

TITLE PAGE

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Social inequalities in health information seeking among young adults in Montreal

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SUMMARY

Over their lifecourse, young adults develop different skills and preferences in relationship to the information sources they seek when having questions about health. Health information seeking behaviour (HISB) includes multiple, unequally accessed sources; yet most studies have focused on single sources and did not examine HISB's association with social inequalities. This study explores 'multiple-source' profiles and their association with socioeconomic characteristics. We analyzed cross-sectional data from the *Interdisciplinary Study of Inequalities in Smoking* involving 2,093 young adults recruited in Montreal, Canada in 2011-2012. We used latent class analysis to create profiles based on responses to questions regarding whether participants sought health professionals, family, friends or the Internet when having questions about health. Using multinomial logistic regression, we examined the associations between profiles and economic, social and cultural capital indicators: financial difficulties and transportation means, friend satisfaction and network size, and individual, mother's, and father's education. Five profiles were found: 'all sources' (42%), 'health professional centered' (29%), 'family only' (14%), 'Internet centered' (14%) and 'no sources' (2%). Participants with a larger social network and higher friend satisfaction were more likely to be in the 'all sources' group. Participants who experienced financial difficulties and completed college/university were less likely to be in the 'family only' group; those whose mother had completed college/university were more likely to be in this group. Our findings point to the importance of considering multiple sources to study HISB, especially when the capacity to seek multiple sources is unequally distributed. Scholars should acknowledge HISB's implications for health inequalities.

INTRODUCTION

Recent studies highlight the prominence of a number of health-detering behaviours among young adults. These include smoking, physical inactivity, unhealthy eating, alcohol abuse and unsafe sexual practices (IOM, 2015, USDHHS, 2012, Stroud et al., 2015, Muyle et al., 2009). Importantly, these behaviours are unequally distributed, with higher rates evidenced among the socioeconomically disadvantaged (IOM, 2015, USDHHS, 2012). These inequalities may be in part explained by differential distributions of health-related resources, including health information (Viswanath et al., 2006, 2012). In health promotion, scholars have highlighted the role of health literacy as a key determinant of health (Nutbeam, 2000, Nutbeam, 2008, Kickbusch, 2001). Social inequalities in health literacy can be observed from early adolescence onwards (Manganello, 2008, Brown et al., 2007). Health literacy can be defined as “[...] knowledge, motivation and competence to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life [...]” (Sorensen et al., 2012). As can be gleaned from this definition, the ability to seek and access health information should be considered as a fundamental component of health literacy. As proposed by Sorensen and colleagues (2012), skills and preferences used by young adults when seeking health information are not only influenced by cognitive or psychosocial factors, but also by contextual and societal determinants. Therefore, studies of young adults’ health information seeking behaviour (HISB) and its socioeconomic distribution can contribute to a better understanding of their capacity to adopt health-promoting practices. Although young adulthood is now considered to be critical to the establishment of these practices (IOM, 2015), research on HISB in young adults is relatively limited (Percheski & Hargittai, 2011, Ybarra & Suman, 2008, Younes et al., 2015). Therefore, this paper aims to tackle two important issues pertaining to HISB in young adults.

The first issue is the identification of a theoretically informed portrait of the socioeconomic characteristics that influence HISB in young adults. Historically, HISB has been examined in terms of individual-level determinants (Lambert & Loiselle, 2007), failing to conceptualize it as a social phenomenon. Hence, the examination of social patterns in HISB requires the use of theories that can account for inequalities, in particular those related to non-material resources. Drawing from Bourdieu’s work on social inequalities (1986), scholars have argued that individuals’ capacity to promote their health is shaped by their access to a range of ‘capitals’ that can be accumulated and used towards health (Carpiano, 2006, Abel, 2007, Abel & Frohlich, 2012). Capitals can be classified into three types: economic (i.e.: financial and material resources that can bring immediate benefit or be exchanged against other resources), social (i.e.: resources accessible through social networks based on principles of recognition and reciprocity), and cultural (i.e.: knowledge, skills and preferences accumulated through socialization in the family and school environments) (Bourdieu, 1986, Abel, 2008). Abel (2007, 2008) argued that inequalities in health literacy could be understood as the result of unequal chances to acquire socially-valued knowledge (values, norms and preferences related to health information) through friends, peers, education and media. This knowledge provides individuals with different capacities to use health information directly and indirectly through the application of other forms of capital (e.g.: buying and reading books, access to support groups), and ultimately contributes to the reproduction of social inequalities in health. We argue that a similar perspective can shed light on how HISB can be conceived as an unequally distributed health-promoting resource.

