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The associations of social networking site use and self-reported general health, mental health, and well-being among Canadians

Paige Coyne, Sara Santarossa, Nicole Polumbo and Sarah J. Woodruff

Abstract

Objectives: To investigate social networking site (SNS) use and frequency, and their potential associations with self-reported general health, mental health, and well-being among the Canadian population using the nationally representative 2013 General Social Survey (GSS).

Methods: Data were collected via Statistics Canada GSS 2013 (cycle 27). Six separate one-way analysis of covariances (ANCOVAs) were conducted to determine differences in general health, mental health, and well-being for both SNS use and frequency, controlling for age, gender, number of children at home, household location, education, and income.

Results: SNS users were younger (with nearly 96% being 15–24 years old vs. 27% $\geq$ 75 years; $p < .001$), female ($p < .001$), have three or fewer children at home ($p < .001$), live in urban/Prince Edward Island locations, were at the lower or higher ends of household income ($p < .001$), and were less educated ($p < .001$). Among all Internet users, better general health ($p = .03$) was associated with using SNSs, yet better mental health ($p = .001$) and well-being ($p = .001$) were associated with not using SNSs. Among SNS account-holders, those who never accessed their accounts had significantly lower general health ($p = .007$), mental health ($p < .001$), and well-being ($p < .001$) compared with those who accessed their accounts, regardless of frequency.

Conclusion: Differences exist for SNS use and frequency and health outcomes. However, investigations into the possible differences that may exist between individuals who do not have a SNS account and those who do, but do not use it, are needed in the future.

Keywords

Internet, social networking site use, health, mental health, well-being

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Introduction

Internet and social networking

The way in which Canadians communicate, interact, and obtain information has evolved considerably in the last 50 years,[1] due largely to the introduction and growth of the Internet, and, more recently, to the increasing popularity of social networking sites (SNSs).[2–4] According to Ellison (p. 211),[5] a social networking site (SNS) can be defined as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system". Additionally, the ways these sites encourage and

Department of Kinesiology, University of Windsor, CA

Corresponding author:
Paige Coyne, Department of Kinesiology, University of Windsor, 401 Sunset Avenue, Windsor, ON N9B 3P4, Canada.
Email: coynep@uwindsor.ca

allow for social interaction can vary from site to site.[5] A popular reason for users accessing the Internet is to obtain health information.[6,7] For example, with only a few clicks, users can easily obtain information regarding medication side effects, medication interactions, and even the potential risks of a given surgical procedure. Moreover, while users were once limited in their ability to access the Internet by the need to be connected through an Ethernet cable, today's users are not only able to access the World Wide Web wirelessly through local Wi-Fi connections but also through wireless networks provided by cell phone providers.[1] In particular, this virtually unlimited access to the Internet has also allowed SNSs users to maintain new or existing social connections more easily than ever before.[1]

Internet and SNSs popularity

Overall, Internet usage in Canadian homes increased from 36% in 1998 to nearly 83% in 2012.[8,9] Although younger individuals more frequently use the Internet and SNSs,[3,10,11] older adults are the fastest-growing group on the Internet.[11] Engagement in SNSs by young people frequently occupies greater than 2 hours a day,[12] with adolescents dedicating themselves to multiple sites, including Instagram, Snapchat, Twitter, and Facebook.[13]

Internet and SNS use outcomes

However, with this increase in Internet and SNS use across all ages, interest in the effects (both positive and negative) that it can have on user health has been a topic of research for many small-scale studies, especially in regards to SNS use, with mixed results obtained.[4,10,14–21] In terms of positive impacts on health, SNS use may increase perceived social support and interconnectivity among individuals.[3,4,10,14,16,18,20,21] Furthermore, public health programs have found success in utilizing SNS as a communication platform for health promotion efforts, such as smoking cessation, broadening their reach with the use of the Internet.[3,4,22–25]

