



Health information-seeking behavior and perceived information source credibility among middle-aged and older adults

Fei Fan¹, Kara Chan², Lennon Tsang³

¹BNU-HKBU United International College, Zhuhai, China

²School of Communication, Hong Kong Baptist University, Hong Kong

³College of International Education, Hong Kong Baptist University, Hong Kong

Received: April 26, 2024

Revised: June 16 2024

Accepted: June 17, 2024

Corresponding author

Fei Fan

BNU-HKBU United International College, Zhuhai, China

Email: fanfeifei66@gmail.com

Abstract:

This is the first empirical study to compare the health information-seeking behaviors among the middle-aged groups and older adults. The purpose of this research paper is to explore how middle-aged and older adults use different sources to acquire health information, their perception of information quality, and information processing behaviors. A survey study was conducted among 786 Hong Kong residents aged 40 to 69. The study found that respondents relied heavily on their families and friends to obtain health information. Although professionals were the second least used information source for health information, it was considered the most credible one among the respondents. New media was perceived as the least used as well as the least credible source for health information. Older adults more relied on traditional media and professionals to get health information while middle-aged adults more frequently used new media to obtain health information.

Keywords: Source credibility, health education, information quality, older adults, food knowledge

Introduction

In the digital era, the significance of studying health information-seeking behavior among middle-aged and older adults becomes increasingly crucial, especially in a society flooded with misinformation about health. More and more older consumers acquire health information through the social media. They are often routinely exposed to media sources or search health information actively (Li & Chang, 2023). This demographic group grows up without the internet and may be more vulnerable to misinformation online due to the digital divide. Similar to other societies, social media in China contains both credible and unreliable health information that could have influence on older adults' health choice and self-management. Knowledge about their use of various information sources for health information can promote smart online information practices (Li & Chang, 2023). Understanding how middle-aged and older adults seek, process, and utilize health information is vital for promoting their health literacy, empowering informed decision-making, and mitigating potential risks associated with misleading health information. This study aims to provide insights into the information-seeking behaviors of middle-aged older adults in the context of a society where much misinformation about health.

Health information-seeking has been an important topic as health information is abundant and highly accessible. The general public has an increased sense of self-care awareness (Lambert & Loiselle, 2007). Existing studies found that older adults were willing to spend more time and money on health

care. Moschis and Friend's study (2008) showed that adults spent an average of \$3,019 a year on healthcare while the expenditure on the same area of the general population was only \$1,959. Besides this, the major consumers of organic food were found to be older adults aged 40 to 69 (Kriwy & Mecking, 2012). Since older adults are the main market to consume healthcare products, it is valuable to figure out how they learn health-related information and their health information-seeking behaviors, which may later provide practical insights to healthcare products' marketers when developing promotional campaigns to target these potential consumers.

In this study, we adopted the two-step flow of communication as our theoretical framework. The two-step flow of communication model hypothesized that ideas often flow from the media to opinion leaders and then from opinion leaders to those who were less active in information-seeking in the society (Katz, 1957). A network analysis of two Twitter-based discussion groups on political issues found that the two-step flow of communication model was able to predict the flow of ideas from content creators to online opinion leaders, then to other online users (Choi, 2015). With the popularity of the internet, the general population has access to nearly all media channels as the opinion leaders. However, not all information on the internet or the social media is reliable. Also, the general public may not understand complicated medical terminologies and scientific research processes. Some medical and health professionals, as well as health paraprofessionals, play an active sharing role in social media, advising people on health mat-

ters. A qualitative interview study of five medical doctors who were identified as social media health opinion leaders found that they adopted various communication strategies to enhance effective communication with their followers. These strategies include simplifying the information, providing health orientation, clarifying myths, stimulating interest, and building up the professional image (Chew et al., 2022). This indicates that the general public may need medical experts to “translate” complicated health information into contents that are jargon-free for them. A survey with 407 older adults aged 60 and above in China found that respondents’ routine exposure to health information had a positive correlation with their health status, efficacy, social support, and health opinion leadership. Furthermore, their active search of health information had a positive correlation with their education, efficacy, and health opinion leadership (Li & Chang, 2023).

