the strengths of the secondary data include the use of nationally representative probability sample and the large cases/sample. While there are online health information access studies from other countries, these studies have involved only a select group of individuals such as cardiac patients or those who visited family practice clinic within a certain period of time. Thus, the present study adds value in the use of a representative population sample with the

presence of some inherent limitations related to the study design. The nature of data gathered had implications for how the results were analyzed. As with several opinion polls in this area, only number and percentages were reported. In the present survey, only self-defined heads of households were interviewed. This probably contributed to the preponderance of males in the survey on the self-selection bias. However, only demographic and the Internet use patterns pertinent to the participants were used. Household level information on access to the Internet was not included.

Also, the present study raises questions which should be addressed in future studies. Over the last few decades, the internet has become an integral part of our daily life. While it is important to know the nature of individuals accessing the internet and health information online, it has become more relevant to find out specifically what users access not just how and when. While how and when types of questions are needed as the first step as in the case of the present study, further research is needed on more content-based study on online health information within the context of health promotion and healthcare delivery in the future. Also, the Internet has been considered as having the potential for providing more efficient health care services to those who are hard to reach by traditional avenues. While some have espoused the potential positive impact and promise of the Internet and online health information, others have cautioned against this new emerging trend highlighting the challenges of a rapidly expanding field. Barriers and facilitators to using the Internet as a medium for health education across age groups should be explored. Privacy, security and content concerns on the Internet are prevalent, although only limited research is available in this area. Studies should examine the role of these concerns on the use of the Internet.

McCann and Giles [48] reported that health professionals are less likely to direct an elderly person to online health information mainly due to perceptions that the elderly are less likely to be computer literate and have the capacity to access health information online and beliefs that the elderly are less likely to change and unwilling to adopt new innovation. Studies and educational programs should target health professionals in furthering our understanding of the perceptions of health professionals. Also, studies have shown that the elderly are willing to access and use health information successfully, if provided proper training and support [45,46,49,50,57]. Process and implementation issues related to acquiring a new skill related to the use of this technology by the elderly should be examined. The elderly need not be on the sidelines when it comes to Internet use and access to health information, with further research aimed at enhancing our understanding of this issue and addressing the lack of Internet access through innovative programs and strategies.

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