Finally, there are numerous theories and decades of research on the importance of social connection and its association with both physical and psychological health.[26–28] One of the most well-known theories is Maslow's Motivation Theory,[28] which breaks down human needs into a hierarchical pyramid of five needs to be achieved, in which the third stage consists of the need for social "belongingness". It is suggested that humans are motivated to form and maintain social connections with others and that humans need to feel as though they are accepted among various social groups in order to be satisfied with their life.[28] Yet, while Maslow's Motivation Theory was developed in 1943, (i.e., long before the introduction of both the Internet and SNSs),[28] these new methods of communication are becoming increasingly popular ways for individuals to maintain social connections. As such, a number of studies suggest SNS use may have a positive impact on mental health and psychological outcomes.[3,29–32] For example, studies examining adolescents and college students have argued that improvements in social connections, both in the number, and the quality, of connections made through SNSs are positively associated with psychological outcomes such as psychological well-being, increased self-esteem, and life satisfaction.[3,29–32] In addition, greater social connectedness from sharing personal stories on SNSs and the use of SNSs as a coping strategy for dealing with challenges, was also found by Chassiakos and colleagues.[29] Moreover, there is also a growing number of adult SNS users who report sharing and receiving health information from friends within their online social networks,[4,29] thus positively increasing health information dissemination, although only when the information being shared/received is accurate.

Conversely, other small studies suggest that SNSs may have negative effects on user health, with increasing evidence suggesting that the Internet and SNSs may have a negative influence on both depressive symptoms and suicide-related behavior.[17,33] In addition, SNS use also provides individuals with another medium (besides face-to-face) to engage in bullying and harassment-like behaviors towards their peers.[15,17] Moreover, individuals who engage in, or have been a victim of, Internet and SNS-based bullying and harassment (more commonly known as cyberbullying and cyberharrassment), including intentional and repeated threats and harassments via SNSs, text messages, or email,[17,34] are 1.5 times and 2 times, respectively, more likely to attempt suicide than those who were not victims or offenders.[17,35] Furthermore, Santarossa and Woodruff reported that problematic SNS use (i.e., a highly dependent relationship with SNS) was associated with body image, self-esteem, and eating disorder symptoms/concerns among a small sample of university-aged students.[19] A study by Vogel and colleagues supports these findings by suggesting that SNS users who make upward comparisons with their peers are more likely to have lower self-esteem than users who did not engage in these types of comparisons on SNSs.[36] Lastly, while the use of the Internet and SNSs for health information sharing can be positive if the information is accurate, many studies suggest that information provided through the Internet, and specifically SNSs, can often be misleading and inaccurate.[37–40] For example, one small study reported that, of the 140 YouTube videos analyzed containing the keyword "anorexia", almost 30% of these videos encouraged

pro-anorexia-like behaviors, thus potentially misleading viewers looking for accurate information on how to manage/overcome an eating disorder.[41]

Objectives

Considering the conflicting results and small data sets of the studies presented above, the need for population-level research endeavors focused on associations between the Internet, SNS use, and health could not be timelier. As such, this study's three research objectives were to (a) determine SNS user demographics; (b) explore the differences in self-rated general health, mental health, and well-being between SNS users and non-users; and (c) investigate the differences in self-rated general health, mental health, and well-being between SNS users based on frequency of use among the Canadian population using the nationally representative 2013 General Social Survey (GSS) as administered by Statistics Canada.[42]

Methods

Sample

The GSS, introduced in 1985 and conducted yearly by Statistics Canada, is a nationally representative cross-sectional survey targeting the Canadian population aged 15 years and older.[43] The objectives of the GSS are to track "social trends in order to monitor changes in the living conditions and well-being of Canadians over time" and "provide immediate information on specific social policy issues of current or emerging interest" across each of Canada's ten provinces.[43,44] The GSS consists of six themes, each of which is surveyed in-depth every 5 years.[43] The present study utilized data from the 2013 GSS (Cycle 27) on social identity (which has been the focus of the 2003, 2008, and 2013 GSS). In addition to theme data, each survey collects demographic information (including gender, age, education, income, and ethnicity) of all participants.[43]