In young adults, economic, social and cultural capitals are first acquired through parents’ wealth, social connections and education, and later during the transition towards adulthood through socialization in family, school and work settings (Furstenberg, 2008, Abel & Frohlich, 2012, Gagné, Frohlich & Abel, 2015). Since capitals are unequally distributed in the population, there is reason to believe that young adults’ HISB may also be unequally distributed. Percheski & Hargittai (2011) found that among college students, young adults with a higher education level (cultural capital) sought health professionals, friends and family more often than those with a lower educational attainment. Beck et al. (2014) also found that manual labour status and income (economic

capital) were negatively associated with seeking health information online and through health professionals. HISB is likely to be associated with the breadth and quality of one's social network (social capital), the financial means to access health care professionals and physical means of transportation (Savolainen, 1995, Ackerson & Viswanath, 2009). Individuals develop different information skills and preferences over their lifetime because in addition to health concerns, they routinely seek information on multiple issues (e.g.: on personal interests, employment, family or friends) (Chelton & Cool, 2007). Individuals are also more inclined to seek their close relationships (e.g.: family and friends) when they perceive them to be knowledgeable about health and when they practice healthy activities (Savolainen, 1995, Dobranski & Hargittai, 2012, Ten Huurne & Gutteling, 2008).

A second issue that requires examination is the operationalization of young adults' HISB beyond the seeking of single sources of information. To date, most studies in this area have focused on specific health issues and on single sources (e.g.: health care professionals, peers, family, printed media, the Internet) (Lambert & Loiselle, 2007, Anker, Reinhart & Feeley, 2010, Weaver et al., 2010). Information seeking, however, is a dynamic process that weaves together multiple sources in response to different illness and wellness concerns (Weaver et al., 2010, Brashers, Goldsmith & Hsieh, 2002, Lambert & Loiselle, 2007, Horgan & Sweeney, 2012). Health issues and their related needs (e.g.: online anonymity, social support on Internet forums, trust and quality of information) inherently call for the use of different sources (Ruppel and Rains, 2012). Single-source research has been informed by a "substitution hypothesis", which proposes that seeking a specific source of information reduces the probability of seeking other sources. In contrast, Dutta-Bergman (2004, 2005) proposed that when possible people use multiple sources of information ("complementary hypothesis"). For example, individuals may be directed towards online sources following a medical consultation, may seek a health professional after having acquired information from a family member, or may avoid seeking one if they receive advice against (ECDC, 2011, Fox & Fallows, 2003, Beck et al., 2014, Brashers, Goldsmith, Shieh, 2002). We propose that individuals who seek multiple sources of health information have the best capacity to address health-related concerns and information needs. A growing body of literature supports this hypothesis (Ybarra and Suman, 2008, Ruppel and Rains, 2012, Beck et al., 2014, Cunningham et al., 2014, Younes et al., 2015), and suggests that the use of multiple sources may be beneficial to health (Redmond et al., 2010).

In light of these two issues, the objectives of this paper are: (1) to better understand young adults' HISB patterns by examining multiple sources of information and, (2) to examine the unequal distribution of HISB by exploring a set of socioeconomic indicators and their association with these patterns. To do this, we first describe HISB patterns by modeling profiles based on young adults' propensity to seek different information sources, and then examine whether these profiles are unequally distributed using indicators of young adults' economic, social and cultural capitals.