Previous studies found that people actively looked for health information from different sources including media sources and interpersonal sources (Kelly et al., 2010; Niederdeppe et al., 2007; Ramírez et al., 2013). A telephone survey with baby boomers and older adults found that although they were late adopters of media technology, most of the older respondents used the internet to collect health information. The eHealth literacy of respondents who actively sought health information online was significantly higher than those who did not do so (Tennant et al., 2015). People’s health need and health awareness could trigger their intention to conduct health information-seeking behaviors (Burton, 2005). Health information seeking involves the pursuit of health information about a concrete topic (Ramírez et al., 2013). For instance, some studies analyzed cancer-related information-seeking behaviors of adults aged 40–70 in the United States (Ramírez et al., 2013). In our study, the specific health-related topic addressed is healthy eating. Our study aims to figure out how older adults pursue healthy eating-related information from different sources.

Health information seeking can be conducted both online and offline. Specifically, traditional media such as television is perceived as an important source of health information, but the importance of new media such as the Internet grows rapidly and may take over the functions performed by traditional media (Leung, 2008). One in three U.S. adults used the new media to obtain health knowledge in view of its easy accessibility (Jacobs, Amuta & Jeon, 2017). New media, including Facebook, allows individuals to specifically target health-related information thanks to its competitive advantage of multimedia communication (Nakiwala & Kakooza, 2020). Although health information-seeking by new media might build a sense of social support (Ramírez et al., 2013), the trustworthiness and accuracy of information are concerned. As for the offline information sources, existing studies proved that older adults showed a higher preference for traditional information sources such as doctors, pharmacists, and nurses as their main source of information in terms of high credibility and quality (Leung, 2008; Marton & Choo, 2012). A survey study about health information-seeking behaviors by mobile phones in China proved that if the information quality from some sources is good, people are more willing to seek health information there (Deng, Liu & Hinz, 2015).

Health information-seeking behaviors vary among consumers with different demographic backgrounds. Rice’s study found that gender, occupation, and health reasons significantly

influenced a person’s health information-seeking behaviors (Rice, 2006). Renahy and Chauvin (2006) argued that female was more likely to seek health-related information online than the male counterpart. They also found that well-educated people with higher level of income were more willing to conduct health information-seeking behaviors. Age also influences the health information seeking and health literacy. Miller and Bell’s (2012) study applied logistic regressions to test age differences in health information-seeking. Compared with the young adults, older adults gave priority to health information seeking by professionals such as their physicians, instead of by online media sources (Miller & Bell, 2012). Jeong and Kim’s (2016) study about 1,000 Korean adults found that age was negatively correlated to the health literacy. The older the respondents were, the lower the level of health literacy would be. This might be explained by the obstacles to getting access to health information faced by the older adults (Jeong & Kim, 2016). Although extant studies have widely discussed how different demographic factors including age are associated with health information-seeking behaviors, the existing studies mainly compare the young with senior adults in terms of health information-seeking, and no study has been conducted to specifically divide older adults into different segments and analyze their differences in health information-seeking. It is necessary to identify whether potential differences exist among different segments of older adults as such research findings could facilitate health-related policymakers, institutes, and brands to make decisions on whether differentiation marketing is necessary for health-related promotion and how to improve health literacy and communicate health-related information with target audiences more effectively. To fill this research gap, our study aims to study how different middle-aged and senior adults are when seeking health information from various sources.

Methodology

An online cross-sectional survey was conducted with 786 Hong Kong residents aged 40 to 69. The authors received approval from the University’s Research Ethics Committee before data collection. All respondents participated voluntarily.

Sampling method and respondents’ profile

Quota sampling method was used. Undergraduates from a research methodology course at a university in Hong Kong helped recruit respondents from their social network to fill in an online questionnaire. Each student was asked to find at least one male and one female adult in each of the age groups 40–49, 50–59, and 60–69. A total of 795 online questionnaires were collected, among which seven questionnaires were not usable as more than two-thirds of the questions were not answered. The final sample consisted of 786 individuals.

