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ABSTRACT

This study aims to solve the problem of unwise judgment, decisions, and correspondingly dangerous behaviors caused by error health information to the elderly. Based on the MOA model and self-determination theory, this paper constructs a health information sharing model for the elderly and analyzes it with Amos's structural equation model. The study finds that media richness, health information literacy, perceived benefits, and negative emotions of the coronavirus epidemic positively influence health information sharing behavior. In contrast, perceived risks have a significant negative impact on health information sharing behavior. At the same time, media richness positively affects health information literacy, perceived benefits, and negative emotions of the coronavirus epidemic but has no significant impact on perceived risks. Health literacy positively affects perceived benefits but does not significantly affect the perceived risks and negative emotions of the coronavirus epidemic. This study aims to assist government and online social platforms in taking relevant measures under the background of normalization of the pandemic situation, controlling the spread of error health information among the elderly, and guiding the elderly to share health information better.

Keywords: Pandemic situation, the elderly, information sharing, health information, MOA theoretical model, self-determination theory.

INTRODUCTION

These years have witnessed the aging population of China continues to deepen. By November 2020, China's elderly population aged 60 and above has reached 264 million, accounting for 18.7% of China's total population, and its proportion has increased by 5.44 percentage points. The international and domestic COVID-19 are repeated constantly, in which case epidemic prevention and control should be regarded as a standard management model. After the outbreak of COVID-19, many aged people began to contact with mobile intelligent devices to meet the epidemic prevention and control requirements more conveniently in daily life (for example, using Health Codes). In this case, a growing number of aged people have become netizens gradually. Exposed to news, articles, and other forms of health information related to the epidemic situation through the Internet, aged people tend to comment and forward through online social platforms.

Under the pandemic situation, aged people pay more attention to health, collecting health information frequently (Pálsdóttir 2011). Sharing health information has become a crucial way to gain a sense of value and vent their emotions (Wasko *et al.*, 2005). However, due to the lack of health information literacy of the aged, they can hardly distinguish error health information on the Internet, such as non-authoritative health advertisements and health rumors that spread false information under the guise of science or authority. Not only will it impede the epidemic prevention work of the aged who are susceptible population in COVID-19, but it also will reduce the vigilance of the elderly in epidemic prevention and become a substantial hidden danger in epidemic prevention work.

Therefore, in the case of the normalization of the COVID-19 pandemic, exploring the influencing factors and mechanisms of the elderly's health information sharing behavior on the Internet will help the aged reduce the risk of encountering "false health information" on the Internet when such public health emergencies occur, reducing the negative impact of health information and the phenomenon of false health information dissemination caused by improper health information sharing behavior of the elderly.

Correspondingly, it will promote the aged in China to share and exchange health information correctly when public health emergencies occur, improve their health information literacy and form a correct health awareness.

In this study, the formation mechanism of self-determination behavior of elderly people's health information sharing will be discussed theoretically by combining MOA theoretical model and self-determination theory. Combined with the questionnaire survey results, the structural equation model of data will be used to analyze the path of various factors affecting elderly people's health information sharing behavior. Based on this idea, some countermeasures and suggestions are used to guide elderly people to share high-quality health information. Specific research questions include: What factors affect the health information sharing behavior of the elderly under the background of normalization of pandemic situations? What are the factors that promote and hinder the elderly's health information sharing behavior? How do these factors affect the health information sharing behavior of the elderly? What is the influence mechanism?

Combined with the questionnaire survey results, the structural equation model of data will be used to analyze the path of various factors affecting elderly people's health information sharing behavior. By analyzing the data, we found that media richness, health information literacy, perceived benefits, and negative emotions of the epidemic situation all positively impact health information sharing behavior. At the same time, media richness positively affects health information literacy, perceived benefits, and epidemic negative emotions but has no significant impact on perceived risks. Health literacy positively affects perceived benefits but has no significant effect on the epidemic situation's perceived risks and negative emotions. In contrast, perceived risks have a significant negative impact on health information sharing behavior.

The study concluded that social media managers should take the initiative to assume social responsibility in an epidemic, strengthen the review and supervision of online health information, create a positive anti-epidemic atmosphere and accurately push some authoritative health information to the elderly in an epidemic. Based on this idea, countermeasures and suggestions are put forward to guide the elderly to share high-quality health information from the perspective of policymakers and media managers. Government departments should accurately grasp the emotional changes of the elderly in the case of an epidemic and quickly provide targeted and rapid reassurance and value guidance.

The remainder of the paper is organized as follows. Section 2 reviews the previous articles and theories about health information behavior and introduces the research scenarios of the MOA theoretical model and self-determination theory in information behavior. Section 3 describes the research methods to explore the influencing factors of health information sharing behavior of the elderly, including the construction of health information sharing behavior of the elderly model and the process of empirical research. Section 4 presents the running results of the study model, and the results are discussed in Section 5. Section 6 summarizes all the work of the study.

LITERATURE REVIEW

Manafo and Wong believe that health information behavior refers to a series of behaviors generated in people searching, screening, and selecting health information in an event or situation (Manafo *et al.*, 2012). In the past, the research on health information behavior at home and abroad mainly focused on health information search behavior (Beaudoin *et al.*, 2011). With the development of social media platforms such as the health community and WeChat, people's health information sharing behavior has increased. Therefore, health information sharing behavior has gradually attracted the attention of scholars at home and abroad (Yan *et al.*, 2016). Scholars mainly study the influencing factors of information sharing behavior from different situations and information sharing subjects. For different situations, most studies focus on learning, health, and other situations, but few studies are set in public health emergencies. The influence mechanism of user group differences or internal determinants of information behavior is studied for the research subjects. However, few studies focus on the particular group of the elderly.

With the growth of age, the physical function and cognitive level of the elderly gradually decline, and they are a particular group "marginalized" in the network social environment. Every process of the elderly's information behavior depends on their existing knowledge structure and cognitive ability (Sutcliffe *et al.*, 1998). Therefore, the elderly's health information literacy, the knowledge structure and judgment ability of health information, is an essential factor affecting the elderly's health information behavior. In addition, the emotional and psychological factors of the elderly affected by their health status and social health information are also the main factors affecting their health information behavior (Miles *et al.*, 2008; Nelissen *et al.*, 2015). In addition to the help of relatives, social support factors such as media richness and the judgment of interpersonal benefits and risks caused by this behavior are the main factors affecting the health information behavior of the elderly (Eastin *et al.*, 2005).