METHODS

Data

We analyzed cross-sectional data from the 2011-2012 panel of the *Interdisciplinary Study of Inequalities in Smoking* (ISIS), a cohort study established with the objective of better understanding the joint contribution of individual and neighborhood factors to social inequalities in smoking among young adults (Frohlich et al., 2015). The target population was non-institutionalized young adults aged 18 to 25 living in Montreal, Canada who had resided at their current address for at least one year at the time of first contact. From an initial sample of 6,020 randomly selected individuals obtained from the provincial health insurance program (RAMQ), individuals were contacted between November 2011 and August 2012 through a nominalized letter. Questionnaires were completed online, with other administration methods made available upon request. At the end of the recruitment period, 349 had refused to participate, 458 were declared ineligible and 3,111 could not be reached, for a total sample size of 2,093 participants. The final response rate was 37.6%. Full details on

sampling and survey procedures are available elsewhere (Frohlich et al., 2015). This study received ethics approval by the provincial information access committee (*Commission d'accès à l'information du Québec*) and the Université de Montréal's ethics board (*Comité d'éthique de la recherche en santé de la Faculté de Médecine*).

Measures

HISB was operationalized based on the following question: "When you have questions about your health, who do you ask first? Choose *all* the answers (Y/N) that apply to you." Five non-exclusive sources were offered: "A health professional", "A member of the family", "A friend or another person", "You look for answers on the internet" and "You don't ask anyone". These variables were created by the ISIS team and adapted from the NORC General Social Survey and other measures of HISB in young adults (Cotten & Gupta, 2004, Dobransky & Hargittai, 2012).

Social, economic and cultural capitals were operationalized using seven indicators (question labels and responses for independent variables are available in the Supplementary Material). For social capital, two indicators of personal social networks were used: *friend satisfaction* (four-point Likert scale) and *social network size*. *Social network size* was computed as the sum of three items asking participants how many friends they: 1) could confide in, 2) could receive help from in case of an emergency and, 3) felt close to ($\alpha = .74$, range = 0 – 15, mean = 10.39, SD = 3.92). The sum was standardized before modelling. For economic capital, two indicators were used: presence of *financial difficulties* and whether participants had *no transportation means*. Participants were categorized as having *financial difficulties* (Y/N) if the head of their household (i.e.: themselves, a parent or tutor) encountered difficulties in paying for rent, for utilities, or for food in the past year, or if they were on welfare ($\alpha = .65$). *No transportation means* (Y/N) measured whether participants had access to a car or a monthly transit pass. For cultural capital, we examined *individual, father's and mother's education*, extensively validated indicators of cultural capital in young adults (Gagné, Frohlich & Abel, 2015). Responses included twelve choices ranging from 'No school' to 'Earned doctorate' and were recoded into two categories: "High school completed or less" and "CEGEP completed or more". CEGEP (*Collège d'enseignement général et professionnel*) is a post-secondary educational institution between high school and university that provides mandatory pre-university education or vocational training in Quebec, Canada. A dichotomous variable was created because in the Province of Quebec, mandatory schooling finishes when an individual obtains a high school diploma.

Statistical analyses

We analysed HISB patterns using latent class analysis (LCA). LCA is a statistical technique that infers a categorical latent variable (i.e.: HISB profiles) from the interrelationships between discrete measurement indicators (i.e.: the five HISB indicators). We explored the optimal number of classes representing these interrelationships by computing models with an increasing number of classes and comparing them using three model fit indices: entropy, BIC and Vuong-Lo-Mendell-Rubin (VLRM) (see class probabilities and fit indices in Supplementary File 1). Entropy is a measure of the quality of participants' classification within their most likely class, BIC is an index that compares model fit between class solutions, and VLRM is a likelihood ratio test that compares a k class solution with its $(k - 1)$ counterpart (Nylund, Asparahov & Muthen, 2007). LCA models were estimated using 1000 random starts, checking for best log-likelihood replication to ensure that no local maxima were inadvertently derived. Because LCA provides a probability of class membership, we attributed a class to each individual based on their most likely class. Associations between capital indicators and HISB classes (modeled here as the dependent variable) were examined using multinomial logistic regression models, controlling for *age* and *sex*.