There were nearly equal proportions of male and female respondents. Altogether 422 of them were females (53.69%) while 364 (46.31%) were males. As for the age distribution, the age group of 50–59 recorded the highest number (309 individuals). Following that, 266 individuals were recruited from 40–49 age group, and 213 participants aged 60–69. Overall, the sample was well-educated. Altogether 46.4 percent of them graduated from secondary school while 41 percent of them graduated from post-secondary or university. Only 12.6 percent of participants belonged to the category of primary school or below. Three-quarters were married, and ten percent were

widowed. Two-thirds of the sample were living with children and one-sixth was living with parents. Altogether 34 percent of the respondents had monthly household income 30,001 or above Hong Kong dollars. Around half of the participants reported that they had 10,001-30,000 Hong Kong dollars'

Table 1. Frequency of use and perceived credibility of 19 information sources

Information source	Frequency of use		Perceived credibility	
	Mean	SD	Mean	SD
Family	3.3	1.0	3.6	1.0
TV	3.2	1.0	3.7	0.9
Friends	3.2	1.0	3.5	0.8
Doctor or nurse	2.9	1.2	4.1	0.9
Print media	2.9	1.1	3.7	0.9
Print media e-version	2.9	1.1	3.5	0.9
Social media	2.8	1.1	3.0	1.0
TCM doctor	2.7	1.2	4.0	1.0
Search engine	2.7	1.1	3.1	0.9
Instant message app	2.7	1.1	3.0	1.9
Health publicity materials	2.6	1.1	3.9	1.0
Health website	2.6	1.1	3.7	1.0
Radio	2.6	1.1	3.5	0.9
Outdoor and transit advertising	2.5	1.1	3.2	1.0
Video website	2.5	1.1	3.0	1.0
Nutritionist	2.4	1.2	3.9	1.0
Government website	2.3	1.1	3.8	1.0
Other apps	2.3	1.1	2.9	1.0
Blog	1.9	1.0	2.7	1.0

monthly income.

Questionnaire design and measures

The questionnaire was developed based on the literature review. The questionnaire included questions about health information seeking and demographic details. Health information seeking mainly focused on the topic of healthy eating. To test health information seeking, three variables were measured. They were information source, perceived information quality, and health information processing.

As for information sources, a list of 19 information sources such as newspaper and friends was provided. The information sources came from the literature. Respondents were asked to rate these information sources on frequency of use on a five-point scale (1 = never to 5 = nearly every time) and perceived credibility on a five-point scale (1 = extremely not credible to 5 = extremely credible). Respondents' perceived information quality about healthy eating was measured using a scale developed by Huang, Lee, and Wang (1998). It consisted of four items, e.g. "In general, the information I acquired about healthy eating is accurate/up-to-date/easy to understand/easily accessible". The respondents were asked to rate these items on a five-point scale (1 = strongly disagree to 5 = strongly agree). The Cronbach's alpha for the four-item scale was 0.78. Information processing of healthy eating was measured by five items, such as "When I receive new information about healthy eating, I will check if they are correct", "I will compare information about healthy eating from different information sources", "I will take the initiative to talk to health professionals (doctors/nurses/nutritionists/Chinese medicine practitioners) about healthy eating", "I will take the initiative to talk to my family about healthy eating", and "I will take the initiative to

Table 2. Factor analysis of information source

	Component			
	1	2	3	4
Factor 1: New media				
Video website	0.79			
Social media	0.76			
Search engine	0.75			
Other apps	0.74			
Blog	0.70			
Instant message app	0.65			
Print media e version	0.58		0.54	
Factor 2: Professionals				
Nutritionist		0.83		
Health publicity materials		0.79		
TCM doctor		0.77		
Doctor or nurse		0.76		
Government website	0.39	0.71		
Health website	0.53	0.59		
Factor 3: Traditional media				
Print media			0.81	
TV			0.73	
Radio		0.43	0.66	
Factor 4: Family/friends				
Family				0.86
Friends				0.81
Outdoor and transit advertising [@]		0.37		0.39

*Factor loadings smaller than 0.35 were not shown

[@] not belong to any of the four factors

talk to friends, classmates, or colleagues about healthy eating". The Cronbach's alpha for the five-item scale was 0.77.