In the research context of health information sharing behavior of the elderly, their health information behavior refers to a series of behaviors produced in the process of searching, screening, and selecting health information in an event or situation (Manafo *et al.*, 2012). Information sharing is a dimension of information use, which refers to how an individual obtains information and then transmits it to another person (Erdelez, 2000). According to the theory of media richness, this paper defines media richness as the ability of how much information the media can spread and the quality and effect of the information content (Chen *et al.*, 2004). Some studies have applied platform factors such as media environment to the research of information behavior and believe that the stimulation of media environment will affect users' information behavior. The American Academy of medical research (IOM) defines health literacy as "health literacy refers to an individual's ability to obtain, process and understand basic health information and services to make appropriate health decisions" (Fu *et al.*, 2017; Suri *et al.*, 2016). Health literacy includes the

knowledge level and ability level. The ability level is health information literacy, which is the core of health literacy. Because elderly people are susceptible to the new crown virus, their emotions are easily affected by the epidemic-related health information on the Internet. Some studies have shown that emotion, as a motivation, can stimulate users' information-sharing behavior (Wellman *et al.*, 1996). In the epidemic environment, the elderly vent the negative emotions caused by the epidemic and carry out information-sharing behavior.

In information behavior research, MOA model theory and self-determination theory have been successfully used to explain a series of user information behaviors. MOA model, namely the motivation opportunity ability model, was first proposed by Maclnnis and Jaworski (Macunnis *et al.*, 1991). Recently, MOA theory has been used to explain the influencing factors of information sharing behavior. For example, the Song Xiaokang and Zhao Yuxiang take health rumor sharing behavior as the function of MOA influencing factors and take motivation opportunity ability as the starting point to explain the main influencing factors of health rumor sharing behavior from the three dimensions of motivation opportunity ability (Song *et al.*, 2020). In the MOA model, motivation, opportunity, and ability are interrelated. When individuals have these three simultaneously in the online social platform, the higher the probability of information sharing. Self-determination theory is a motivational process theory about human self-determination behavior proposed by Deci *et al.* (1985). Its core elements are internal motivation and external motivation. In recent years, self-determination theory has been gradually applied to the research situation of information sharing. For example, Chang Victor, sun Siwei, and others explored the interaction between researchers' knowledge-sharing incentives in online multi background communities based on self-determination theory (Sun *et al.*, 2021).

METHODS
Study Model
This study takes the elderly as the research group. Under the specific social health background of epidemic normalization, this study aims at health information and analyzes the influencing factors of information sharing behavior of the elderly. MOA model can analyze the influence mechanism of various factors affecting the health information sharing behavior of the elderly on the actual behavior under the framework of motivation opportunity ability. Combined with self-determination theory, we can further explore the formation mechanism of ability and opportunity factors on internal motivation and external motivation to further analyze the influence path of health information sharing behavior. Then we can explore the methods to guide the elderly to share health information correctly under the thinking logic of mutual transformation of internal and external motivation.

Motivation is the main factor that determines users' behavior of information sharing (Lu *et al.*, 2012; Lin & H.F., 2007a, 2007b). In the MOA model, motivation is a kind of motivation to guide individuals to produce specific behaviors, which can generally be expressed by willingness, interest, and desire to process information. According to self-determination theory, motivation is divided into external motivation and internal motivation. In the research of information sharing, the external motivation is mainly related to users' perceived value, that is, the comparison between the costs and benefits perceived by users in the process of information exchange. The cost includes the risk cost of personal and social image loss borne by users in sharing behavior, and the potential benefits include reciprocity, improving their reputation, and so on.

Emotion plays an essential role in internal motivation. Self-determined behavior, that is, information sharing behavior has the incentive to provide energy caused by emotion and the need for future satisfaction. The social network platform is an open platform. Users can freely express their views and emotions through information sharing. As a new type of virus, COVID-19 has limited public knowledge and a large volume of outbreak information quickly, which has caused negative emotions of the elderly such as nervousness, anxiety, sadness, disappointment, fear, and worry. Van *et al.* pointed out that public emergencies are also emotional events under the epidemic situation, the demand for emotional expression of the elderly increases, and their information-sharing behavior is affected by internal motivation such as emotional release (van der Meer *et al.*, 2020). Therefore, the expression of negative emotions of the epidemic situation is taken as the main factor of their internal motivation.

According to MOA theory, ability refers to the ability and proficiency to understand and use information. In the health context, the health information literacy of the elderly is the core competence factor for health information sharing in the social network platform. Fu *et al.* believe that the knowledge and ability to meet people's health needs are critical factors for people to share health (Fu *et al.*, 2017). Nutbeam and others believe that critical thinking literacy is essential for people to analyze health information and selectively use health information critically (Nutbeam & D, 2000a, 2000b). Therefore, this study believes that health information literacy can be expressed as the ability factor in the health information sharing behavior of the elderly. Combined with self-determination theory, the ability of the elderly to complete challenging tasks will also have a specific impact on the motivation of health information sharing. Therefore, as a competency factor, health information literacy can directly affect the health information sharing behavior of the elderly and affect the development results of individual behavior by affecting personal competency motivation.

According to MOA theory, opportunity refers to the situational factors faced by individual executive behavior. When the elderly share health information on the Internet, the main environment of their behavior has changed from the traditional social environment to the network media environment such as social platforms. With the continuous development of social platforms, the public demand for information in public health emergencies increases, which means that the public use of social media has increased significantly. Moreover, social media and other platforms have accelerated the spread of false information in public health emergencies and strengthened it continuously (Qazvinian *et al.*, 2011). For example, at the beginning of the large-scale

outbreak of Ebola in West Africa in 2014, various "cure Prescriptions" were wildly forwarded via Twitter(Oyeyemi *et al.*, 2014). In 2015, the Zika epidemic broke out in central and South America. A large number of conspiracy theories and pseudoscientific ideas were spread on social media, and there were forums to encourage the public to refuse vaccination, even affecting the mainstream media (Dredze *et al.*, 2016). After the outbreak of the 2019 coronavirus epidemic (covid-19 for short), so-called "folk prescriptions" that can prevent or treat the virus, such as gargling with light saltwater, chewing garlic petals, drinking high alcohol, and taking vitamin C, have emerged on social media, resulting in relevant institutions having to occupy scarce and valuable public resources in the epidemic and set up a special rumor refutation platform.

