Exploring the Relationship between Health Information Literacy and Health Behaviors of the Elderly

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Abstract

Background: Population aging and health issues are one of the most crucial issues worldwide. Health behaviors are the most direct factor affecting the health of the elderly. This study aims to explore the relationship between the health information literacy and health behaviors of the elderly.

Methods: A hypothesis model for the influence of health information literacy on health behaviors of the elderly was constructed. Based on survey data of 382 elderly people aged 60 and above in Hangzhou, China, from March 2022 to May 2022, the relationship between the health information literacy and health behaviors of the elderly was studied by using quantitative statistics and the structural equation model.

Results: The health information literacy of the elderly had a significant positive impact on their health behaviors ($P<0.01$). Health information seeking played a partial mediating role between health information literacy and health behaviors. Social support exerted a significant moderating effect between health information literacy and health behaviors ($P<0.05$) and between health information literacy and health information seeking ($P<0.05$).

Conclusion: Health information literacy is the decisive factor of the elderly's health behaviors. The higher level of health information literacy, the more health information seeking, thus promoting more active health behaviors.

Keywords: Elderly; Health information literacy; Health behaviors; Health information seeking; Social support

Introduction

Population aging and health have become worldwide problems. The WHO has published the *World Report on Aging and Health*, which focuses on improving the health and quality of life of the elderly (1). Information is an essential way to health (2), and public health information literacy has a profound impact on improving the health level of the whole society. Health information literacy can usually be used to judge the impact on individual health status and behaviors (3). It is generally accepted that health information literacy is the integration of health literacy and information literacy, which are mainly composed of health information consciousness, health information access, health information evaluation, and health information application (4). The research on health information literacy of the elderly mainly emphasizes the following aspects: the status of health information literacy of the elderly, how social demographic variables affect the search and use of health information, and the understanding and use of health information by

the elderly (5). If improved, health information literacy can help individuals maintain their own health and promote the development of their health level (6).Health behaviors are an evident mode of behaviors, actions, and habits related to the maintenance, recovery, and improvement of health (7).

Scholars have mainly laid particular emphasis on investigating the content and influencing factors of health behaviors. The content of health behaviors generally includes basic health behaviors, preventive behaviors, protective behaviors, and health service utilization behaviors (8). After individuals obtain useful health information through various channels, it is helpful to change their daily behaviors, strengthen their attention to health consciousness in the process of transformation, and solve their health problems quickly and correctly (9). For the elderly, the harder they study health knowledge and health care skills, the longer they will persist in health behaviors (10). The higher the level of health care literacy of the elderly, the stronger their ability to obtain health information, the higher their belief in improving their current living conditions and pursuing health, the lower their uncertainty caused by diseases and other factors, and the higher the level of their health behaviors (11). Given this finding, the following hypothesis was proposed: (H1) The health information literacy of the elderly has a positive impact on their health behaviors.

Health information seeking describes the behavior process of individuals who use the Internet to search, browse, select, evaluate, and use health knowledge to meet their health information needs. A significant relationship between health information literacy and health information seeking has been proven. Moreover, the level of health literacy is positively correlated with health information seeking and that the health management can be facilitated by improving their health literacy (12). Users may change some health-related behaviors after searching and obtaining health information, change poor living habits in time, enhance their attention to health, and handle and correctly deal with health problems in a timely manner (13). On this basis, the following

hypotheses were put forward：(H2) The health information literacy of the elderly has a positive impact on their health information seeking; (H3) Health behaviors are positively affected by the health information seeking of the elderly. As an important concept in the field of social science and health communication, social support mainly refers to the care, answer, and support gained by individuals in social networks (14).

Social support includes informational support, emotional support, companionship support, and material support (15). Informational support and emotional support have become the main influencing factors in the research on health communication. The social relationship of the elderly is relatively simple. The more social support they can get, the more they will choose to trust this information. For example, the lower their health information literacy, the less willing they are to make health decisions but the more they trust their doctors (16) and the weaker the impact of the health information literacy on their health information seeking. Benefiting from the support of a better social system will also improve the socioeconomic status of the elderly (17). Social support has a positive impact on the subjective well-being of elderly people (18). The elderly with more social support can often feel happy, reduce stress, enhance their ability to resist stress, and promote their own health information literacy to produce health behaviors. Therefore, the following hypotheses were presented: (H4) Social support negatively regulates the relationship between the health information literacy and health information seeking of the elderly; (H5) Social support plays a positive role in moderating the relationship between the health information literacy and health behavior of the elderly.

