Health Information Avoidance Behavior and Influencing Factors of Cancer Patients in the Smart Media Era: A Preliminary Exploratory Study

Fuzhi Wang

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Abstract

Background: Objectives: To explore the influencing factors and path of health information avoidance behavior of cancer patients in the age of smart media, and to construct a theoretical model of influencing factors. Methods: Face-to-face interviews were used to collect primary data, following the steps of the rooted theory research method. NVivo 12 software was applied to code and analyze the data, and a theoretical model of the factors influencing the health information avoidance behaviors of cancer patients was constructed by combining with the Stimulus-Human Body-Response (SOR) theory. Results: This study proposed six research hypotheses by analyzing the content of the interviews, which showed a causal relationship between psychological factors and health information avoidance behavior; personal, informational, and environmental factors, while indirectly influencing the health information avoidance behavior of cancer patients through the mediating role of psychological factors; capacity factors moderated the chain of factors from information factors and environmental factors to psychological factors to health information avoidance behaviors, respectively. Conclusions: In this study, we proposed a theoretical model of the factors influencing cancer patients' health information avoidance behavior in the smart media era. This model can summarize the influencing factors of cancer patients' occurrence of health information avoidance behaviors in the environment of the Smart Media Era, and provides research hypotheses and theoretical frameworks for further explaining the role path relationships between the influencing factors.

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1. Background

Currently, the incidence and mortality rates of cancer are increasing year by year globally, making it a public health challenge for mankind. According to the World Health Organization, cancer is one of the leading causes of death worldwide [1]. In the United States and Germany, one in four people die of cancer [2]. Currently, the burden of cancer in China is also increasing, according to the Global Cancer Report [3]: in 2020, there will be about 19.3 million new cancer cases worldwide, of which 4.57 million will be new cancer cases in China, accounting for 23.7% of the world's total, and the number of deaths will be about 3 million, accounting for about 30% of the world's total, so that the number of new cases of cancer and deaths in China ranked first in the world. According to the latest data [4] from the International Agency for Research on Cancer (IARC), there will be about 20 million new cancer cases globally in 2022, of which 4,824,700 new cases and 2,574,200 deaths will occur in China. The number of new cancer cases is projected to reach 30 million globally in 2050, while at the same time, the cancer mortality rate will double.

Smart media is a technology-oriented form of media. With the rapid development of emerging technologies, smart media will improve the ability to disseminate information, enhance the effectiveness of information dissemination and provided innovative communication methods [5]. We will enter a smart media era where everything is a medium. However, the acceleration of information dissemination in the age of smart media is accompanied by a series of risks, which will make the information show the characteristics of diversification, change, disorder, explosion, and multidirectional dissemination, and spread rapidly in the form of "nuclear fission" [6]. Due to the arrival of the smart media era, the public's access to health information has gradually evolved to a variety of channels, and a large amount of health information can be accessed and queried through a series of convenient channels such as Jitterbug, health apps, Baidu, and WeChat public numbers. Health information here refers broadly to all knowledge, skills, and behaviors related to a person's mental and physical health [7]. In the environment of the Smart Media Era, when massive amounts of health information flood together into the scope of the user's field of vision, when the user perceives the problems of information overload, information risk, and privacy leakage, it triggers the user's negative emotions such as fatigue, fear, and anxiety [8], which further affects the user's decision-making on the behavior of dealing with the information [9]. However, cancer patients are a group of special chronic disease groups with high morbidity and mortality rates [10] that are more vulnerable compared to healthy populations, and cancer patients in the environment of the Smart Media Era will be affected by utilizing health information during the period of querying or obtaining health information when they encounter incorrect health information [11]. At the same time, with the rapid development of digital communication technology, cancer patients will face a series of problems in the face of a variety of health information resources. According to a study in the United States, few cancer patients assess the accuracy of health information sources when looking for online health information resources, which can make it difficult for cancer patients to find the most valuable health information websites [12]. Another study found that cancer patients have higher negative emotions compared to other healthy populations, and that this negative emotion affects cancer patients' trust in online health information [13]. According to research, middle-aged and elderly people account for the majority of cancer patients [14], and the current environment of information overload and false information in the network era, coupled with the low health literacy of cancer patients themselves [15], makes it easy for them to fall into the predicament of "information cocoon". At the same time, cancer patients understand that the negative emotions caused by the poor prognosis of the disease can lead them to have less hope for the cure rate and survival of the disease. As a result, cancer patients may intentionally not view valuable health information, a behavior