It has been pointed out that social media may accelerate the dissemination of wrong information in public health emergencies. Some research, however, shows that social media is also a sharp tool to correct false information, which means it can use platform factors such as media environment to guide the elderly to share health information correctly (Alexander, 2014). This study believes that the index of media richness can express the opportunity factors in the health information sharing of the elderly. In addition, combined with self-determination theory, media richness and other situational factors directly affect health information sharing behavior and affect the development results of individual behavior by affecting individual autonomy motivation.

Based on the above analysis, the specific conceptual model of health information sharing behavior of the elderly is shown in Figure 1.
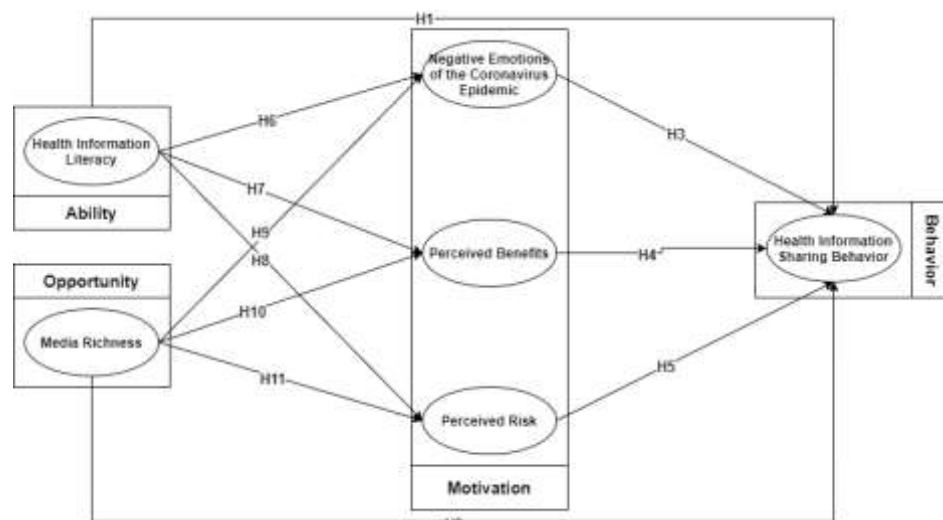

Figure 1: Conceptual model of health information sharing behavior of the elderly

Research Hypothesis
Health information literacy and health information sharing behavior
Studies have shown that user literacy (searchability, language ability, etc.) and external environmental factors directly impact information behavior, which means the health information literacy of the elderly will also affect the health information sharing behavior of the elderly (Zha *et al.*, 2014). The level of health information literacy determines whether the elderly can consciously and actively search for health information, judge it, share and use it after judgment, rather than blindly and passively accept health information from the Internet. Therefore, this study assumes that:
H1: health information literacy has a positive impact on the health information sharing behavior of the elderly.

Media richness and health information sharing behavior
Some studies have pointed out that social platforms as media factors affect information sharing behavior. With the rapid development of network technology, the convenience and efficiency of information dissemination in social platforms make the "magic bullet effect" appear. The so-called magic bullet effect means that within the scope of communication, the audience will positively respond to the information, and this response will rise to the behavioral level and have consistency. In the social environment of the elderly, many friends forward health information, or friends often exchange health information. The elderly are more willing to share health information (Bock *et al.*, 2005). Therefore, the richer the health information provided by the social platform, the more types and forms, and the more people participate in information sharing, which means, the higher the richness of the media, the older people are more likely to have a positive response and have a willingness to share health information, resulting in health information sharing behavior. Therefore, this study assumes that:
H2: media richness positively affects the health information sharing behavior of the elderly.

Negative emotions of the coronavirus epidemic and health information sharing behavior
Hyde's balance theory points out that when people are in a psychological imbalance, they will take various measures to restore their original balance (Heider, 2013a, 2013b). It has been considered that the health information sharing behavior of the elderly under the background of the epidemic has become a meaningful way to vent the anxiety, hypochondriasis, and other emotions of the elderly caused by the epidemic. Therefore, this study believes that with the increase of negative emotions, the elderly are

more willing to share health information related to the epidemic to vent their destructive emotions to reduce the impact of negative emotions of the epidemic. Therefore, this study assumes that:

H3: the negative emotions of the epidemic positively affect the health information sharing behavior of the elderly.

Perceived benefits and health information sharing behavior

Perceived benefits include "for me" and "for others," and "for me" refers to the benefits brought to users by sharing behavior, such as economic or reputation benefits. "For others" refers to the benefits of sharing behavior with others (Zhang *et al.*, 2017). When the elderly can bring benefits to themselves by sharing health information, the elderly will be willing to share health information out of the need personal interests; When elderly people share health information to bring benefits to others, improve their understanding of New Coronavirus, or reduce the risk of others facing the epidemic. Under the drive of altruism demand, the elderly are also willing to share health information. Therefore, this study assumes that:

H4: perceived benefits positively affect health information sharing behavior.

Perceived risk and health information sharing behavior

Health information often involves the privacy of users. Sharing health information always leads to privacy disclosure, which is the risk most concerned by users. The worry about a series of problems caused by privacy disclosure will make the elderly unwilling to share health information, followed by misleading others, illegal use, and other reasons (Tamjidyamcholo *et al.*, 2014). Perceived risk will bring uncertainty to users' behavior results and then inhibit users' sharing behavior. When the elderly encounter information that they think has high uncertainty, and even sharing the information will harm themselves and others, they will treat the behavior of health information sharing carefully to protect their interests from infringement. Therefore, this study assumes that:

H5: perceived risk negatively affects health information sharing behavior.

Epidemic negative emotion and health information literacy

During the epidemic period, the health information of online social platforms is complex. At this time, the elderly are isolated at home most of the time according to epidemic prevention and control requirements. Online social platforms can help the elderly understand more health information related to the epidemic. In this case, the elderly with high health information literacy can often collect more health information related to the epidemic through the network. Swar *et al.* found through questionnaire research that perceived information overload in online health information search will aggravate users' feelings of psychological discomfort (Swar *et al.*, 2017). Gray believes that getting too much health information from the Internet can lead to health anxiety (Gray, 2018a, 2018b). The elderly exposed to too much health information cannot distinguish the authenticity of the information, or some of the information conflicts with their cognition, increasing their feelings of unknown and fear of the epidemic situation. Therefore, this study puts forward the following assumptions:

H6: health information literacy has a positive impact on the negative emotions of the epidemic.