Through combing a large number of documents, it is found that the relationship between the health information literacy and health behaviors of the elderly has rarely been investigated, remaining a subject to be further improved and deepened. Especially amid the flood of information in the Internet era, whether the elderly can have a positive level of health information

literacy has an important impact on their access to and application of health information, further affecting their health behaviors and status. In this study, the relationship between the health information literacy and health behavior of the elderly, as the study object, was explored via quantitative statistics and the structural equation model (SEM). With the findings, we expect to under-stand the health information literacy of the elderly more deeply and put forward effective strategies to improve their health behaviors. Fig.1 shows the constructed theoretical hypothesis model of the relationship among health information literacy, health information seeking, and health behaviors according to the above analysis.
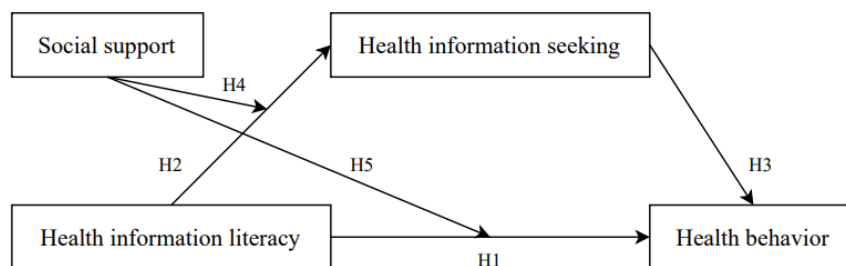

Fig. 1: Structure of the proposed theoretical analysis model

Methods

Data collection

Data were collected by means of questionnaire survey based on empirical research methods. It was difficult to collect questionnaires online from the respondents, who were elderly people aged 60 or above. Hence, the data were collected by giving out paper questionnaires on site, mainly in concentrated exercise areas for the elderly, activity rooms for the elderly, and parks in Hangzhou. Specifically, the elderly were sampled randomly to fill in questionnaires face to face. The questionnaires were distributed from March 2022 to May 2022, during which a total of 450 questionnaires were distributed and 423 were recovered. After questionnaires with incomplete filling were excluded, 382 valid ones were finally recovered. The sample size met the requirements of descriptive statistical research, relevant research, and structural model analysis.

Research variables

The variable "Health Information Literacy" (HIL) was measured with reference to the *Health Information Literacy Self-Rating Scale* constructed by scholars such as Wang (19). The scale has 12 items, including health information consciousness, health information access, health information evaluation, and health information application. The variable "Health Behavior" (HB) was measured in accordance with the Chinese version of the *Self-Rated Abilities for Health Practices Scale* (SRAHP) (20). The Chinese version was adjusted based on the SRAHP scale developed by Becker (1993), which is widely used in the international health behavior evaluation of middle-aged and elderly residents. The scale has a total of 16 items, including four factors: nutritional behavior, mental health, physical exercise, and reasonable medical care. The variable "Health Information Seeking" (HIS) was measured according to the items designed by Qu (2016) for the health information seeking behavior of community residents (21). The scale was simplified into two relevant items by combining the characteristics of the elderly as the research object. The variable "Social Support" (SS) was measured by the *Social Support Scale* (22). It contained two factors, namely, informational support and emotional support, with a total of 6 items.

The items in the questionnaire were measured using Likert's five-point method. After the initial questionnaire was drawn up, a pre-investigation

was carried out, the items with low reliability were deleted, and a small-scale expert interview was convened. Moreover, the items were slightly adjusted to make the questionnaire items more scientific and reasonable. Finally, a formal questionnaire consisting of 36 items was determined. All study participants gave their informed consent for inclusion before they participated in the study.

Data were processed by statistical analysis software SPSS22.0 and AMOS21.0 to test the reliability and validity of the measurement scales of different variables and verify the proposed hypotheses in the model.

Results

Reliability and validity tests of variables

The reliability and validity analysis results of the measurement model are listed in Table 1. The Cronbach's α of the scales were all above 0.7, indicating their good reliability. From the fitting index of the model, the $\chi 2/df$ of the three variables were all between 1 and 3; RMR was kept below 0.05; the values of GFI, AGFI, NFI, IFI, and CFI all exceeded the ideal level of 0.9; and the values of RMSEA were all less than 0.08. Specifically, the confirmatory factor analysis results of all variables were within the acceptable range, manifesting their favorable construct validity.