Missing values for the independent variables used in this study were below 5% in all cases except for *financial difficulties, mother's education* and *father's education*. In the case of the two education variables, this is because data were extracted from a second collection wave that followed 73% of the sample

(Frohlich et al., 2015). To handle missing data and make full use of our sample in regression models, we used a multiple imputation procedure that accounted for variables' categorical or continuous nature with 10 imputed sets (Graham, 2007). For parental education variables, we included all variables found to be associated with attrition at follow-up to improve the quality of our imputation. Descriptive analyses were performed in SPSS 21 (IBM, 2011). Latent class analysis, multiple imputation and regression analyses were performed in MPlus 7 (Muthén and Muthén, 1998-2013).

RESULTS

Please insert Table 1 somewhere here.

Table 1 describes the study sample. We excluded participants who did not provide valid answers to HISB indicators ($n = 12$), resulting in a final analytical sample of 2,081 individuals. Participants' mean age was 21 years old ($SD = 2.3$), and 56% were female. When having questions about health, 57% declared seeking a health professional, 71% their family, 43% a friend, 56% the Internet, and 4% no one. We also found that 1% sought no sources, 30% one, 26% two, 27% three and 16% sought all four available information sources.

HISB profiles

Please insert Figure 1 somewhere here.

Based on available degrees of freedom and BIC values, the number of profiles that provided the best model fit was a 5-class solution (see Supplementary Material). The entropy value of the model was .97, indicating that participants were extremely well classified by their profile attribution based on their most likely class. Figure 1 presents the distribution of HISB patterns according to participants' most likely class. The largest group (42.1%), labeled 'all sources', had a high probability of seeking all available information sources when having questions about health. Class 2 (28.9%), labeled 'health professional centered', represents young adults who tended to resort to health professionals when seeking health information, but also had a high probability of seeking family members and the Internet. Class 3 (13.8%), labeled 'family only', represents young adults who resorted only to family members when seeking health information. Class 4 (13.7%), labeled 'Internet centered', represents young adults who tended to look online when having questions about health, with a moderate probability of also using family members as a source. Class 5 (1.5%), labeled 'no sources', represents young adults who did not seek anyone when having questions about health. We made a distinction between 'centered' and 'only' labels to highlight that the 'family only' group is the only class with a very low probability of seeking other sources whereas other classes had at least a moderate probability ($\geq 40\%$) of seeking an additional source.

Association between young adults' HISB profiles and socioeconomic characteristics

We proposed that individuals who seek multiple sources of health information had the best capacity to address health-related concerns and information needs. Therefore, based on the LCA results, the 'all sources' profile was used as the reference category in multinomial logistic regressions.

Please insert Table 2 somewhere here.

Table 2 presents associations between participants' capital indicators and HISB profile membership. In bivariate analyses (results not shown), we found that age was not significantly associated with class membership, but that women were more likely to be members of the 'all-sources' group in comparison to the 'no sources' (OR = 4.70, 95%CI (2.08, 10.62)), 'health professional centered' (OR = 1.28, 95%CI (1.04, 1.58)), 'Internet centered' (OR = 1.92, 95%CI (1.47, 2.52)) and 'family only' (OR = 1.32, 95%CI (1.00, 1.72)) groups.

In our full model, we examined the adjusted odds of membership in each HISB class using the 'all sources' class as reference category for each independent variable, controlling for all other independent variables. In comparison to the 'all sources' group, participants with a larger social network (as defined by a 1 SD increase in the variable score) had significantly lower odds of being a member of any other group: participants with a larger social network were (respectively) 0.80, 0.86 and 0.76 times as likely to be in the 'health professional centered', 'family only' and 'Internet-centered' groups. The largest difference was found with the 'no source' group, where participants with a larger social network were 0.54 times as likely to be a member of that group (95%CI (0.36, 0.82)). Additionally, controlling for participants' social network, participants who felt more satisfied with their circle of friends were found to be 0.81 times as likely to be in the 'Internet centered' group (95%CI (0.65, 0.88)).