The framework used for the 2013 GSS was created by using a list of all households within all 10 provinces, as well as a list of all in-use telephone numbers (landline and cellular; retrieved from various sources such as Census of population).[44] All 10 provinces were separated into strata (i.e., geographic areas).[42] Moreover, the following Census Metropolitan Areas (CMAs) were each considered their own strata: St. John's, Halifax, Saint John, Montreal, Quebec City, Toronto, Ottawa, Hamilton, Winnipeg, Regina, Saskatoon, Calgary, Edmonton, and Vancouver.[42] All other CMAs not listed, in each of their given provinces, were grouped together to form three more strata.[42] Lastly, all remaining non-CMA areas in each province were grouped together to form an additional 10 strata, for a total of 27 strata overall.[42]

Furthermore, an oversample of immigrants and youth were taken as part of the 2013 GSS to allow for greater analyses of these populations.[42] Excluded from this survey are residents of the Yukon, Northwest Territories, Nunavut, and full-time residents of institutions. In total, 27,534 Canadians were sampled during the 2013 GSS.[44] Data collection took place between June 2013 and March 2014,[44] with interviews (computer-assisted telephone interviewing and electronic internet questionnaires) taking approximately 40–45 min.[43] A response rate of 48.1% was obtained.[42] Respondents were interviewed in the official language of their choice (English or French). To ensure representativeness, Statistics Canada utilized survey sampling weight, which were used in all analyses described below.

Variables

SNS use. SN use was measured using the question "In the past month (or 12 months), have you used the Internet to access a social networking website (such as Facebook or Twitter)?" with response options of yes and no.[44]

SNS frequency. SN frequency was measured using the question "How often do you access your social networking site(s)?" with response options of several times a day, about once a day, 3–5 times a week, 1–2 times a week, a few times a month, less than once a month, and never.[44]

Self-rated general health. General health was assessed using the question "In general, would you say your health is …?" with response options of excellent, very good, good, fair, and poor.[44]

Self-rated mental health. Mental health was assessed using the question "In general, would you say your mental health is …?" with response options of excellent, very good, good, fair, and poor.[44]

Self-rated well-being. Respondents' were asked the question "Using a scale of 0 to 10 where 0 means "very dissatisfied" and 10 means "very satisfied", how do you feel about your life as a whole right now?" in order to uncover their well-being.[44]

Participant demographics (covariates)

There were six demographic covariates including age (7 levels), gender (2 levels), number of children living at home (5 levels), household location (3 levels), total

household income (12 levels), and highest certificate, diploma, or degree completed (7 levels).[44]

Statistical methods

All statistical analyses were completed with SPSS Version 24 (IBM Corp).[45] The basic weighting factor for analysis at the person level was used in all analyses. Weighted percentages were calculated from cross tabulation and chi-square analyses for basic demographics (Table 1). Three separate one-way analysis of covariances (ANCOVAs) were conducted to determine a statistically significant difference of self-reported general health, mental health, and well-being on SNS use, controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income. Additionally, three separate one-way ANCOVAs were conducted to determine a statistically significant difference of self-reported general health, mental health, and well-being on SNS frequency controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income. Effect sizes were calculated for all one-way ANCOVAs (both SNS use and SNS frequency) using partial eta squared (η^2).

Assumptions. For all ANCOVA analyses, the assumptions were satisfied. The assumption of homogeneity of variance was evaluated using a series of box plots, and the variance was found to be in an acceptable range. Based on statistically non-significant Levene's Tests, researchers were able to reject the null hypothesis that the error variance of the dependent variable is equal across groups in all ANCOVAs. The assumption of a linear relationship for each independent variable between the dependent variable and the covariates was satisfied, and the assumption of homogeneity of regression slopes was fulfilled based on evaluation of scatter plots. Finally, the covariates and independent variables were found to be independent.

