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Measuring Online Health Information Seeking Skills and its Related Factors in a Middle-Aged Population

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Abstract

Background: Internet is an important source of online health information seeking. Middle-aged people, may face more health-threatening challenges if they lack seeking skills. Therefore, the evaluation of seeking skills on health information in middle-aged people needs to be further studied.
Objectives: The purpose of this paper was to examine the Online Health Information-Seeking Skills (OHISS) and its related factors in middle-aged people.
Methods: The cross-sectional study was conducted in 2021 on 430 middle-aged people in Kashan. Participants were selected with the cluster-random method. The data were collected using the Online Health Information Seeking Skills scale (OHISS), Social Participation, and Attitude General Technology questionnaires. The data were analyzed using t-test, Pearson's correlation, and liner regression using SPSS 16.0 statistical software.
***Results*:** The mean (SD) age of participants was 47.69 (5.96) years old. The mean (SD) score of OHISS was 60.31 (20.86) on a scale of 0 to 100. Pearson correlation coefficients showed a positive correlation between OHISS with technology attitude ($r= 0.45$, $p<0.001$), and social participation ($r= 0.17$, $p=0.003$), and a negative correlation with age ($r= -0.22$, $p<0.001$). There was a significant relationship between OHISS and education ($t= -3.97$, $p<0.001$), and was no significant relationship with gender, marital status, occupational status, and income ($p>0.05$). Liner regarrison analysis shows that age, education, and technology attitude explained 30% of the OHISS variance in middle-aged people.
Conclusion: Internet skills are the key to achieving online health information. Assessing the level of skills and its predictors can be an intervention guide for health policymakers to prevent health inequalities and help maintain or improve the health of middle-aged people.

Keywords: health information, online, skill, Middle aged

Introduction

Online health is defined as the use of digital technologies for healthcare [1]. As of 2019, more than half of American households used the Internet for health-related purposes [2], but in Poland was 66.7% in 2012 that most of them lived in urban areas, were highly educated, and were professionally active [3]. There is no information in Iran. The users of online health information are the people of the community, patients, caregivers, or other people interested in health issues that can search for the required information, share their experiences with other users, and benefit from health-related social counseling and support [4-6]. In addition , they are able to express their views and opinions and even challenge the performance of health care centers and their quality [7].

The use of online health information is closely related to having internet skills. Van Deursen et al. (2017) state that lack or poor internet skills is

the most important reason for not using online resources [8]. Researches indicate that younger people with higher socio-economic status and more previous experience have relatively high skills in using the internet [9]. In contrast, lack of Internet skills leads to disruption of online interaction, which in turn affects offline interaction [8,10].

Assessing internet skills is increasingly important among different age groups in the public population because internet skills are so important to enter the digital world [11]. This assessment can help identify specific vital skills in technology-rich social environments and guide specific policy interventions aimed at increasing digital inclusion among members of the community. It also makes it possible to measure and compare online health information seeking skills in an intercultural context [12].

Several factors are associated with online health information-seeking skills. Knowing these factors is essential among middle-aged people; because it helps to understand the existing structure (9). Studies have shown that the type of attitude towards technology is related to its use [13]. A study in Iran (2019) showed that a negative attitude towards technology is one of the obstacles to using technology [14]. Another factor related to internet skills is social participation. Feeling the need for new information plays an important role in social participation and encouragement to use online health information [15]. Users who are active in online messaging have higher online health information-seeking skills than inactive users [16]

The review of the literature showed that the studies conducted to measure the skills of individuals in the community in using online health information in developing countries are very limited, and they are mainly related to developed countries [16]. However, it's not possible to ignore the effect of demographic and socio-cultural factors on the ability to seek online health information among different age, racial and ethnic groups[17]. Middle-aged people are at risk of developing chronic diseases. Determining online health information-seeking skills in middle-aged people can provide evidence for the development of appropriate measures to maintain or promote their health [18]. Accordingly, this study aimed to examine the online health information-seeking skills and its related factors in middle-aged people.

Methods

The cross-sectional study was conducted on 430 middle-aged people referred to Urban Comprehensive Health Service Centers in Kashan, Iran, between January 2020 and September 2021. Inclusion criteria included having an electronic health record in Urban Comprehensive Health Service Centers, being in the age of 40-60 years, access to WhatsApp or Telegram messenger, tablet, or laptop, and having at least of reading and writing skill.