Results

Descriptive statistics: Health information-seeking

Table I summarizes respondents' evaluation of the 19 different information sources. Results indicated that there were no information sources that respondents used very frequently. All the mean values were between 1.9 to 3.3. The higher the number was, the more frequently people acquired health-related information via the particular information source. Respondents most often consulted family, friends, and television as information sources for healthy eating. They were least often used blog, apps, and government website as information sources for healthy eating. Nevertheless, respondents found nearly all provided sources credible for obtaining healthy information. Only the blog had a mean value of 2.7 and was found significantly lower than the mid-point of three ($t = -8.5$, $p < 0.001$). The mean values of the other 18 information sources ranged from 3.0 to 4.1. Doctors and nurses were perceived as the most credible information source on healthy eating, followed by

Table 3. Frequency of use and perceived credibility by information sources

Information source groups (alpha [@])	Frequency of use		Perceived credibility		Correlation coefficient
	Mean	SD	Mean	SD	
Family/friends ($\alpha = 0.84$; $\alpha = 0.87$)	3.28	0.95	3.59	0.77	0.49**
Traditional media ($\alpha = 0.77$; $\alpha = 0.86$)	2.95	0.88	3.59	0.78	0.45**
Professionals ($\alpha = 0.89$; $\alpha = 0.90$)	2.59	0.94	3.90	0.79	0.23**
New media ($\alpha = 0.83$; $\alpha = 0.87$)	2.54	0.83	3.02	0.72	0.49**

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

[@] Cronbach alpha values, the first one for frequency of use and the second one for perceived credibility

nutritionists, healthy publicity materials, and government web-sites.

As for perceived information quality, respondents were, overall, satisfied with the information quality of healthy eating. Respondents were more satisfied with the information accessibility (M= 3.74) and the information “easy-to-understand” characteristic (M= 3.73), than the information accuracy (M= 3.51) and information timeliness (M= 3.26).

As for information processing, respondents reported that they processed information about healthy eating actively (M= 3.56). They most often discussed with families (M= 3.75) and friends (M= 3.65). They also actively checked the accuracy (M= 3.51) and compared the information from different sources (M= 3.53). However, they less often cross-checked this information with professionals (M= 3.38).

Factor analysis: Information sources

A factor analysis of use frequency of 19 information sources was conducted using principal component analysis and varimax rotation. The results revealed the presence of four components with eigenvalues exceeding one, explaining 22.6%, 20.9%, 12.4%, and 10.8% of the variance respectively. The four-component solution explained a total of 66.8% of the variance. Table 2 summarizes the factor loadings of the four-component solution. The first factor was named “new media”. It consisted of seven popular new and social media such as YouTube, apps, and search engines. The second factor was named “professionals” as it consisted of medical professionals and official government sources. The third factor was named “traditional media” which consisted of TV, radio, and hard

under the first group of new media.

As the factor analysis patterns for the perceived credibility followed closely with the patterns for the frequency of use, the mean values of the items under the first factor analysis pattern were compiled. These mean values and the Cronbach alpha values are shown in Table 3. Results found that the most used information source was family/friends. Although professionals were the second least used information source for healthy eating, it was the most credible one among the respondents. As for new media, it was perceived as the least used and the least credible information source among older adults. Overall, senior adults used traditional mass media as an information source more than that of professional ones. However, the perceived credibility of professionals was irreplaceable.