Results

Descriptive data

In total, 27,534 participants aged 15 years and older participated in the GSS. Among the total sample, most participants ($n = 22{,}840$; ~86%) reported using the Internet in the past month. Among those that did not use the Internet in the past month ($n = 4667$), only 17% reporting using it during the past year. Of those that did report using the Internet (over the past year; $n = 23{,}588$), 70% reporting using SNSs, such as Facebook or Twitter. Table 1 provides a breakdown of the participant demographics by SNS use (yes/no) and frequency of use. SNS users tended to be younger (with nearly 96% of 15–24 year olds vs. only 27% of 75 years and older; $p < .001$), female ($p < .001$), have three or fewer children at home ($p < .001$), live in urban/PEI locations, be at the lower or higher ends of household income ($p < .001$), and be less educated ($p < .001$). Further, nearly half of all participants (~45%) accessed SNS several times a day, with only ~4% accessing it less than once a month or never. Participants who were younger ($p < .001$), female ($p < .001$), no children at home ($p < .001$), less total household income ($p < .001$), and had lower levels of education ($p < .001$) accessed SNS more frequently than older, male, more children at home, higher total household income, and higher levels of education.

Main findings

Internet users. Among all Internet users ($n = 22{,}840$), there was a significant effect of SNS use on general health after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income, $F(1,19260) = 4.725$, $p = .030$, $\eta^2 = .000$. The mean general health was 2.17 ± 0.931 (possible range: 1–5; 1 = excellent, 5 = poor). There was a significant effect of SNS use on mental health after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income, $F(1,19265) = 10.273$, $p = .001$, $\eta^2 = .001$. The mean mental health was 1.99 ± 0.929 (possible range: 1–5; 1 = excellent, 5 = poor). There was a significant effect of SNS use on well-being after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income, $F(1,19265) = 31.788$, $p < .001$, $\eta^2 = .002$. The mean subjective well-being was 7.75 ± 1.750 (possible range: 0–10; 0 = very dissatisfied, 10 = very satisfied). Based on statistically significant results from all ANCOVAs, post hoc comparisons using a LSD test were used to indicate where statistically significant difference existed. Pairwise comparison results can be found in Table 2. Overall, better general health was associated with using SNS, yet mental health and well-being were associated with not using SNS.

SNS account holders. Among only those that reported having a SNS account ($n = 15{,}985$), there was a significant effect of SNS frequency on general health after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest

Table 1. Participant demographics by social networking site use and frequency.

	Social networking site use			Social networking site frequency							
	Yes $n = 23,588$	No $n = 3746$	p	Several times a day $n = 7298$	About 1/week $n = 4339$	3-5 times/ week $n = 1548$	1-2 times/ week $n = 1645$	Few times/ month $n = 1040$	Less than 1/month $n = 647$	Never $n = 58$	p
Age											
15–24 years ($n = 4289$; 15.58%)	95.50%	4.50%	<0.001	63.20%	22.10%	6.30%	5.00%	2.00%	1.20%	0.20%	<0.001
25–34 years ($n = 4629$; 16.81%)	86.80%	13.20%		51.30%	25.80%	8.60%	6.60%	5.10%	2.40%	0.20%	
35–44 years ($n = 4411$; 16.02%)	76.10%	23.90%		38.50%	28.30%	10.00%	11.90%	6.70%	4.30%	0.30%	
45–54 years ($n = 4985$; 18.10%)	58.60%	41.40%		30.40%	28.10%	11.40%	13.90%	9.60%	6.40%	0.30%	
55–64 years ($n = 4337$; 15.75%)	52.10%	47.90%		25.80%	29.60%	11.70%	15.60%	10.10%	6.40%	0.70%	
65–74 years ($n = 2817$; 10.23%)	39.40%	60.60%		25.80%	25.80%	12.20%	14.80%	11.40%	8.80%	1.10%	
75 years + ($n = 2066$; 7.50%)	26.50%	73.50%		19.60%	27.50%	12.70%	20.60%	10.60%	7.90%	1.10%	
Gender											
Males ($n = 13,599$; 49.39%)	66.30%	33.70%	<0.001	39.20%	26.10%	10.70%	11.30%	7.70%	4.70%	0.40%	<0.001
Females ($n = 13,935$; 50.61%)	73.60%	26.40%		48.40%	26.20%	8.20%	8.70%	5.00%	3.20%	0.30%	
Number of children living at home											
0 ($n = 17,687$; 64.24%)	70.90%	29.10%	<0.001	47.70%	25.30%	8.70%	9.00%	5.40%	3.60%	0.30%	<0.001
1 ($n = 4020$; 14.60%)	67.40%	32.60%		39.10%	27.90%	9.80%	11.00%	8.40%	3.50%	0.30%	
2 ($n = 4204$; 15.27%)	69.90%	30.10%		36.90%	27.70%	9.90%	12.60%	7.60%	5.00%	0.30%	
3 ($n = 1214$; 4.41%)	69.30%	30.70%		37.30%	25.60%	13.70%	10.40%	7.10%	5.50%	0.40%	
4 or more ($n = 408$; 1.48%)	62.30%	37.70%		36.40%	32.90%	12.60%	8.20%	6.90%	1.30%	1.70%	