Perceived benefits and health information literacy

In terms of information awareness, older people tend to use smart products or services to obtain useful information to improve their own knowledge deficiency. They are relatively backward and have narrower life circles than younger people, but also have necessary information needs. On the one hand, older people with high health information literacy are more likely to recognize what information they need and then obtain and share the information that meets their needs from the Internet. On the other hand, they have the ability to judge the quality of information and then screen out information that is valuable to them. Therefore, we propose the following hypothesis.

H7: Health information literacy positively affects perceived benefits.

Health information literacy and perceived risk

The ability to search, understand, evaluate and apply health information is the core of health information literacy. Previous studies on health information literacy mainly focused on the relationship between health information literacy and health information search behavior, library participation, health behavior, etc. few scholars studied the relationship between health information literacy and perceived risks brought by sharing health information. With the improvement of individual health literacy, individuals' perceived credibility to distorted health information gradually decreases. The higher the health information literacy, the less likely it is to believe false information. Therefore, we reasonably speculate that the higher the health information literacy of the elderly, the easier it is to perceive the risks in the process of sharing health information. Therefore, this study assumes that:

H8: health information literacy has a positive impact on the perceived risk of the elderly.

Media richness and negative emotions

Some scholars pointed out that any public health crisis caused by public health emergencies is also an information crisis, which will produce many problems related to library and information science (Xie *et al.*, 2020). In the face of the epidemic, people generally have anxiety about whether they will be infected and whether they can be cured after infection. Therefore, people's information environment in the epidemic situation is different from that in other periods. On February 2, 2020, the global infectious disease prevention expert, Sylvie Briand, noted that the outbreak of the Infodemic also had a significant impact on people's lives. A large number of dense and difficult to distinguish true and false health information have many effects on individuals in this environment, among which information overload is one of the most common manifestations. Information

overload can cause users to have negative emotions and exaggerate their chances of developing new crown pneumonia. In addition, negative social emotions are communicable. In social interaction, individual emotions can affect others. Emotions will affect and strengthen each other and be amplified under the influence of mutual suggestion or self-suggestion.

Although the epidemic situation in the world has improved and gradually changed from large-scale to sporadic in some areas, all kinds of epidemic news in social media still touch people's sensitive nerves all the time. This study selects media richness to measure the complexity of the amount and types of information in the information environment. Explore its impact on people's negative emotions under the epidemic situation. Therefore, this study assumes that:
H9: media richness has a positive impact on the epidemic situation and negative emotions of the elderly.

Media richness and perceived benefits
By providing the richness of the information provided by the application software, users can perceive the benefits of the rich information to themselves. Users will spontaneously feel that the information is helpful to themselves or can effectively use the information. Based on this, this study believes that when the elderly get enough information from WeChat or the information provided by WeChat itself is enough, and the elderly will feel that they can benefit from it. Therefore, this study assumes:
H10: media richness has a positive impact on the perceived benefits of the elderly.

Media richness and perceived risk
In his research on consumers' perceived risk in online stores, Ye Naiyi found that the reputation of online stores and after-sales commitment of online stores can negatively affect consumers' perceived risk, which means consumers will feel less risk and avoid hesitation after contacting more information about merchants (Ye, 2008). Based on the above, when users get enough information, they can meet their expectations for information to reduce uncertainty about the unknown. Under the epidemic situation, the elderly obtain and share a large amount of and rich information through the social network platform and hope to reduce their panic about the epidemic to a certain extent. Therefore, this study assumes that:
H11: media richness negatively affects the perceived risk of the elderly.

Based on the above, the research hypotheses are summarized in Table 1 below.

Table 1: Summary of research assumptions

	Hypothetical content
H1	Health information literacy has a positive impact on the health information sharing behavior of the elderly
H2	Media richness positively affects the health information sharing behavior of the elderly
H3	The negative emotions of the epidemic positively affect the health information sharing behavior of the elderly
H4	Perceived benefits positively affect the health information sharing behavior of the elderly
H5	Perceived risk negatively affects the health information sharing behavior of the elderly
H6	Health information literacy positively affects the negative emotions of the elderly
H7	Health information literacy negatively affects the perceived benefits of the elderly
H8	Health information literacy is positively affecting the perceived risk of the elderly
H9	Media richness has a positive impact on the negative emotions of the elderly
H10	Media richness has a positive impact on the perceived benefits of the elderly
H11	Media richness negatively affects the perceived risk of the elderly

Data Collection
Based on literature research and existing models, this study constructs a health information sharing model for the elderly and designs a questionnaire about the maturity scale.

The questionnaire mainly includes two parts: the first part is the basic personal information, including gender, age, major, education level, the health status of the elderly, etc. The second part is the measurement of the variables involved in the study. The measurement variables include six variables: media richness, perceived risk, perceived return, health information literacy, epidemic negative emotion, and health information sharing behavior of the elderly.

In this study, the variables were measured by the Likert five-level scale, in which five options representing different degrees were set for each question item, and the respondents chose the option most in line with their cognition according to the degree of recognition.

After the preliminary questionnaire was formed, the pre-survey questionnaire was determined according to interviews with the elderly. In order to improve the accuracy and group adaptability of the questions, the study conducted a pre-survey through a small-scale questionnaire distribution and modified the questionnaire for the problems generally reflected, such as unclear significance and difficulty for the elderly to understand. The final questionnaire was obtained and officially distributed online and offline. The study used the method of young people assisting the elderly to fill in the questionnaire and finally collected 486 questionnaires. Excluding the invalid questionnaires, such as too short answer time, incomplete answers, and consistent answers, 472 valid questionnaires were obtained, and the effective rate of the questionnaire was 97.12%.

RESULT

Descriptive Statistics

This study mainly investigated the elderly over 55 years old who use mobile intelligent devices. Among them, men accounted for 42.58%, women accounted for 57.42%, and the proportion of men and women was relatively balanced. At the age level, the statistical results of this questionnaire show that the number of Internet users of the elderly decreases with age, which is consistent with the data results of the Research Report on Internet life of the middle-aged and the elderly issued by the Institute of Sociology of the Chinese Academy of Social Sciences in 2018.

In addition, the questionnaire also covers the elderly in different regions, educational level, age, health status, and living status, which ensures the scientificity of the research to a certain extent.

Reliability and Validity Test

In this study, SPSS 26 was used to test the reliability and validity of the recovered formal questionnaire.

Cronbachα for all variables in this study and CR are more significant than 0.7, and some are even bigger than 0.8, which can be considered to have good reliability. It is generally believed that when Cronbachα and CR reach 0.7, the questionnaire results have passed the reliability test. In order to investigate the reliability of questionnaire measurement and the internal consistency of measurement results, Cronbach α was used in this study, and Combined Reliability (CR) was used to test the reliability of the questionnaire. The results are shown in Table 2.