Additional differences between the 'all sources' group and other groups were found for participants belonging to the 'family only' group. In comparison to the 'all sources' group, participants who had experienced financial difficulties were 0.63 times as likely to be in the 'family only' group (95%CI (0.40, 0.98)); those who have a diploma higher than high school were 0.63 times as likely to be in the 'family only' group (95%CI (0.46, 0.86)); and those who have a mother who obtained a post-secondary diploma were 1.99 times as likely to be in the 'family only' group (95%CI (1.23, 3.24)).

DISCUSSION

The aims of this article were to better understand HISB patterns in young adults by examining multiple sources of information, and to explore their unequal distribution based on their association with indicators of economic, social and cultural capital. Our findings provide evidence of multiple-source HISB patterns, therefore suggesting that HISB may be better examined by using profiles that go beyond single sources of information. These results are in line with a recent study that used a clustering approach to examine profiles in mental health information preferences among youth with mental health problems (Cunningham et al., 2014). The authors found that individuals could be classified into specific groups according to their preferences regarding traditional media and virtual media. To the best of our knowledge, this study is the first to use a clustering technique to examine HISB patterns among young adults in the general population.

LCA analyses showed five different HISB profiles, pointing to the diversity in health information seeking behaviour in young adults. These findings support the "complementary hypothesis": when examining the profiles' estimated prevalence given participants' most likely class membership, three out of the five profiles (approximately 85% of participants) had a high probability of seeking more than one source when in need of health information, with one profile (42% of participants) having a high probability of seeking all available sources. Moreover, these results show that alternative sources of information such as the Internet do not seem to substitute established sources such as friends, family or health professionals (Beck et al., 2014, Younes et al., 2015). This suggests that asking 'what sources are sought?' instead of 'is this particular source sought?' may be a more pertinent question for health promotion research in HISB. We also found that four out of five groups in this study resorted to family members when seeking health information. This supports hypotheses proposing that family members are likely to act as a primary layer of information among young adults (Chelton & Cool, 2007).

Building upon the multiple-source HISB profiles found in this study, our results then suggest that young adults' information seeking practices are associated with varying levels of economic, social and cultural capitals. We found that all three forms of capital were associated with young adults' propensity to seek specific sources of information. The most significant differences were found between individuals who sought only their families and those who sought all sources of information.

Regarding social capital, this study showed that having a larger social network was associated with higher odds of membership in the 'all sources' group in comparison to other groups. We also found that independent of network size, young adults more satisfied with their friends were less likely to rely on the Internet for health information. These two findings suggest that higher levels of social capital play a role in shaping individual capacity to seek multiple sources of health information. In line with our findings, a study of young adults' HISB among American college students using a similar indicator of social capital found it to be associated with higher odds of seeking health care professionals, family, and friends when in need of health information (Percheski & Hargittai, 2011). High levels of social capital were also found to be important to HISB in healthcare settings for disadvantaged groups with distinct cultural challenges (Kim, Kreps & Chin, 2015, Dubbin, Chang & Shim, 2013).

Regarding cultural capital, we found that young adults who pursued post-secondary studies had higher odds of seeking other information sources in addition to their family. A potential explanation for this is that those pursuing a higher education are more likely to be exposed to environments conducive to the development of new social contacts and information sources (Settersten, Furstenberg & Rumbart, 2005, Furstenberg, 2008). Higher education is also thought to promote the development of formal and informal knowledge, skills and preferences towards valuing health and using health information in order to promote it (Abel, 2007). Since parents and other family members are typically the first source of information across the lifecourse, it is possible that young adults who seek only their family may not yet have developed sufficient health-related skills and preferences to seek a greater number of sources. Influences from individual education and social capital suggest that the development of health information skills and preferences during young adulthood may constitute a mechanism behind the reproduction of social inequalities in individuals' capacity to promote their health. Conversely, we found that having a mother who pursued post-secondary studies increased young adults' propensity to seek only their family. Young adults may resort more often to their mother when they perceive her as well educated and knowledgeable about health (Dobranski & Hargittai, 2012). The fact that only mother's education (and not the father's) was significantly associated with HISB suggests that gender may also play a role in shaping HISB in young adults. Scholars have proposed that in most Western cultures, women have a 'nurturing' role that makes them more likely to seek health information on behalf of their family (Renahy et al., 2010, Ek, 2015). Our results, however, cannot tell us whether those who have more educated mothers and declared seeking only their family are not able to seek additional sources when necessary.