Table 3 indicated that there were significant positive correlations between frequency of use and perceived credibility of the four groups of information sources (p<0.01). That means information sources perceived to be more credible were used more frequently, and vice versa. Besides this, pairwise t-tests were used to compare the usage and perceived credibility of traditional and new media for healthy eating information. Results found that respondents used traditional media more frequently than new media for healthy eating information (t=11.5, p<0.001). Respondents also found traditional media more credible than new media for healthy eating information (t=17.1, p<0.001).

Health information-seeking among different age groups

Differences exist among the three adult age groups mainly on the information source. Table 4 showed that people from different age groups had varied preferences on how to seek health information by new media (F(2,785) = 22.73, p <0.001), traditional media (F(2,785) = 5.10, p <0.01), and professionals (F(2,784) = 3.12, p <0.05). As for new media, the younger the respondents were, the more frequently they used new media to learn health-related information. One reversed trend was found in the frequency of using traditional media. As for professionals, people aged 40-49 and people aged 50-59 on average had similar practice on seeking health information from professionals. However, people aged 60-69 more often consulted professionals compared to other age groups. Besides this, no significant difference was found in their perception of information quality (F(2,785) = 0.99, p = 0.37) and information processing (F(2,784) = 0.12, p = 0.89).

There is a significant difference in the perceived credibility of health information sources among respondents of different age groups. Table 4 showed that except for professionals (F(2,658) = 2.57, p = 0.08), significant differences were found in the perceived credibility of health-related information received from new media (F(2,662) = 3.36, p < 0.05), traditional media (F(2,663) = 5.11, p < 0.01), and family/friends (F(2,658) = 3.34, p < 0.05). Health-related information received from new media was most credible among people aged 40-49 whereas it was least credible among the older people aged 60-69. Traditional media were perceived the most credible information source among the older people aged 60-69 but least credible among individuals aged 50-59. As for personal information source, it was more trustworthy among older people aged 60-69 than the other two age groups.

Overall, Table 4 showed that the usage of health information sources was related to the perceived credibility. The more trust respondents put into a type of media, the more likely they

Table 4. Age difference in health information-seeking and credibility of information sources

	40-49 Mean	50-59 Mean	60-69 Mean	F-value
Information source				
New media	2.75	2.56	2.26	22.73**
Professionals	2.54	2.54	2.73	3.12*
Traditional media	2.88	2.91	3.12	5.10**
Family/friends	3.25	3.25	3.35	1.00
Information quality	3.56	3.52	3.60	0.99
Information processing	3.56	3.58	3.55	0.12
Credibility of information sources				
New media	3.11	3.02	2.92	3.36*
Professionals	3.82	3.90	3.99	2.57
Traditional media	3.55	3.51	3.73	5.11**

copy of print. The fourth factor was named “family/friends”. Out-of-home advertising did not belong to any of the four factors. Health websites, even as a form of new media, were classified as a professional source in terms of frequency of use.

Based on the factor analysis results, the means of the component items were compiled. These mean values and the Cronbach alpha values are shown in Table 3. The same factor analysis procedure was applied to the perceived credibility of the 19 information sources. Results generated again a four-factor solution that accounted for 70.2% of the total variance. The grouping of the information sources was almost the same as that presented in Table 2 except for two differences. First, the credibility of print media electronic version was grouped under the third factor of traditional media. Second, the credibility of OOH advertising (out-of-home advertising) was grouped

used it. There was a moderate positive relationship between the perceived credibility of health information sources and the frequency of using the health information source to receive relevant messages ($r = .40, p < .01$).

Discussion and Conclusion

The cross-sectional survey conducted with 786 Hong Kong residents aged 40 to 69 finds that older adults, overall, more frequently seek health information from interpersonal sources such as family members and friends. In terms of frequency of use, they more often obtain health information from traditional media, and not new media. This finding echoes Kelly et al.'s (2010) survey study that people aged 40-70 seek more diverse health-related information and topics from traditional media such as newspapers than new media such as the Internet. It also reconfirms Niederdeppe et al.'s (2007) interview study with people aged 50-70 that interviewees most frequently acquire health-related information such as cancer-related details from traditional media. Apart from non-clinical sources, older adults more often use traditional media than new media to receive information about diet, fruit and vegetables, and exercise (Ramírez et al., 2013).