(continued)

Table 1. Continued.

	Social networking site use			Social networking site frequency							
	Yes $n = 23,588$	No $n = 3746$	p	Several times a day $n = 7298$	About 1/week $n = 4339$	3-5 times/ week $n = 1548$	1-2 times/ week $n = 1645$	Few times/ month $n = 1040$	Less than 1/month $n = 647$	Never $n = 58$	p
Household location											
Urban ($n = 23,102$; 83.90%)	70.30%	29.70%	0.005	44.40%	26.10%	9.30%	9.70%	6.30%	3.90%	0.40%	0.321
Rural ($n = 4318$; 15.68%)	67.80%	32.20%		41.60%	26.80%	9.60%	11.40%	6.40%	3.90%	0.30%	
PEI ($n = 114$; 0.41%)	75.50%	24.50%		53.40%	21.90%	6.80%	11.00%	4.10%	2.70%	0.00%	
Total household income											
No income or loss ($n = 98$; 0.45%)	77.50%	22.50%	<0.001	56.50%	14.50%	4.80%	14.50%	4.80%	1.60%	3.20%	<0.001
Less than $5000 ($n = 174$; 0.80%)	72.10%	27.90%		45.50%	21.80%	14.50%	10.90%	2.70%	4.50%	0.00%	
$5,000 - $9999 ($n = 168$; 0.77%)	80.30%	19.70%		58.80%	15.50%	2.10%	9.30%	11.30%	3.10%	0.00%	
$10,000 - $14,999 ($n = 442$; 2.02%)	71.60%	28.40%		47.20%	29.30%	9.20%	6.60%	3.90%	3.90%	0.00%	
$15,000 - $19,999 ($n = 578$; 2.64%)	74.00%	26.00%		47.30%	26.90%	8.70%	8.70%	3.60%	2.90%	1.80%	
$20,000 - $29,999 ($n = 1391$; 6.36%)	71.90%	28.10%		47.00%	23.20%	10.40%	7.50%	6.80%	4.90%	0.10%	
$30,000 - $39,999 ($n = 1714$; 7.84%)	66.80%	33.20%		44.00%	26.70%	8.90%	10.10%	5.20%	4.30%	0.70%	
$40,000 - $49,999 ($n = 1723$; 7.88%)	68.20%	31.80%		42.00%	27.80%	9.70%	9.50%	6.90%	3.70%	0.40%	
$50,000 - $59,999 ($n = 1822$; 8.33%)	67.00%	33.00%		46.50%	24.90%	9.20%	10.30%	6.00%	2.90%	0.20%	
$60,000 - $79,999 ($n = 3149$; 14.40%)	68.70%	31.30%		44.10%	28.20%	8.40%	9.30%	5.80%	3.70%	0.60%	
$80,000 - $99,999 ($n = 2692$; 12.31%)	72.00%	28.00%		44.70%	26.00%	8.40%	10.70%	6.30%	3.70%	0.30%	
$100,000 - $149,999 ($n = 4343$; 19.86%)	73.00%	27.00%		44.50%	25.10%	9.80%	9.60%	6.70%	4.00%	0.40%	
$150,000 or more ($n = 3577$; 16.35%)	71.80%	28.20%		42.10%	25.90%	10.70%	10.30%	6.50%	4.30%	0.10%	

(continued)

Table 1. Continued.