Finally, regarding economic capital, we found that experiencing financial difficulties in the household was associated with higher odds of seeking information sources outside the family. Other studies have found that financial resources represent an obstacle to the utilization of health services, but not to other sources of information including the Internet (Younes et al., 2015). Young adults might be inclined to seek other information sources when their parents are socioeconomically disadvantaged, suggesting that economic resources may not represent such a strong obstacle in seeking and accessing health information in this population.

Limitations

Our study has certain limitations. First, given its cross-sectional design, no causal links could be established between independent variables and HISB profiles. Second, HISB in this study is based on one question only and this question asks where the respondents turn when they need health-related information,

whereas information seeking behaviour is often considered to include many more dimensions (e.g. frequency of use, trust in the sources) than source preference. Alternative ways of operationalizing HISB might therefore have yielded different results. For a review of measures and methods, please see Anker et al. (2011). Third, although participants sought on average 2.26 sources, the word ‘...first?’ in the question label may have influenced participants to choose fewer sources. Finally, participants in our sample were slightly more educated and less healthy in comparison to nationally representative Canadian surveys (Frohlich et al., 2015). The restriction that participants had to be resident of their current address for more than one year might also have biased the sample given the higher mobility of this group. Certain HISB patterns may therefore be under- or overrepresented.

Conclusion

Health information seeking behaviour is a health-promoting practice developed by young adults during their transition to adulthood, and also a mechanism through which social inequalities may become health inequalities. In contrast with substitution hypotheses, we found that HISB in young adults was of a complementary nature, as most participants resorted to more than one source when seeking health information. These findings point to the importance of considering multiple sources of health information when studying HISB. Other studies may wish to examine how the HISB profiles found in this study may be relevant to other settings. Furthermore, we found that HISB was associated with individual indicators of social, economic and cultural capital. The skills and preferences associated with the capacity to seek multiple sources of health information are only one part of young adults’ capacity to promote their health, as their association with health might also be reflective of young adults’ overall disposition (i.e. knowledge, skills, values, and preferences) towards health. Following a Bourdieusian perspective, this disposition towards health has been conceptualized through the concepts of health-relevant cultural capital (Abel, 2007, 2008, Abel & Frohlich, 2012, Gagné, Frohlich & Abel, 2015) and cultural health capital (Shim, 2010, Dubbin, Chang & Shim, 2013). Additional research examining links between individual capitals and HISB can contribute to shed light on the role played by health information seeking behaviour in the production of social inequalities in health.

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TABLE 1Descriptive statistics of the ISIS analytical sample ($n = 2,081$)

Variables	<i>N</i> (%)	Missing (%)
When you have questions about your health, who do you ask first?		0
A health professional	1182 (56.6)	
A member of your family	1485 (71.1)	
A friend or another person	897 (42.9)	
You look online	1176 (56.3)	
You don't ask anyone	88 (4.2)	
Number of sought sources (max. four)		0
0	26 (1.2)	
1	625 (30.0)	
2	544 (26.1)	
3	553 (26.6)	
4	333 (16.0)	
Sex		0
M	902 (43.3)	
F	1179 (56.7)	
Age		0
Mean (SD)	21.5 (2.3)	
Friend satisfaction		11 (0.5)
Very satisfied	15 (0.7)	
Somewhat satisfied	117 (5.7)	
Somewhat dissatisfied	1032 (49.9)	
Very dissatisfied	906 (43.8)	
Friend network size		19 (0.9)
Mean (SD)	10.38 (3.91)	
Financial difficulties		199 (9.6)
Experienced difficulties	298 (14.3)	
Have not experienced difficulties	1584 (76.1)	
Access to car or bus pass		49 (2.4)
No car/transit pass	139 (6.7)	
Access to one or both	1893 (91.0)	
Individual education		10 (0.5)
High school or less	809 (39.0)	
Post-secondary education	1262 (61.0)	
Mother's education		718 (34.5)
High school or less	426 (31.3)	
Post-secondary education	937 (68.7)	
Father's education		758 (36.4)
High school or less	439 (33.2)	
Post-secondary education	884 (66.8)	