known as health information avoidance. Health information avoidance first appeared in the field of psychology, where psychologist K. Seeny argued that information avoidance is any behavior in which people delay accessing or resisting information that may be needed in response to perceived health stress or a potential threat [16]. Health information avoidance behavior triggers higher decision-making costs for users, delays in prognosis and treatment timing, as well as corresponding threats to the physical and mental health of cancer patients, and how to help cancer patients access and utilize health information in a timely and effective manner is a challenge that is now urgently needed.

Some developed countries and regions have realized that health information avoidance behavior will have negative impacts on users, and have conducted a large number of related research studies in order to guide users to rationally treat and intervene in health information avoidance behavior. The impact of information avoidance behaviors on cancer patients has been demonstrated in a wide range of studies, with a series of findings in the literature suggesting that health information avoidance behaviors can result in undesirable behaviors for cancer patients, such as cancer screening rates, when 39% of cancer patients are somehow unwilling to know their risk of cancer [17]. Numerous scholars have identified a number of factors that influence the occurrence of health information avoidance behaviors in cancer patients. A typical study was conducted by Elena Link and other scholars using the Risk Information Search and Processing Model (RISP) to divide the sample of the study into people with and without experience of cancer, and in both groups, the findings showed that people with a fatalistic view of cancer risk, those with lower levels of health literacy, and those who were less trusting of the information sources would frequently avoid health information [18]. Jiyoung Chae and other scholars investigated the prevalence, predictors, and psychosocial mechanisms of cancer information avoidance (CIA) in Americans and found that cancer information overload, cancer fatalism, and social support were predictors of CIA [19]. PRESTIN A and other scholars found that the majority of Americans use the Internet as a primary source of health information, which has led to a higher rate of cancer information avoidance on Internet platforms than other channels due to Americans questioning the credibility of online health information [20]. Heather Orom and other scholars investigated the current status of whether 1005 participants were aware of their risk for common diseases (diabetes, colorectal cancer) and found that lower levels of health literacy and health information avoidance behaviors increased the probability of participants answering that they were unaware of their risk for common diseases [21]. Charlotte Vrinten et al. researchers included 1,258 older adults in England to explore the relationship between having a fear of cancer and cancer information avoidance behaviors, and found that people with cancer fear and

psychosocial stress were more likely to show avoidance behaviors towards cancer-related information [22]. Scholars such as RF. McCloud explored the impact of social factors on information avoidance in 519 cancer survivors and found that participants who were younger, had lower incomes, were female, had more debt, and had difficulty accessing appropriate information were more likely to engage in health information avoidance behaviors [23]. In contrast, it is unknown whether there is a willingness to avoid health information among cancer patients in mainland China, and what factors influence health information avoidance behavior.

In this study, we take cancer patients as the research object and apply qualitative research methods to carry out a preliminary exploratory study on the health information avoidance behavior of cancer patients and their influencing factors, to explore the influencing factors and logical correlations of the health information avoidance behavior of cancer patients. Provide support and assistance for the follow-up of relevant health education and health promotion work.

2. Information and methodology

2.1 Sample Selection

In order to gain as comprehensive an understanding as possible of the factors influencing cancer patients' information avoidance behaviors, interviews were conducted with family members of cancer patients, physicians, and nurses, in addition to those from clinically hospitalized cancer patients. Purposive sampling was used to select cancer patients from a tertiary hospital in Bengbu City from September to December 2023 for in-depth interviews. The study population consisted of cancer patients, caregivers of cancer patients, physicians, and nurses. The sample inclusion and exclusion criteria, are shown in Table 1.