	Social networking site use			Social networking site frequency							
	Yes $n = 23,588$	No $n = 3746$	p	Several times a day $n = 7298$	About 1/week $n = 4339$	3-5 times/ week $n = 1548$	1-2 times/ week $n = 1645$	Few times/ month $n = 1040$	Less than 1/month $n = 647$	Never $n = 58$	p
Highest certificate, diploma, or degree completed											
Less than high school (or equivalent) ($n = 4063$; 14.86%)	74.90%	25.10%	<0.001	51.80%	25.60%	8.00%	7.20%	4.40%	2.40%	0.60%	<0.001
High school diploma (or equivalent) ($n = 7322$; 26.78%)	71.10%	28.90%		49.70%	25.80%	7.50%	8.00%	5.30%	3.30%	0.40%	
Trade certificate or diploma ($n = 2233$; 8.17%)	64.30%	35.70%		40.40%	26.10%	9.00%	10.40%	8.90%	5.00%	0.20%	
College/CEGEP/other non-university certificate or diploma ($n = 5476$; 20.03%)	69.00%	31.00%		40.90%	27.20%	9.70%	11.60%	6.30%	3.90%	0.30%	
University certificate or diploma below bachelor's level ($n = 988$; 3.61%)	68.00%	32.00%		41.20%	26.70%	9.50%	11.30%	5.70%	5.20%	0.30%	
Bachelor's degree ($n = 4791$; 17.52%)	71.50%	28.50%		40.80%	26.20%	11.50%	10.10%	6.90%	4.30%	0.30%	
University certificate, diploma, degree above bachelor's degree ($n = 2468$; 9.03%)	66.80%	33.20%		35.60%	25.60%	10.90%	14.10%	8.20%	5.30%	0.30%	

educational degree achieved education, and household income, $F(6,13325) = 2.975$, $p = .007$, $\eta^2 = .001$. There was a significant effect of SNS frequency on mental health after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income, $F(6,13336) = 5.349$, $p < .001$, $\eta^2 = .002$. Finally, there was a significant effect of SNS frequency on well-being after controlling for age, gender, number of children at home, household location (urban, rural, PEI), highest educational degree achieved education, and household income, $F(6,13331) = 4.633$, $p < .001$, $\eta^2 = 0.002$. Based on statistically significant results from all ANCOVAs, post hoc comparisons using a LSD test were used to indicate where statistically significant difference existed. Pairwise comparison results found in Table 3 suggest that participants who never access SNS (even though they have an account) have significantly lower general health, mental health, and well-being compared with all other access categories.

Table 2. Self-reported general health, mental health, and well-being by social networking site use.

	Yes Mean (SD)	No Mean (SD)	p
General Health (1–5)[a]	2.17 (0.931)	2.26 (0.971)	<0.001
Mental Health (1–5)[a]	1.99 (0.929)	1.91 (0.867)	0.001
Well-being (0–10)[b]	7.75 (1.750)	8.02 (1.742)	0.002

[a]Lower numbers indicate better outcomes.
[b]Higher numbers indicate better outcomes.

Discussion

The current study used the 2013 GSS in order to obtain a nationally representative picture of the ways in which Canadians use SNSs, and the potential impacts it may have on users' general health, mental health, and well-being. While many small-scale studies have examined some of these impacts, conflicting results highlight the importance of a large-scale study, such as this one, to obtain a better overall understanding of self-reported health outcomes associated with using the Internet and SNSs. First, SNS user demographics were examined. Following this, comparison of self-reported health outcomes between SNS users and non-users were analyzed. Lastly, differences in self-reported health outcomes based on frequency of SNS use was explored.

Overall, in 2013, SNS use by Canadians (70% of Internet users) was quite similar to that of Americans (73%).[46] In addition, the 2013 GSS supports previous small-scale studies that suggest that SNS users are more likely to be younger in age,[3,10,11] with a steady decline in SNS use as age increases. Ariyachandra and colleagues argue that this decline in SNS use with age, especially among the older adults, may be due to the fact that many older adults experience anxiety when it comes to simply using a computer, let alone engaging in SNS use.[47] It has also been suggested that many older adults are unclear of what SNSs are used for, do not understand how to use them, or may consider them an invasion of their personal privacy.[47–49]

Table 3. Self-reported general health, mental health, and well-being by social networking site frequency.