TABLE 2

Socioeconomic variables associated with HISB profiles in comparison to the ‘all sources’ class ($n = 2,081$ with 10 imputed sets)

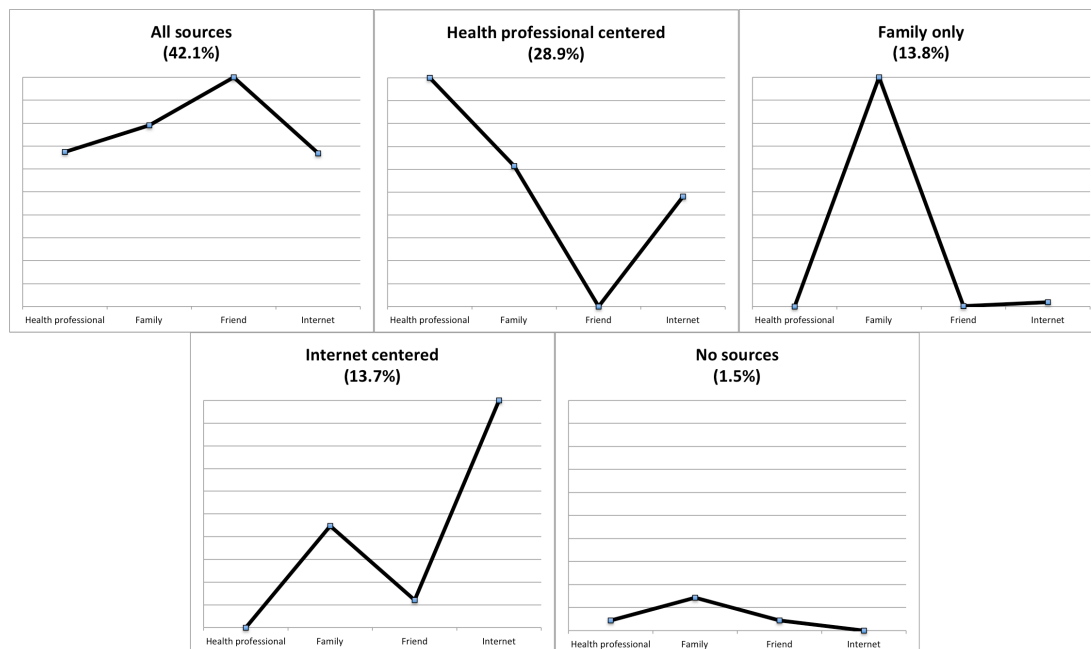
Variables	Classes (in order of prevalence)							
	Health professional centered		Family only		Internet centered		No source	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Social								
Friend satisfaction	1.00	(0.90, 1.12)	0.89	(0.77, 1.03)	0.81	(0.65, 0.88)	0.73	(0.48, 1.11)
Social network*	0.80	(0.71, 0.90)	0.86	(0.74, 0.99)	0.76	(0.70, 0.93)	0.54	(0.36, 0.82)
Economic								
Financial difficulties	0.90	(0.64, 1.26)	0.63	(0.40, 0.98)	0.81	(0.54, 1.22)	1.68	(0.61, 4.62)
No transport means	0.69	(0.45, 1.07)	0.61	(0.36, 1.05)	0.89	(0.50, 1.61)	0.47	(0.15, 1.49)
Cultural (Has post-secondary diploma)								
Individual	0.88	(0.68, 1.13)	0.63	(0.46, 0.86)	1.19	(0.86, 1.64)	0.68	(0.27, 1.72)
Mother	0.99	(0.73, 1.35)	1.99	(1.23, 3.24)	1.18	(0.79, 1.76)	1.72	(0.58, 5.19)
Father	1.34	(0.95, 1.85)	1.11	(0.72, 1.69)	1.17	(0.78, 1.78)	0.69	(0.20, 2.41)

Coefficients with *p-values* below .05 are in bold. The model includes all seven independent variables plus age and sex as control variables.