Table 1: Reliability and validity analysis results of the model

Variables	*Cronbach's a*	χ^2/df	*RMR*	*GFI*	*AGFI*	*NFI*	*IFI*	*CFI*	*RMSEA*
HIL	.831	2.538	0.031	0.929	0.949	0.935	0.936	0.943	0.064
HB	.889	2.741	0.025	0.965	0.928	0.922	0.948	0.904	0.053
HIS	.784	2.326	0.037	0.946	0.944	0.954	0.974	0.928	0.071
CS	.816	2.486	0.029	0.987	0.951	0.972	0.954	0.953	0.063

Verification and results of the structural model SEM analysis of the influence of health information literacy on health behaviors

The hypothetical model was tested by AMOS21.0, and the goodness-of-fit index is exhibited in Table 2. The absolute fitting index $\chi2/df$ of the model is shown to be less than the strict standard of 3. The values of GFI, AGFI, NFI, IFI, and CFI were all above the ideal level of 0.9, and RMSEA was below the ideal standard of 0.05, verifying that the degree of fitting is satisfactory.

Table 2: Fit indices of the model

Statistical value	χ^2/df	*GFI*	*AGFI*	*NFI*	*IFI*	*CFI*	*RMSEA*
Standard or critical value	<3.00	>0.90	>0.90	>0.90	>0.90	>0.90	<0.05
Test result data	2.287	0.931	0.928	0.942	0.957	0.945	0.042
Model adaptation judgment	Y	Y	Y	Y	Y	Y	Y

SEM was constructed according to the hypotheses, and the model was fitted, adjusted, and tested. The final model is shown in Fig. 2. Specifically, health information literacy (β=0.71, *P*<0.01) positively affected health behaviors and health information seeking, with path coefficients of 0.71 (*P*<0.01) and 0.69 (*P* <0.01), respectively. Health information seeking had a significant positive effect on health behaviors (β=0.44, *P* <0.05). The verification results effectively verified H1–H3, as listed in Table 3.
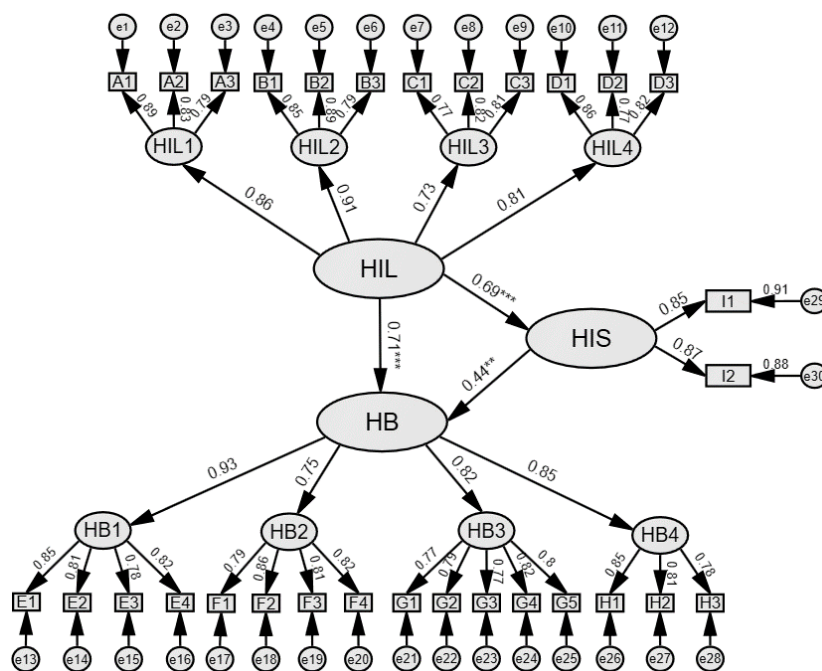
Fig. 2: SEM analysis results

Table 3: Regression analysis of path coefficients

Hypothesis	Path	Estimate	S.E.	C.R.	P	Test result
1	HIL —> HB	0.709	0.032	15.159	***	Supported
2	HIL —> HIS	0.692	0.021	34.188	***	Supported
3	HIS —> HB	0.438	0.026	25.124	**	Supported

Notes: ** and *** significant at the levels of 0.05 and 0.01, respectively.