Table 2: Reliability test results

Variable	Title Design	Cronbach after deleting itemα	Cronbach α	CR	AVE
MR	MR1	0.729	0.752	0.757	0.51
	MR2	0.638			
	MR3	0.621			
HIL	HIL1	0.561	0.702	0.716	0.458
	HIL2	0.641			
	HIL3	0.639			
PB	PB1	0.826	0.847	0.848	0.53
	PB2	0.825			
	PB3	0.815			
	PB4	0.819			
	PB5	0.79			
NE	NE1	0.89	0.903	0.904	0.653
	NE2	0.882			
	NE3	0.884			
	NE4	0.874			
	NE5	0.881			
PR	PR1	0.586	0.714	0.716	0.457
	PR2	0.628			
	PR3	0.659			
HSB	HSB1	0.73	0.807	0.815	0.653
	HSB2	0.765			
	HSB3	0.703			

At the same time, this study compares the correlation coefficient between variables with the quadratic root of AVE value (diagonal value), as shown in Table 3, the quadratic root of the AVE value of each variable is more significant than 0.676 and greater than the correlation coefficient between variables, so it has good aggregate validity and discriminant validity.

Table 3: Aggregate validity and discriminant validity

	MR	HIL	PB	NE	PR	HSB
MR	0.714					
HIL	0.634	0.677				
PB	0.621	0.596	0.728			
NE	0.533	0.345	0.457	0.808		
PR	-0.187	-0.176	-0.168	-0.077	0.676	

| HSB | 0.709 | 0.644 | 0.685 | 0.571 | -0.34 | 0.771 |

Structural Equation Analysis

Model construction and fitting

In order to understand the impact of media richness, perceived risk, perceived return, health information literacy, and negative emotions of the coronavirus epidemic on the health information sharing behavior of the elderly, this study used Amos 24 to draw the structural equation model of the health information sharing behavior relationship model of the elderly, as shown in Figure 2.
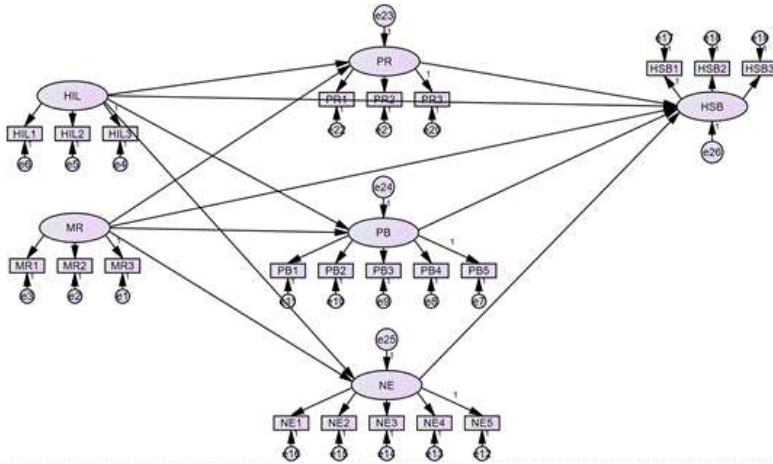

Figure 2: Structural equation model of health information sharing behavior of the elderly

The model contains six potential variables and 22 significant variables. After importing the sample data into Amos 24, the fitting degree of the model is tested in this paper. The indicators selected in this study includeχ^2/df, RMESA, RMA, GFI, AGFI, CFI, RFI, NFI, IFI, etc. It is generally believed that χ^2/df between 1 and 3 has a good fit. When RMESA and RMA are less than 0.08, the fit is better. When GFI, AGFI, CFI, RFI, NFI, and IFI are greater than 0.9, the fit is better. If these indexes are only greater than 0.8, the model can be regarded as reasonable. The model fitting test results of this study are shown in Table 4.

Table 4: Fitting test results

Fitting index	Fitting value of this model	Recommended value	critical value
CMIN/DF	2.324	1~3	3~5
GFI	0.916	>0.9	>0.8
RFI	0.888	>0.9	>0.8
CFI	0.942	>0.9	>0.8
NFI	0.904	>0.9	>0.8
IFI	0.943	>0.9	>0.8
AGFI	0.892	>0.9	>0.8
RMESA	0.053	<0.05	<0.08
RMR	0.132	<0.05	<0.08

It can be seen that the CMIN/DF, GFI, CFI, NFI, IFI of this model have reached the recommended values, but on the whole, the fit between the model and the sample data is still poor.

Model modification

Because the preliminary fitting results are not ideal, this paper modifies the model based on the principle of the structural equation. Amos will give the modified index (MI) according to the fitting effect after the model operation, which researchers can use as a reference. Combined with the suggestion of model correction index (MI) in Amos and the re-review of relevant theories, the initial model is modified. Existing studies have shown that sufficient network information resources will improve users' information literacy, which means the higher the media richness, the more conducive to improving health information literacy (Qin, 2015). In confirmatory factor analysis, media richness and health information literacy also show a relatively high correlation, so a new path from media richness to health information literacy is added. The corrected fitting test results are shown in Table 5 below.

Table 5: Corrected fitting test results

Fitting index	Fitting value of this model	critical value	Recommended value
CMIN/DF	1.749	1~3	3~5

GFI	0.934	>0.9	>0.8
RFI	0.916	>0.9	>0.8
CFI	0.968	>0.9	>0.8
NFI	0.928	>0.9	>0.8
IFI	0.968	>0.9	>0.8
AGFI	0.916	>0.9	>0.8
RMESA	0.040	<0.05	<0.08
RMR	0.058	<0.05	<0.08

By observing each fitness index in the table, it can be found that the CMIN/ DF of the research model is 1.749, which meets the standard of less than 3; The GFI value is 0.934, exceeding 0.9; The AGFI value is 0.916, exceeding 0.9; The CFI value is 0.968, exceeding 0.9; The NFI value is 0.928, exceeding 0.9; The RFI value is 0.916, exceeding 0.9; The IFI value is 0.968, exceeding 0.9; The RMSEA value is 0.040 and does not exceed 0.05. Most indicators have reached the recommended value of model fitting, so it can be considered that the overall adaptability of the modified model is good.