The sample size of 384 was calculated using a formula ($n = Z^2_{1-\alpha/2}\ \delta^2/d^2$) and considering the Standard Deviation (SD) of the online health information seeking skills score in a pilot study on 40 people at a 95% confidence interval ($Z_{1-\alpha/2} = 1.96$, $\delta = 15$, $d=1.5$), and according to the web-based sampling method and for handling possible attrition of participants, 450 were considered. Participants selected by the multistage cluster sampling method using the software. The city of Kashan was divided into five geographical districts, and one center was simple randomly selected from each district. Then, middle-aged people' health records were coded in each center, and participants were randomly selected based on the quota sampling in each center. Next, the researcher contacted potential participants by phone and if they were satisfied with participating in the study and having access to the Internet, a questionnaire link was sent to them. If they no had access internet, another participant was replaced.

The link of the questionnaires and the informed consent form that was created on the website https://porsline.ir/program was sent to the participants through social networks of WhatsApp and Instagram. Participants had one week to complete the questionnaires. For those who did not return the questionnaires within a week, a reminder package containing an informed consent form and questionnaires was sent to them. After completing the response process, the response link was visible to the researcher via https://porsline.ir/program.

Data were collected using demographical questionnaire, Online Health Information-Seeking Skill Scale (OHI-SSS), Social Participation Questionnaire, and attitude towards general

technology Questionnaire. The OHI-SSS is a 20-item scale developed by Izadi et al. (2020) to assess online health information-seeking skill in middle-aged people in Iran. The scale consists of 11 items on receiving information, 6 items providing and information exchange and 3 items on identification and trust. The total score of the scale is the sum of the scores of three sections. Higher total score indicated more skill. The items of the scale were scored based on a 5-point Likert scale (1- strongly disagree, to 5- strongly agree). The total score of the OHI-SSS is from 20 to 100 and to determine to level, the score of the tool is calculated based on 100. Scores 0 to 35 mil skill, 36 to 70 moderate, and scores of 71 to 100 indicate good skill. The content validity of the scale showed that S-CVI = 0.92, CVR = 0.80. Scale's reliability with Cronbach's alpha coefficient was to be 0.93. The intra-class correlation coefficient (ICC) with a 2 week interval was estimated 0.92 [19]. In the present study, scale's reliability with Cronbach's alpha coefficient was to be 0.89.

The Social Participation Questionnaire is developed by Hassanzadeh (2015) and contains 14 items with 4 subscales include 1) informal volunteering participation, 2) informal religious participation, 3) social networks and 4) active participation. Questionnaire items are score with a 5-point Likert scale (1-very low to 5- very high). The scale score range of is 14-70. A higher score indicates greater social participation. The face validity of questionnaire is reported suitable and its internal reliability as 0.79 using Cronbach's alpha method [20]. In the present study, scale's reliability with Cronbach's alpha coefficient was to be 0.93.

The attitude towards general technology Questionnaire is developed by Edison and Geissler (2003) and contains 10 items. Item scoring is based on a 5-point Likert scale (1-strongly disagree to 5- strongly agree). The questionnaire score range is 10 to 50. A higher score indicates better attitude towards technology. The validity of questionnaire is reported as favorable and internal consistency with Cronbach's alpha was above 0.65 [21]. Original version of the questionnaire was translated from English to Persian language using Backward-Forward translation method. Content validity index (CVI) was obtained 0.91 for the scale. Reliability of the questionnaire with Cronbach's alpha coefficient was to be 0.87 and Intra-class Correlation Coefficient with a 2-week interval was estimated 0.89.

Data were analyzed using SPSS software, Version 16.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (frequencies and percentages for categorical variables, the mean and standard deviation for quantitative variables) were used to summarize the characteristics of participants. In univariate analysis independent t-test and Pearson correlation were used to determine the relationship between categorical and numerical variables and OHISS. Multiple linear regression was used to determine OHISS predictors. The value of $p \leq 0.2$ was considered for entering variables into the model. The significant level of tests was considered less than 0.05.

Results

Of the 450 questionnaires sent to middle-aged people, %95.6 of the participants completed and returned the questionnaires. The results showed that the participants' mean (SD) age was 47.69 (5.96) years. Other demographic characteristics of the participants were summarized in Table 1.

Moreover, the mean (SD) scores of social participation was 44.13 (8.37) on a scale of 14 to 70. The mean (SD) scores of attitude towards technology was 36.39 (6.32) on a scale of 10 to 50.