	General health (1–5)[a] Mean (SD)	Mental health (1–5)[a] Mean (SD)	Well-being (0–10)[b] Mean (SD)
Several times a day	2.14 (0.923)	2.02 (0.948)	7.70 (1.749)
About once a day	2.18 (0.929)	1.96 (0.897)	7.79 (1.741)
3–5 times a week	2.12 (0.922)	1.92 (0.891)	7.94 (1.693)
1–2 times a week	2.23 (0.966)	1.98 (0.925)	7.80 (1.726)
A few times per month	2.22 (0.892	1.97 (0.897)	7.67 (1.816)
Less than once a month	2.29 (0.977)	1.98 (0.975)	7.74 (1.809)
Never	2.63 (0.971)*	2.63 (1.189)*	6.90 (2.126)*

[a]Lower numbers indicate better outcomes.
[b]Higher numbers indicate better outcomes.
*Post hoc Tukey test suggests this group is different from the rest.

Furthermore, the results of the current study are similar to those of Barker,[50] who propose that SNS users are significantly more often female. Barker argues that communication with peers is the strongest predictor of SNSs, and that females valued this communication more than males, thus proposing a possible explanation for the gender disparity in SNS usage.[50]

This study also revealed that Canadians who have fewer children are more likely to use SNSs. While this study suggests that those with four or more children at home are less likely than those with three children are less likely to use SNSs, more than half of those with four or more children are using SNSs, which is consistent with Morris, who reported that approximately 60% of all mothers utilize SNSs.[51] As such, perhaps a more relevant finding of this study is that most mothers, regardless of the number of children they have, use SNSs, with other studies explaining that busy mothers often use SNSs as a method to stay in touch with friends and document their child(ren)'s lives, while also trying to raise their child(ren).[52,53] Perhaps it is only when mothers are trying to raise four or more children that they just do not have the time to maintain these social connections through SNS use.

Consistent with previous research from the United States, those who live in an urban area are also more likely to use SNSs compared with rural areas.[54] However, Perrin's research contradicts the 2013 GSS results that those who are less educated and who are either at the higher or lower ends of the income spectrum are also more likely to use SNSs.[54] Although both are based on nationally representative surveys, the disparity between studies might simply display a difference in SNS users between countries.

The second objective of this study was to compare self-rated general health, mental health, and well-being between SNS users and non-users, with this study suggesting that SNS users have significantly higher general health but significantly lower mental health and well-being than non-SNS users. Previous research on health outcomes in relation to SNS use has been mixed, with both positive,[3,4,30,32] and adverse effects beings found across all types of health.[19,20,33,36] When examining the positive effects of SNS use on general health in this study, it may be biased in the way the question was written (i.e., "In general, would you say your health is …?"). Although mental health and well-being have become large topics of discussion as of late, a lot of past surveys for measuring general health perceptions revolved almost solely around physical health.[55,56] As such, when answering this questions, individuals may have been basing their 'general health' solely around their physical health status and their ability to access health information more readily than in the past via the Internet and SNS, and may not have considered the state of their mental health and well-being and the impact the Internet and SNS use may have on their psychological health when responding to the question. While the association between a decrease in mental health and well-being with increased SNS use found in this study is supported by some past research,[15,17,19,20,36] it also conflicts with other previous research.[3,29–32] As such, perhaps it is not merely whether or not an individual is using SNSs or not, but how they are using it that has a greater impact on their mental health and well-being. Seabrook and colleagues suggested that positive interactions on SNSs are related to better mental health and well-being, whereas negative interactions were related to feelings of loneliness and lower mental health and well-being.[57] For example, using SNSs to stay in touch with family and friends, and maintain social connections can have a positive impact on their mental health and well-being,[10,21,47] while those who are constantly making upwards comparisons to others they see on SNSs or are the victim of cyberbullying may experience a decrease in mental health and well-being.[17,19,34,36]