However, unlike previous studies (Kelly et al., 2010; Niederdeppe et al., 2007; Ramírez et al., 2013), our study found that health information was not most frequently acquired from clinical sources such as medical professionals. This might be related to the accessibility of different information sources in the Chinese context. Future studies are suggested to continue exploring the potential factors behind such contradictory finding. Although professionals are not the most frequently used information source in our study, they are the most credible one in providing health information to older adults. This finding is consistent with Leung's and Marton and Choo's studies. Both extant studies prove that professionals such as doctors are the most credible information source for people to learn health-related updates (Leung, 2008; Marton & Choo, 2012). According to Chaiken and Maheswaran's study (1994), the credibility of information source positively influences the level of information acceptance among the information receivers. Shang, Zhou and Zuo's (2021) survey on older adults' social media usage concurred that when older adults processed health-related information, source credibility had a positive impact on their information-sharing intention which was mediated by the perceived usefulness of the information. This might be explained by the communication effectiveness of opinion leaders in the theory of two-step flow of communication.

In the two-step flow of communication, opinion leaders had the characteristics of being experts, which would equip them with the audience's perceived credibility (Katz, 1957). This is also supported by the source credibility model (Hovland, Janis & Kelley, 1953), indicating that expertise as one dimension of source credibility, significantly affects the information source's communication effectiveness (Spry, Pappu & Cornwell, 2011). Given the low usage of professional sources for health information, our data did not support the two-step flow of information from professional sources to ordinary people. The high usage and perceived credibility of family and friends suggested the presence of health opinion leaders from the social network of older adults who passed along health information to them. Further study can verify this hypothesis and identify the characteristics of these peer health opinion leaders.

In our study, differences do exist among different age groups

of older adults on health information seeking by traditional media, new media, and professionals. The older the adults are, the less likely they use new media to learn about healthy eating. The reversed pattern is found in the traditional media as an information source. As for the professionals, people aged 40-49 and 50-59 have similar health information-seeking behaviors whereas the senior aged 60-69 records the highest frequency of seeking health information from the professionals. This finding is in line with Miller and Bell's study. Their study about the Health Information National Trends Survey in the United States shows that older adults prefer seeking health information through traditional information sources such as professionals whereas their young counterpart uses online media frequently to receive health information (Miller & Bell, 2012). Overall, our study fills the research gap in comparison of older adults about their health information-seeking behaviors. Most existing studies mainly address the adults aged 40-70 as a whole to analyze their health information-seeking behaviors such as Kelly et al.'s (2010) survey study, Niederdeppe et al.'s (2007) interview, and Ramírez et al.'s (2013) survey research, and did not specifically analyze how different their health information-seeking behaviors are.

Developed on the main findings, three health communication-related practical implications are summarized. First, older adults are not the same in health information-seeking. When health-related policymakers, institutes, and brands communicate with older adults, market segmentation and differentiation are needed. Our study shows that people aged 40-49, 50-59, and 60-69 have different source preferences when seeking health information. They also have different attitudes toward the credibility of various information sources. To more effectively promote health-related messages, practitioners are suggested to use the sources that different older adult groups trust and media that older adults are familiar with to share the information. As for new media, although there is an overall increasing trend of adoption of the Internet to seek health information among older adults (Cotten & Gupta, 2004), middle-aged adults and the senior still have different media preferences. To reach people aged 40-49, new media are workable.