* ORs for a standardized variable represent the modified odds of membership in a group given an increase of one SD unit in the variable’s score

FIGURE 1

Health information seeking behaviour profiles - Individual probabilities of seeking a health information source



The dots constituting the bolded lines represent individuals' probability (%) of seeking a health information source for each group. Each gray line represents a 10% increase in individual probability. Percentages under each class name represent their estimated prevalence given participants' most likely class membership. Although the indicator "You don't ask anyone" has been used in model construction, class probabilities for this indicator are not shown here. Probabilities for all indicators are presented in Supplementary File 1.

SUPPLEMENTARY MATERIAL

Estimated probabilities (%) of seeking a health information source in a class based on individuals' most likely latent class membership

	Class 1 All sources <i>n</i> = 877 (42.1%)	Class 2 Health professional <i>n</i> = 601 (28.9%)	Class 3 Family only <i>n</i> = 287 (13.8%)	Class 4 Internet <i>n</i> = 285 (13.7%)	Class 5 No sources <i>n</i> = 31 (1.5%)
Health professional	67.5	100	0	0	4.3
Member of your family	79.1	61.5	100	44.7	14.4
Friend or someone	100	0	0.1	12.1	4.3
You look online	66.9	48.0	1.9	100	0
You ask no one	0.8	1.4	0	10.2	100

BIC, VLRT and entropy values by number of classes, from 2 to 5.

	2	3	4	5
BIC	11595	11514	11417	11389
VLRT (p-value)	0.0000	0.0000	0.0000	0.0000
Entropy	0.54	0.53	0.70	0.97

Average latent class probabilities for most likely latent class membership (row) by latent class (column)

	1	2	3	4	5
Health prof. centered group	0.998	0.002	0.000	0.000	0.000
No-sources group (2)	0.000	0.996	0.004	0.000	0.000
All-sources group (3)	0.000	0.001	0.963	0.034	0.003
Internet centered group (4)	0.000	0.000	0.010	0.970	0.020
Family only group (5)	0.000	0.000	0.000	0.000	1.000

SUPPLEMENTARY MATERIAL 2

Independent variables

Variables	Question labels	Categories analyzed
Financial difficulties (recoded into a dichotomous variable from four items)	In the past 12 months, did you, or the person responsible for this expense, ever not have enough money to... 1. ... pay the rent or mortgage? 2. ... pay for electricity, hot water, or heat? 3. ... buy food? In the past 12 months, have you received any social assistance, that is, financial aid provided as a last resort (also known as welfare assistance)?	Experienced difficulties Did not experience difficulties
Access to neither a car nor a transit pass (recoded into a dichotomous variable from two items)	Do you own a car, or have a car at your disposal (for example, the car of a friend or family member, or membership in a car sharing system such as <i>Communauto</i> , etc.)? Do you have a monthly public transit pass (bus, metro and/or train)?	No car or transit pass Have access to one or both
Individual education	What is the highest level of education you have completed?	High school completed or less Post-mandatory education
Mother's education	What was the highest level of education that your mother attained (this does not include current studies)?	High school completed or less Post-mandatory education
Father's education	What was the highest level of education that your father attained (this does not include current studies)?	High school completed or less Post-mandatory education
Friend satisfaction	In general, how satisfied are you with your relationships with your friends?	Very satisfied Somewhat satisfied Somewhat dissatisfied Very dissatisfied
Friend network size (Sum-score from three items)	Is there anyone in your social circle (your friends or family, or other people you trust) that you can confide in and talk openly with about your problems? (how many people?) Is there anyone in your social circle (your friends or family) who can help you if you have a problem? (how many people?) Is there anyone in your social circle (friends or family) that you feel close to and is affectionate toward you? (how many people?)	Continuous score