The third aim of this study was to investigate whether or not the frequency at which users accessed SNSs has an impact on their self-rated general health, mental health, and well-being. The current results suggest that individuals who never access SNSs (but do in fact have one or more accounts) have significantly lower general health, mental health, and well-being compared with those who have an account and access it, regardless of the frequency at which they visit it. Past research suggests SNSs enable individuals to connect with friends, family, acquaintance, and celebrities, and both maintain and create new friendships and connections, while simultaneously being able to express one's thoughts and feelings.[5,58,59] Moreover, when used appropriately, SNSs allow individuals to expand the ways in which they are able to connect and remain in touch with friends and family.[60] This ability to foster and maintain social relationships has been found to positively affect both an individual's physical and mental health.[61,62] For example, if a family member or close friend moves away, individuals are still able to view their pictures, interact with them, and see what is going on in their daily life, thus enabling them to remain connected.[60] As such, perhaps as long as an individual is accessing their SNS account in some capacity, they are able to remain connected with their friends and family and this positively affects their general health, mental health, and well-being, whereas an individual who does not have an account is not getting this kind of connection in any capacity and their general health, mental health, and well-being suffer as a result.

Limitations

While this study is the first large-scale study to look at SNS use/frequency of Canadians and its potential outcomes in regards to general health, mental health, and well-being, it is still limited by a few factors. First, general health, mental health, and well-being were measured subjectively. Crossley and Kennedy suggested self-rated health status is fairly reliable, with almost three-quarters of individuals rating their health status similarly across two time-points on the 1995 Australian National Health Survey.[63] Moreover, of those that did change their answers, only 3% changed their answer by more than one category (e.g., very good to fair).[63] Similarly, Purba and colleagues examined the test-retest reliability of two subjectively measured health-related quality of life surveys administered to a nationally represented sample of 1056 persons in Indonesia, and reported moderate to almost perfect agreement for both surveys, with a time interval ranging from 10 days to a month between the test-retest for all participants.[64] As such, while best practice would have been to obtain objective measures of general health, mental health, and well-being, this was simply not feasible, and self-report data can be considered an acceptable method of collecting health status from individuals. Second, while the 2013 GSS is considered to be a nationally representative sample, the exclusion of North West Territories, Yukon, Nunavut, and those institutionalized cannot go unnoticed. As such, while the GSS is the most nationally representative, large-scale survey collected in Canada at present time, future versions of the survey should include individuals from not only Canada's provinces but its territories as well. Thirdly, although all results were significant, the effect sizes were very small, indicating that while SNS habits can impact health outcomes, the extent to which they do so may not be that large in comparison to other factors. Fourthly, the SNS landscape is ever-changing, and this study is limited by the fact that the data were collected in 2013. Unfortunately, as previously noted, the social identity cycle of the GSS only occurs every 5 years, with data from the upcoming 2018 cycle not yet available. In addition, while the online environment is rapidly changing, it typically takes at least 2 years before Statistics Canada releases the data (i.e., late 2020/early 2021).

Lastly, this study is also limited by its use of single-item questions, instead of well validated scales. Yet, a recent systematic review and meta-analysis by Ngamaba, Panagioti and Armitage examining the association between health status and subjectively measured well-being and whether or not this association is influenced by any methodological choices, reported that such associations were higher when multiple items were used.[65] Therefore, the use of single items analyzed separately, as was used in this study, may in fact be preferable. Thus, it is suggested that future research investigate the degree to which SNSs impact overall general health, mental health, and well-being, and also to investigate why differences exist between SNS users and non-users that do not access their accounts in terms of health outcomes.

Conclusion

In sum, this study suggests that SNS users are more likely to be younger, female, have few children, live in an urban location, be at the low or high ends of household income, and be less educated. This study also reports that SNS users have better general health but poorer mental health and well-being than non-users. Moreover, this study reveals that individuals that possess a SNS account but do not use it have lower outcomes in all three health variables in comparison to those who use SNSs at any frequency. Lastly, this study highlights some limitations of large-scale studies, as well as the need for future researchers to investigate the possible differences that may exist between individuals who do not have a SNS account and those who do but do not use it and their associated health outcomes.

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ORCID iD: Paige Coyne http://orcid.org/0000-0002-9062-9587

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