Hypothesis test and path coefficient analysis
Amos further outputs the path coefficients and their significance between the modified variables. See Figure 3 and Table 6 for details.
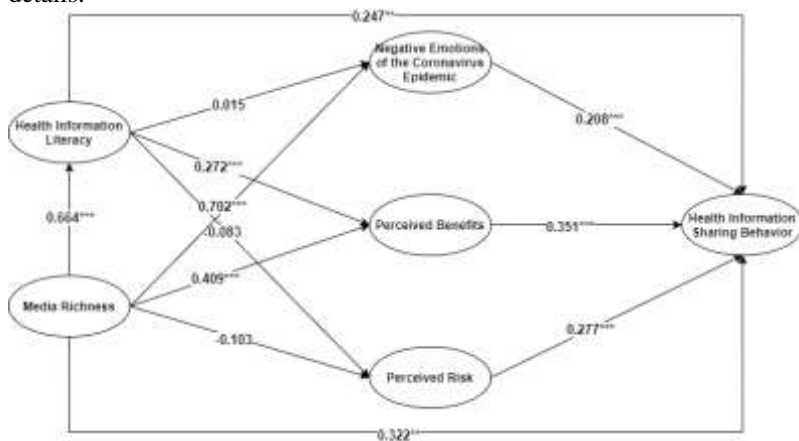

Figure 3: Simulation path coefficient diagram

Table 6: Model path coefficient and significance results

Route	Standardized regression coefficient	S.E.	C.R.	P
HIL←MR	0.664	0.076	8.735	***
PR←HIL	-0.083	0.077	-1.074	0.283
PB←HIL	0.272	0.066	4.144	***
NE←HIL	0.015	0.096	0.153	0.878
PB←MR	0.409	0.068	5.996	***
NE←MR	0.702	0.107	6.588	***
PR←MR	-0.103	0.078	-1.32	0.187
HSB←PB	0.351	0.083	4.217	***
HSB←PR	-0.277	0.066	-4.208	***
HSB←NE	0.208	0.048	4.37	***
HSB←HIL	0.247	0.08	3.086	0.002
HSB←MR	0.322	0.1	3.212	0.001

DISCUSSION
Discussion on empirical research results
According to the results of structural equation analysis, media richness, health information literacy, perceived income, and negative emotion of epidemic situation all have a significant positive impact on health information sharing behavior. Perceived risk has a significant negative impact on health information sharing behavior. At the same time, media richness positively impacts health information literacy, perceived income, and negative emotion of the epidemic situation, but it has no significant impact on perceived risk. Health information literacy has a positive impact on perceived benefits but has no significant impact on the epidemic's perceived risk and negative emotion.

Based on the actual situation and existing literature research, this section will first explain the above untenable assumptions and new paths and sort and analyze the variables in the established assumptions that directly affect the health information sharing behavior of the elderly according to the total effect value. Then analyze the variables that do not directly affect the health information sharing behavior of the elderly with the hypothesis is accurate, and further analyze the influencing factors and mechanism of the health information sharing behavior of the elderly.

Health information literacy and negative emotions of the coronavirus epidemic

The health information literacy of the elderly had no significant effect on the negative emotion of the coronavirus epidemic. The elderly do not have enough information literacy, which will reduce the efficiency and effectiveness of using health information under certain conditions and cannot significantly affect their mood towards the epidemic. At the same time, the participation of elderly patients in the use of health information is also low, especially the elderly avoid mental health and resist prejudice. This will also lead to the failure of information related to improving mental health to guide the elderly during the epidemic correctly. People's long-term exposure to solid information stimulation will improve their emotional tolerance and gradually reduce their response. The elderly have received information from all aspects and all kinds of epidemic situations for a long time. No matter how much information the elderly obtains or how high the quality of information they get, their irritation to the emotions of the elderly will gradually decrease, becoming dull or numb, and show that health information literacy doesn't relate to negative emotions.

Health information literacy and perceived risk

There is no apparent relationship between health information literacy and perceived risk. Under the background of epidemic normalization, the higher the health information literacy of the elderly does not necessarily mean that they can perceive the risks that health information sharing may have on individuals, others, and society. There is a lack of research with the same results in the field of health information, but in the research on consumers' perceived risk of online shopping by LV Wei and others, it is found that there is no significant relationship between consumers' product knowledge and perceived risk of online shopping (Jin *et al.*, 2006). This conclusion is similar to the relationship between health information literacy and perceived risk.

According to the interview results, it is inferred that there may be the following two reasons for this conclusion. First, during the epidemic, the health information in social media was too complicated and confusing. As non-professionals, especially the elderly with low health literacy, it was difficult to judge the authenticity and risk of some rumors. Second, in the late stage of the epidemic, people have a high level of risk awareness after a large number of false information and rumors during the outbreak of the epidemic. When they encounter news that cannot judge the authenticity on the social platform, they will not spread it rashly but choose to wait for the results released by the official, traditional media. Based on the two reasons above, it is not difficult to find that the status of the elderly using social media under the background of epidemic normalization is that they should be vigilant against all uncertain information, do not share it at will, and wait for official confirmation when they cannot distinguish the authenticity of health information.

Media richness and perceived risk

There is no apparent relationship between media richness and perceived risk. This study should re-examine the existing research and theories on this hypothesis. Under the background of the epidemic situation, the network is full of a large number of negative news and even rumors, making some elderly people with poor judgment ability or low psychological quality vulnerable to negative emotions to improve the perceived risk. In other words, in the complex information interaction environment during the epidemic, the perceived risk of the elderly is affected by many factors, so the single variable of media richness has no significant impact on the perceived risk.

Media richness and health information literacy

With the development of information technology, although some elderly people have low knowledge levels and poor learning ability, they also began to use the social network platform to receive network information gradually. Sufficient information resources provide external conditions for improving the health information literacy of the elderly so that they can use the information on the network to obtain the information they need to meet their own needs. Due to the low level of knowledge and lack of judgment, some elderly people are vulnerable to multi-angle and high-frequency radiation of network information. Some media's transfer amplification and processing guidance to factual information have compressed the information quality and richness and produced more attractive information. The elderly are vulnerable to its influence, resulting in misunderstanding and even believing in some rumors. Therefore, media richness has a positive impact on the health information literacy of the elderly.