Moderating effect of social effect

Whether social support interacted with other variables significantly was analyzed by hierarchical regression. The specific analysis results are shown in Table 4. In the two regression equations of health information literacy and health behaviors, social support played a significant moderating role. Thus, H4 and H5 were verified.

Table 4: Regression analysis of the moderator variable

Variables	Regression coefficient	Standard error	Standardized regression coefficient	T value	P value	Significant or not
HIL * SS —> HIS	-0.021	0.007	0.025	2.001	0.039	**
HIL * SS —> HB	0.018	0.011	0.034	2.487	0.042	**

Notes: ** significant at the 0.05 level.

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Discussion

After verifying the relationship among health information literacy, health behaviors, health information seeking, and social support of the elderly, the following four important conclusions were drawn.

First, the health information literacy of the elderly plays a positive role in promoting their health behaviors, which is the same as the results of other studies, such as Levin et al. finding that media health literacy has a positive impact on behaviors that promote healthy development, such as actively searching for health information online and paying attention to diets and sleep (23). From the verification results, it can be seen that health information access has the strongest influence. In other words, the elderly hope to obtain health information from various channels, and those who take the initiative to obtain health information will pay more attention to their own health status and are willing to understand and practice the health information (24). It is noteworthy that the elderly have weak abilities to evaluate health information, as evidenced by the research results. The reason is that the education level of the elderly is relatively low, and professional medical personnel use more technical terms and pay more attention to professional health information communication, which increases the difficulty for the elderly to obtain health information from medical institutions (25).

Second, most health behavior theories define health consciousness in health information literacy as a near-end and easily changed determinant of behavior. This definition has been confirmed by Becker et al. through research, pointing out that personal health behaviors are influenced by health consciousness and beliefs, which affect people's perception and cognition of disease threats, thus interfering with the health behaviors they adopt (26). The health behaviors of the elderly can be comprehensively evaluated from four dimensions: nutritional behavior, mental health, physical exercise, and reasonable medical care. The verification results indicate that nutritional behavior is the most important factor to evaluate their health behaviors. Meanwhile, the mental health dimension and physical exercise dimension are generally weak, reflecting that the elderly pay more attention to diet nutrition and that the transition from knowledge acquisition to behavior generation is better (27). However, less concern is directed toward mental health and physical exercise, a deficiency that is worthy of certain emphasis.

Third, the higher the frequency of active health information seeking for the elderly, the more helpful it is to improve their health behaviors. The higher their health information literacy level, the more frequent their health information-seeking activities. This conclusion has also been confirmed by de Graaf et al. (28), it shows that if the elderly can actively and frequently participate in the search for health behavior information, then the information obtained from the Internet will promote them to change their health behaviors. Special attention should be paid to improve their health information literacy level, which helps cultivate their awareness of information seeking (29).

Fourth, social support plays a moderating role between health information literacy and health information seeking and between health information literacy and health behaviors. In particular, the stronger the social support, the weaker the influence of health information literacy on health information seeking but the stronger its influence on health behaviors, which has also been confirmed by Hou et al. (30). This shows that when getting more social support, the elderly will rely more on informational and emotional support, which will, contrarily, reduce their health information seeking (31). In addition, the elderly will feel happier if they get more social support, especially emotional support, thus promoting their own health behaviors.

Conclusion

To explore the relationship between health information literacy and health behaviors of the

elderly and its action mechanism, a theoretical hypothesis model of the relationship between the two was constructed. This was followed by data collection through the questionnaire survey method and an empirical test using the SEM. Through theoretical and empirical research, the following analytical conclusions were acquired: 1) the health information literacy of the elderly has a positive and direct effect on individual health behaviors; 2) this positive effect can also generate an indirect effect through the mediator variable, namely, health information seeking; and 3) the influence relationship between the two can also be moderated by social support.

In this study, the relationship between the health information literacy and health behaviors of the elderly as the research object was analyzed, the results of which may provide an idea for health communication and in-depth research on more different groups. This research was based on theories and supported by empirical tests, but the survey scale is small with a single survey mode. In follow-up research, the sample size can be expanded to make the research conclusions more convincing.

Journalism Ethics considerations

Conflicts of Interest

The authors declare no conflicts of interest.

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