The mean (SD) scores of OHISS was 65.73 (16.2) on the scale of 0 to 100. The mean (SD) scores of OHISS' subscales were 9.7 (3.04), 37.7 (9.33) and 18.25 (5.68), respectively (Table 1). In addition, most participants reported moderate levels of online health information-seeking skills (72.3%) and 20.7 % were in the level of mild and 7% were good.

Table 1: Sample Characteristics (n=430)

Categorical Variables	Number (%)		Numerical Variables	Mean(SD)*
Gender	Male	176 (40.9)	Age	47.69(5.96)
	Female	254 (59.1)	Work experience	23.9 (7.99)
Marital status	Married	349 (81.2)	Internet usage hours per week	26.14(20.19)
	Single	81 (18.8)	Social Participation	44.13(8.37)
Education	Non-academic	118 (27.4)	Attitude towards technology	36.39(6.32)
	Academic	312(72.6)	OHISS	65.73(16.2)
Occupational status	Self‑employed	229(53.3)	Identification and trust	9.7(3.04)
	Employed	201(46.7)	Receiving information	37.7(9.33)
Income	Sufficient	202(47)	Providing and information exchange	18.25(5.68)
	Insufficient	228(53)		

***Mean and Standard Deviation of total of participants**

There was a significant difference between the participants' mean scores of OHISS in terms of their education (t_{298}= -3.97, p<0.001). In addition, the subscales' mean scores of identification and trust (t_{298}= -2, p=0.04), receiving information (t_{298}= -4.13, p<0.001), and providing and information exchange (T_{298}= -3.44, p<0.001) were significantly associated with education. Identification and trust, receiving information, providing & information exchange, and OHISS were more frequent among academic participants (Table 2). However, this difference was not significant in terms of their gender (p=0.7), marital status (p=0.55), occupational status (p=0.14) and income (p=0.09) (Table 2).

Table 2: Relationship between mean (SD) Scores of OHISS and its Subscales with Categorical Variables

Variables*		Identification and trust	Receiving information	Providing & information exchange	OHISS
Gender	Male	9.67(3.11)	37.79(8.87)	18.6(5.41)	66.07(15.44)
	Female	9.86(3.02)	37.62(9.70)	17.6(5.91)	65.45(16.82)
P value		0.59	0.87	0.33	0.7
Marital status	Married	9.83(3.03)	37.9(9.31)	18.2(5.74)	66.07(15.44)
	Single	9.37(3.14)	36.3(9.52)	18.6(2.90)	66.07(15.44)
P value		0.39	0.32	0.69	0.55
Education	Non-academic	9.34(3.42)	34.99(10.45)	16.86(5.74)	61.19(18.07)
	Academic	10.1(2.75)	39.43(8.12)	19.13(5.46)	68.62(14.2)
P value		0.04 €	<0.001 €	0.001 €	<0.001 €
Occupational Status	Employed	9.71(2.89)	38.1(8.45)	18.67(5.22)	64.29(18.73)
	Self‑employed	9.93(3.38	36.9(11.12)	17.27(6.53)	67.45(16.82)
P value		0.56	0.33	0.05	0.14
Income	Sufficient	9.79(2.83)	38.3(8.41)	18.63(5.21)	66.72(14.68)
	Insufficient	9.74(3.53)	36.2(11.22)	17.3(6.63)	63.28(19.30)
P value		0.91	0.08	0.06	0.09

*Independent t-test, € Significant at the level of 0.001, €€ Significant at the level of 0.05

Results of the Pearson's correlation coefficient showed that age was negatively associated with the OHISS (r = - 0.22, p<0.001). The correlation of other variables with the OHISS was shown in (Table 3).

Table 3: Pearson correlation coefficients of OHISS and subscales with numerical Variables

Variables		OHISS	Identification and trust	Receiving information	Providing & information exchange
Social participation	r	0.17	0.07	0.15	0.20
	P -Value	0.003*	0.17	<0.01*	<0.001**
Attitude towards technology	r	0.45	0.37	0.41	0.42
	P- Value	<0.001**	<0.001**	<0.001**	<0.001**
Age	r	-0.22	-0.17	-0.25	-0.15
	P -Value	<0.001**	0.004*	<0.001**	<0.001**
Work experience	r	-0.12	0.005*	-0.142	-0.11
	P -Value	0.09	0.94	0.036*	0.13
Internet usage per week	r	-0.41	0.05	-0.16	0.07
	P- Value	0.82	0.77	0.36	0.65

* **Significant at the level of 0.05**,

** **Significant at the level of 0.001**.

In multivariate analyses, the variables of education, age, income, social participation, and attitudes towards technology were entered into the model to buffer the effects of OHISS in middle-aged people. The final model showed that variables of education, age, and attitudes towards technology explained 30% of the OHISS variance in middle-aged people (Table 4). Multiple linear regression found the variable of education (β= 2.1, p<0.001) and attitudes towards technology (β= 0.94, p<0.001) positively affecting the OHISS of middle-aged people. Age (β= -0.54, p<0.005) was found to negatively affect the OHISS of middle-aged people (Table 4).