However, traditional media are a better choice if health communication-related practitioners want to engage adults aged 50-69. Second, it is undeniable that although older adults rely on media sources to receive health information, professionals enjoy a higher level of credibility when providing health information. Since the credibility of information sources is positively associated with the acceptance of information (Callison, 2001; Chaiken & Maheswaran, 1994), health communication-related practitioners are suggested to consider engaging well-known medical professionals to endorse the health-related messages in advertising campaigns or public service announcement (PSA) campaigns if they would like to persuade older adults. Current studies have examined how source credibility positively enhances the effectiveness of persuasion. For instance, Dunleavy, Crandall and Metsch's (2005) study about drug users and their health information-seeking behaviors highlights that when people seek health information from expert medical sources such as physicians, their motivation to get access to healthcare provided by the medical professional increases. Source credibility also has a direct and positive impact on the enhancement of advertiser's credibility (Spry, Pappu & Cornwell, 2011). In other words, if the professionals are used to endorse health-related messages in the advertising

campaign, the perceived credibility of the professionals will be transferred to the health-related policymakers, institutes, and even brands who invite the professionals to advertise the health messages in the campaign. Therefore, the use of professionals in health promotion has the effect of killing two birds with one stone. Third, health information-seeking is related to health literacy (Tennant et al., 2015). Health-related policymakers and institutions are suggested to develop relevant training schemes and workshops for middle-aged and older adults to enlighten them in terms of accessibility of media channels to seek health-related information and to empower them on how to use different information channels or sources to make wise decisions relating to their health.

Although this study is the first one to compare the health information-seeking behaviors among older adults aged 40-49, 50-59, and 60-69, limitations also exist in the study.

First, our study only analyzed the information-seeking behaviors about healthy eating. Other types of health information seeking such as disease-specific health information are not included in the study. It is unknown whether the findings about older adults will apply to health information-seeking other than healthy eating. Future study is suggested to repeat the same study and test it in the context of other types of health information-seeking.

Second, our study focuses on how information sources affect older adults' health information-seeking behaviors. Apart from information sources, other factors such as the execution styles of the health messages may also influence how older adults receive the health information. Therefore, future studies might include more independent variables to the study and test whether information sources and other variables such as the messages have an interaction effect on older adults' health information-seeking behaviors. Besides this, although our study compares the differences among middle-aged and elder people in terms of how they acquire health information through different information sources, we did not generally address the potential difference in their behavioral frequency to seek health information and how their dependence on particular information sources grows. Future studies are suggested to include more relevant variables into the measurement. In addition, our study was conducted in the Hong Kong context, instead of the international context. The generalizability of the results might be limited to countries and regions with similar social and cultural backgrounds like Hong Kong. Future studies are suggested to be done in the cross-cultural context, and compare how older adults from western and eastern countries differ in their health information-seeking behaviors.

Data Availability Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Funding Information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

Burton, T.M. (2005). *Health information on the Internet: Who seeks it and how does it affect the utilization of physician services?* University of California.
Callison, C. (2001). Do PR practitioners have a PR problem?:

The effect of associating a source with public relations and client-negative news on audience perception of credibility. *Journal of Public Relations Research*, 13(3),219-234.

- Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, 66(3),460-473.
- Chew, S.T., Mohamad, E.M., & Mohamed Salleh, S. (2022). Strategies of parasocial opinion leaders in using Twitter to convey health messages to followers. *Jurnal Komunikasi: Malaysian Journal of Communication*, 38(4), 118-136.
- Choi, S.J. (2015). The two-step flow of communication in Twitter-based public forums. *Social Science Computer Review*, 33(6),696-711.
- Cotten, S.R., & Gupta, S.S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine*, 59(9),1795-1806.
- Deng, Z., Liu, S., & Hinz, O. (2015). The health information seeking and usage behavior intention of Chinese consumers through mobile phones. *Information Technology & People*, 28(2), 405-423.
- Dunleavy, V.O., Crandall, L., & Metsch, L.R. (2005). A comparative study of sources of health information and access to preventive care among low income chronic drug users. *Communication Research Reports*, 22(2),117-128.
- Hovland, C.I., Janis, I.K., & Kelley, H.H. (1953). *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT: Yale University Press.
- Huang, K., Lee, Y.W., & Wang, R.Y. (1998). *Quality information and knowledge*. Prentice Hall.
- Jacobs, W., Amuta, A.O., & Jeon, K.C. (2017). Health information seeking in the digital age: an analysis of health information seeking behavior among US adults. *Cogent Social Sciences*, 3(1),1302785.
- Jeong, S.H., & Kim, H.K. (2016). Health literacy and barriers to health information seeking: A nationwide survey in South Korea. *Patient Education and Counseling*, 99(11), 1880-1887.
- Katz, E. (1957). The two-step flow of communication: An up-to-date report on an hypothesis. *Public Opinion Quarterly*, 21(1), 61-78.
- Kelly, B., Hornik, R., Romantan, A., Schwartz, J.S., Armstrong, K., DeMichele, A., Fishbein, M., Gray, S., Hull, S., Kim, A., & Nagler, R. (2010). Cancer information scanning and seeking in the general population. *Journal of Health Communication*, 15(7), 734-753.
- Kriwy, P., & Mecking, R.A. (2012). Health and environmental consciousness, costs of behaviour and the purchase of organic food. *International Journal of Consumer Studies*, 36(1), 30-37.
- Lambert, S.D., & Loiselle, C.G. (2007). Health information—seeking behavior. *Qualitative Health Research*, 17(8),1006-1019.
- Leung, L. (2008). Internet embeddedness: links with online health information seeking, expectancy value/quality of health information websites, and Internet usage patterns. *Cyber Psychology & Behavior*, 11(5), 565-569.

- Li, W., & Chang, L. (2023). Aging in cyberspace: Exploring health information acquisition among older WeChat users. *Global Media and China*. <https://doi.org/10.1177/20594364231206640>
- Marton, C., & Choo, C.W. (2012). A review of theoretical models of health information seeking on the web. *Journal of Documentation*, 68(3), 330-352.
- Miller, L.M., & Bell, R.A. (2012). Online health information seeking: the influence of age, information trustworthiness, and search challenges. *Journal of Aging and Health*, 24(3), 525-541.
- Moschis, G.P., & Friend, S.B. (2008). Segmenting the preferences and usage patterns of the mature consumer health-care market. *International Journal of Pharmaceutical and Healthcare Marketing*, 2(1), 7-21.
- Nakiwala, A.S., & Kakooza, F. (2020). Social media for communicating health information in Uganda: constraints and practical suggestions. *Health & New Media Research*, 4(2), 246-273.
- Niederdeppe, J., Hornik, R.C., Kelly, B.J., Frosch, D.L., Romantan, A., Stevens, R.S., Barg, F.K., Weiner, J.L., & Schwartz, J.S. (2007). Examining the dimensions of cancer-related information seeking and scanning behavior. *Health Communication*, 22(2), 153-167.
- Ramírez, A.S., Freres, D., Martínez, L.S., Lewis, N., Bourgoin, A., Kelly, B.J., Lee, C.J., Nagler, R., Schwartz, J.S., & Hornik, R.C. (2013). Information seeking from media and family/friends increases the likelihood of engaging in healthy lifestyle behaviors. *Journal of Health Communication*, 18(5), 527-542.
- Renahy, E., & Chauvin, P. (2006). Internet uses for health information seeking: A literature review. *Revue d'épidémiologie et de santé publique*, 54(3), 263-75.
- Rice, R.E. (2006). Influences, usage, and outcomes of Internet health information searching: multivariate results from the Pew surveys. *International Journal of Medical Informatics*, 75(1), 8-28.
- Shang, L., Zhou, J., & Zuo, M. (2021). Understanding older adults' intention to share health information on social media: the role of health belief and information processing. *Internet Research*, 31(1), 100-122.
- Spry, A., Pappu, R., & Cornwell, T.B. (2011). Celebrity endorsement, brand credibility and brand equity. *European Journal of Marketing*, 45(6), 882-909.
- Tennant, B., Stellefson, M., Dodd, V., Chaney, B., Chaney, D., Paige, S., & Alber, J. (2015). eHealth literacy and web 2.0 health information seeking behaviors among baby boomers and older adults. *Journal of Medical Internet Research*, 17(3), 1-16.