Media richness and health information sharing behavior

Media richness has a positive impact on health information sharing behavior. Media richness indirectly affects health information sharing behavior through intermediary variables such as health information literacy, perceived income, and negative emotion of the epidemic situation, but also directly affects people's information-sharing behavior. First of all, in terms of information content, health information with higher media richness has a comprehensive content coverage, which is easier to meet the practical needs of more users, and people are more willing to share such health information with their relatives and friends. Secondly, in terms of information expression, more kinds of expression methods (such as text, pictures, audio, etc.) can better meet the stimulation needs of users' different senses. Finally, in terms of information quality, users are more inclined to share high-quality information to spread knowledge or help relatives and friends, so high-quality information is always more popular. Therefore, the higher the richness of media, the more it can stimulate the health information sharing behavior of the elderly, as shown in Table 7.

Table 7: Standard total effect value of each variable on health information sharing behavior of the elderly

Variable name	Standard total effect value on sharing behavior
media richness	0.322
Health information literacy	0.247
Perceived benefits	0.351
Perceived risk	-0.277
Negative Emotions of the Coronavirus Epidemic	0.208

Health information literacy and health information sharing behavior

Health information literacy has a positive impact on health information sharing behavior. The processes of information search, acquisition, and online interaction require users to have strong health information literacy. Studies have confirmed that users with high health information literacy are more willing to share health articles online (Zhao *et al.*, 2020). The elderly with high health information literacy can obtain their health information from the network and share the obtained health information. Novel coronavirus pneumonia can make full use of their abilities to identify, judge, and screen information that helps protect their health during the epidemic period and excavate some health information they believe is valuable. It can play a positive role in preventing and treating new crown pneumonia or protecting their health and health during the epidemic period and then hoping that their family members and friends will benefit from it and choose to share it. The elderly with low health information literacy have a weak ability to judge health information and cannot correctly capture valuable health information, so they will not have the behavior of sharing health.

Perceived benefits and health information sharing behavior

Perceived benefits positively affect health information sharing behavior. Ybarra *et al.*'s research show that people seeking medical services seem to be using the Internet to improve their medical services (Ybarra *et al.*, 2006). They believe that using online information to diagnose problems on the Internet will make them feel more comfortable. When an act itself can benefit the actor, it makes him have a stronger willingness to complete the act. In the Internet age, the elderly, like people of other ages, can get valuable information from the Internet. When the elderly encounter information that they think is valuable, they think that it can help people effectively fight the epidemic or protect themselves, so they hope that the information can enable their family or friends to receive the information. If sharing health information makes them think that health information is irrelevant, or the information they obtain is not of sufficient value, they also lose some motivation to share health information.

Perceived risk and health information sharing behavior

Perceived risk negatively affects health information sharing behavior. Some studies have shown that users pay more attention to whether the shared information harms their social communication and interpersonal relationships in using social media. Many older people expect to shape their image by sharing health information. They tend to reduce or not share the information that may affect their images, such as induced consumption, lottery, and advertising. In addition, in today's society, with the continuous postponement of the retirement age and the attention of all walks of life to mental health. At present, the elderly group still has more contact with society and is not entirely marginalized. Moreover, with the refutation of false news by major mainstream media and the publicity of "do not believe rumors, do not spread rumors" by local governments, the elderly will maintain a high awareness of information discrimination and a sense of responsibility for information dissemination. Therefore, when they encounter health information with high perceived risk or cannot distinguish its authenticity, they tend to reduce or avoid sharing such health information.

Negative emotions of the coronavirus epidemic and health information sharing behavior

The negative emotion of the epidemic has a positive impact on health information sharing behavior. Under the epidemic situation, the elderly are more vulnerable to negative emotions and vent their emotions by sharing health information related to the epidemic situation. During the post epidemic period, after the blockade of the epidemic period and all aspects of social publicity, the elderly were aware of the seriousness and harmfulness of COVID-19. Their anxiety and worries about their families' health would inspire them to share more health information about COVID-19. The uncertainty of sporadic outbreaks in various places

has not been eliminated, especially with new variant crown disease strains from abroad. At present, the elderly pay more attention to physical health and daily virus protection and share relevant information with relatives and friends to jointly protect health and safety.

Health information literacy and perceived benefits

Health information literacy has a significant positive impact on perceived benefits. In using internet financial products, users will feel a series of convenience through contact processes such as platform interface design, operation process, and communication with customer service. Users' skills, including obtaining and using information, can help users explore valuable information on the Internet. People with high information literacy can judge when information is needed and know how to obtain, evaluate and effectively use the required information. Similarly, the elderly with high information literacy can identify and share information conducive to improving their social image among the many information on the Internet. On the contrary, the elderly with low information literacy does not have such ability and feel that it is more challenging to benefit them by sharing information.

Media richness and negative emotions of the coronavirus epidemic

Media richness has a positive impact on the negative emotions of the coronavirus epidemic. On the one hand, studies have found that when the information is full of fuzziness, complexity, and contradiction in the context of abundant information, uncertainty perception is usually generated (Han *et al.*, 2011). During the epidemic, the Internet was flooded with information related to New Coronavirus. The information of different forms was uneven in quality, which made the elderly unable to judge the authenticity of the information or even believe and share false information. On the other hand, if a large amount of information flows into the brain simultaneously in a short time and it is too late to be decomposed and digested, the activity of the cerebral cortex will be inhibited. Over time, there will be many negative emotions such as reduced logical thinking and judgment ability, tension, uneasiness, helplessness, etc. During the epidemic period, the Internet has become the main channel for the elderly to obtain and share health information due to home isolation. Due to their limited cognitive level and understanding ability, they are more likely to have negative emotions such as anxiety when they cannot receive relevant information beyond their limits. Based on the above, media richness will lead to the increase of negative emotions of the elderly when it increases the uncertainty perception of the elderly and makes the elderly unable to accept information fully.

Media richness and perceived benefits

Media richness has a positive impact on perceived revenue. With the development of information technology, the channels for ordinary people, including the elderly, to obtain information have gradually changed to the Internet social platform, and WeChat has become one of the Internet products used more by the elderly. Users will have a sense of commonplace after a long time of WeChat public account. This long psychological time will reduce users' interest, so users need to improve media richness by using a certain time user. Let users often find new things in the use process and increase users' interest and perceived benefits. Under the normal circumstances of the epidemic situation, the elderly have been getting health information through WeChat, TV news, and other channels for a long time. Similar to users who have used the WeChat official account for a while, they have lower interest in quality and poor health information, and lower perceived benefits. After improving the richness of media, richer health information will arouse users' interest and increase users' perceived income, so they are more willing to share health information.