Table 4: Multiple Linear Regression Analyses of OHISS Using Enter Method

Model	B	Std. Error	Beta	t	p
(Constant)	40.48	9.16		4.42	<0.001*
Education	3.10	0.57	0.28	5.42	<0.001*
Attitude towards technology	0.94	0.13	0.38	7.47	<0.001*
Age	-0.54	0.13	-0.21	-4.25	<0.001*
income	1.67	1.79	0.05	0.93	0.352
Social participation	0.11	0.09	0.06	1.11	0.270
Adjusted R Square= 0. 30					

***Significant at the level of 0.001**

Discussion

This paper describes online health information-seeking skills (OHISS) and its related factors in middle-aged people. Our study revealed that participants had a level of average the online health information-seeking skills which is similar to the studies conducted in other countries such as China and the United States [22-24]. In the country of Ghana, few patients use online health information [25]. Most people's social class is low in Ghana, and cannot afford internet-ready devices. Therefore, their skill literacy has not grown for using online health information as much as in countries with high economic status. Findings of a systematic review in Iran showed that patients' ability to seek online health information is different in every geographic location and depends on its related factors [26].

In the present study age, education, and attitudes towards technology exerted a buffering effect on OHISS in middle-aged people. Similar to other studies' findings, younger adults have the highest skills for seeking online health information [27-29]. This finding however did not agree with

other studies in Ghana and Kuwait [25,30]. A noteworthy point is that our study was restricted to middle-aged people, whereas participants of the other studies were both older adults and adult patients. Therefore, it is necessary to confirm this finding, more studies are conducted in different communities and with more participants. In addition, it seems younger middle-aged people have both higher education and high access to Wi-Fi on their office which contributes to their skills in online health information seeking.

In the present study, middle-aged with academic education had more skills in online health information seeking which is consistent with other studies [25, 30-32]. The likely reason for educated people to more skills in online health information seeking can be attributed to the fact that individuals are more aware of information sources other than health care professionals especially when they are not satisfied with the information given by health care professionals. They are also likely fewer difficulties for seek online health information and to be able to interpret and understand the information they read on the internet.

Data analyses showed that gender, employment status, and income were not related to OHISS. In contrast, some studies confirmed that online health information seeking was more by women than men, by employed than non-employed people, and by those with higher levels of income [25,31,32]. Shadadeh et al, (2019) in a systemic review found that health literacy is the most important stimulant factor for seeking online health information. The other factors such as income, age, education, and gender were in the next ranking [26]. Most of the participants in the present study were middle-aged people with highly educated, employed, as well as had access to smartphones and the Internet at home or at work. It seems these factors have led to improved health literacy and online health information-seeking skills in all participants. Therefore, the results differ from other studies.

The study showed that attitude towards technology was a predictor for OHISS in middle-aged people. Individuals with positive attitudes had more skills searching online health information. Attitude have a key role to promote skills and diversity of using Internet [33]. Having positive attitudes toward technology increases a person's desire to using the Internet. This in turn serves as a motivation for more internet search to be conducted in order to find accurate results to the questions which will gradually increase people's knowledge and skills in using online health information.

This is a cross sectional study provides a summary during the study period, on middle age people' online health information seeking skills. The longitudinal studies are needed to discover changes in patterns of health information seeking skills middle age people.

Conclusion

This study was conducted in order to assess and identify related to factors online health information seeking skills in middle-aged people. Findings revealed that OHISS was moderate. Age, level of education and attitude toward technology were significant related to factors that OHISS. Individuals with academic education, a positive attitude towards technology and younger had more ability to internet resources. The study findings can help policy-makers in terms of understanding factors that might related to people's health-related decision-making, particularly in Iran. It will also help significant contribution to health-related website content regulators to develop the online access infrastructures.

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This study was approved by the Ethics Committee of Kashan University of Medical Sciences, Iran (IR.KAUMS.NUHEPM.REC.1399.091). The participants signed the informed consent form to participate in the study.

Conflict of interest

The authors have no conflicts of interest to declare.

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