Countermeasures and Suggestions

With the development of information technology and the wide application of mass media during the epidemic period, information dissemination takes on new characteristics. The influx and fermentation of a large amount of information are very confusing, which increases the difficulty of screening and using health information for the elderly and intensifies the fermentation of "Infodemic." As World Health Organization director-general Tan Desai said, "we are not only fighting the epidemic, we are also fighting an 'information epidemic.'" in this context, health information sharing for the elderly.

First of all, policymakers should sense people's emotions at the first time of the epidemic, carry out rapid response guidance, and create a positive network health information environment for the elderly. In the emergency of a sudden epidemic situation, the people have an intense state of panic and fluctuation. However, the government should be prepared to understand, perceive and grasp the law of people's emotional change, and carry out targeted rapid appeasement and value guidance to drive the development of public social opinion to a positive and good situation. In creating a positive network environment, the government should make use of its advantages, fully integrate and mobilize the power of the network media platform, accurately deliver high-quality health information and authoritative information for the elderly, avoid the risk of the elderly exposed to health rumors to the greatest extent, stabilize the emotions of the elderly, and give full play to the subjective initiative of the elderly, help the elderly share more valuable health information. In addition, the government should vigorously strengthen the health information literacy education of the elderly, improve their sense of responsibility, strengthen the publicity, education, and guidance of the elderly, and improve the ability of the elderly to identify healthy information on the principle of "not spreading rumors, not believing rumors and not fabricating rumors," to make them better assume civic responsibility and jointly maintain a good atmosphere of social information dissemination.

For media managers, mainstream media should actively assume social responsibility in public health emergencies and pay attention to the authenticity and accuracy of information. In particular, the mainstream network health platform should take the initiative to make a scientific and timely response to the health problems concerned by the elderly. When accidental factors such

as public health emergencies appear, the elderly will feel powerless when digesting negative information, and the negative emotions will escalate rapidly, reducing their patience in other information. Therefore, in addition to being true, accurate, and timely, the information released by the mainstream media should also pay attention to actively responding to the focus of public attention in terms of content, and the words should be easy to understand and not easy to produce ambiguity. If necessary, simple refuted corrective information should be used instead of factual statements to achieve better health information publicity effect to create more scientific and Positive health information sharing social platform environment.

CONCLUSION
Research Summary
After comparing the previous literature with this paper, it can be considered that this study has the following crucial theoretical significance and practical value.

In terms of theoretical significance, this study has the following two main contributions: This paper applies MOA model theory and self-determination theory to the study of health information sharing behavior of the elderly and explores the influencing factors of health rumor sharing willingness from three aspects: individual motivation, opportunity, and ability. The motivation is further divided into internal and external motivation, and the mechanism of ability and opportunity affecting health information sharing behavior through motivation is explored, which enriches the applicable situation of the theory and expands the theoretical boundary. This study takes the epidemic negative emotion as one of the indicators of health information sharing behavior motivation for the first time. Based on Amos's structural equation, it proves that the epidemic negative emotion can significantly and positively affect health information sharing behavior. In addition, this study breaks through the traditional research index that takes time and technology cost as opportunity factors and takes media richness as an opportunity, which represents the situational factor of individual behavior, which is more in line with the actual situation of the elderly's health information sharing behavior under the condition of the epidemic situation.

From a practice perspective, the research results of this paper, to some extent, are of significance to guide the elderly to share health information correctly under the epidemic situation. First, based on the continuous and repeated social situation of COVID-19, this study analyzes the elderly's health information sharing behavior and focuses on the dual vulnerable groups under the epidemic situation and information society. In order to guide the elderly to share health information correctly and create a good network information sharing environment through related factors, To some extent, it has solid social value and practical significance to avoid the phenomenon of "pseudo health" information dissemination caused by the elderly under the epidemic situation. Second, for social media managers, this study found that media richness has a significant positive impact on health information sharing behavior, which means, the more people have access to health information in online social media, the more they tend to share health information. In addition, media richness also has a significant positive impact on health information literacy, epidemic negative emotions, perceived benefits, and other factors, indirectly affecting health information sharing behavior. Therefore, the situational factor of media richness plays an important role in the health information-sharing behavior of the elderly. Social media managers should take the initiative to assume social responsibility under the epidemic situation, accurately push some authoritative health information to the elderly, and make it easier for the elderly to access health information. On the other hand, we should also strengthen the review and supervision of network health information, create a positive anti-epidemic atmosphere under the epidemic situation, and timely control the spread of harmful health rumors. Third, for policymakers, this study found that health information literacy and negative emotions of the epidemic have a significant positive impact on health information sharing behavior, and health information literacy can indirectly affect health information sharing behavior through a positive impact on perceived benefits. In recent years, the public's concept of health has become stronger and stronger, but due to the lack of health knowledge, it is easy to be misled by health rumors. In the epidemic environment, the numerous health information makes it more difficult for the elderly to distinguish the authenticity of health information. Therefore, government departments should be prepared to understand, perceive and grasp the law of people's emotional changes, release authoritative notices and health information, and carry out targeted and rapid comfort and value guidance to drive the network information environment to a positive and sound state.

Based on the analysis above, starting from the relationship between five factors in the three dimensions of "motivation opportunity ability" of health information sharing among the elderly, the following countermeasures and suggestions are put forward to guide the elderly to share network information correctly.

Deficiency and Prospect
Based on the MOA theoretical model and self-determination theory, this study explores the influencing factors and mechanism of health information sharing behavior of the elderly under the background of epidemic normalization from the three dimensions of motivation opportunity ability, expands the research in the field of information sharing behavior to a certain extent, and finally puts forward relevant countermeasures and suggestions combined with the empirical results. Considering the reliability of the questionnaire collection results, the research project members have direct or indirect guidance for the elderly to fill in the questionnaire. Besides, the requests of the research project members were rejected by many elderly people due to their strong vigilance. Therefore, the number of questionnaires collected is limited to a certain extent. In addition, the scope of the questionnaire is in China, whose situation of epidemic prevention and control is different from that in the world. Therefore, the conclusions on the influencing factors of health information sharing behavior of the elderly are lack universality in the world. In future research, we can further expand the scope of research samples, continue to explore the health information sharing behavior

of the elderly under the normalization of epidemic situations abroad, and compare it with that in China. In addition, the normalization of the epidemic situation is a duration scope, and the questionnaire collection time of this study is only a time point within the duration scope. Therefore, future research can also explore the changes in health information sharing behavior of the elderly over time through multiple empirical investigations under the condition of long-term coexistence of epidemic situations.

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