Table 1. Sample inclusion and exclusion criteria

Interviewees	Inclusion criteria	Exclusion criteria
cancer patient	(1) age 18 years or older; (2) histologically or pathologically confirmed diagnosis of cancer; (3) ability to independently use the internet/smart devices; (4) informed and consent to participate in the study.	(1) patients with cognitive dysfunction or mental illness; (2) lack of basic literacy skills; and (3) withdrawal from the survey midway through.
Caregivers of cancer patients	(1) aged 18 years or older; (2) identified by the patient as the primary caregiver; (3) with the ability to independently use the internet/smart devices; and (4) informed and consented to participate in the study.	(1) caregivers with cognitive impairment or mental illness; (2) lack of basic literacy skills; and (3) withdrawal from the survey.
Doctors and nurses	(1) healthcare professionals with a bachelor's degree or higher; (2) more than 5 years of clinical practice; and (3) informed and consented to participate in the study.	(1) withdrawal from the survey.

2.2 Development of survey instruments

In this study, we developed a semi-structured interview questionnaire on factors influencing

health information avoidance among cancer patients in the age of smart media. The process of developing the questionnaire was as follows: In the first step, based on the relevant research literature, we initially drafted a semi-structured interview outline, and invited experts in the fields of medical informatics and health education to evaluate the interview outline and suggest modifications. A preliminary interview outline was developed. In the second step, five cancer patients were selected in the hospital using purely random sampling. Pre-interviews were conducted by applying the interview outline, and the validity, comprehensibility, and comprehensiveness of the interviews in the outline were evaluated based on the feedback from the interviewees. In the third step, based on the results of the pre-interviews, a group discussion meeting was held to finalize the final interview questionnaire. The interview outline is divided into three parts: the first part is the definition of relevant concepts; the second part is the basic information of the interviewees; and the third part is the relevant influencing factors of the health information avoidance behavior of cancer patients in the age of smart media. The final interview outline is shown in Table 2.

Table 2. Outline of the interview

Interview Topics	Main outline content
Part I: Definition of relevant concepts	The concept of Health Information Avoidance Behavior as mentioned in this syllabus: It is a behavior that occurs when people are faced with a health problem and refers to the act of avoiding or delaying access to valuable but unwanted health information.
Part II: Basic Information	Age, education level, per capita monthly household income, type of cancer
Part III: Factors Influencing Health Information Avoidance Behavior	1. Do you have regular medical checkups? (Reasons for yes or no) Do you usually pay attention to your health? When you feel sick, do you consult a doctor or inquire about diseases?
	2. Do you actively inquire or passively receive some knowledge related to your own disease on smart media platforms (WeChat, Xiaohongshu, Jitterbug, Baidu, health apps, etc.)?
	3. Do you have any experience circumventing knowledge related to your illness while using the Smart Media platform?
	4. Do you feel anxious, worried and sad about your illness? Do you deliberately avoid some health-related knowledge because of these negative emotions?
	5. What health-related knowledge do you not want to read? What areas of health-related knowledge are you more concerned about?
	6. What are your reasons for avoiding this health-related knowledge?
	7. In what contexts do you reject or not want to learn about this health-related knowledge?
	8. How do you usually circumvent health-related knowledge?
	9. How does circumventing health-related knowledge affect you?

2.3 Data Acquisition

This study applied face-to-face interviews to complete data collection. The interviews were arranged to be conducted in a quiet conference room in the hospital, where a tape recorder and a specialized guide were set up for the interviews. Interviewers were researchers with some clinical work experience. The content of all interview entries and the interview technique were discussed in detail by the interviewer prior to the start of the interview. The interview time for each interviewee

was controlled at 20–30 minutes. The entire interview was recorded through audio-recording software, and the text was transcribed in a timely manner at the end of the interview to form a well-organized transcript for analogical refinement and comparative validation and to complete the organization of the interview data. The names of the respondents were anonymized in this study, with the letter P (sample) plus Arabic numerals in the order of 1–21 identifying the cancer patient (e.g., P1 for the first cancer patient) and the letter C plus Arabic numerals in the order of 1–5 identifying the family members of the cancer patient. The letter D plus the Arabic numerals 1–5 identifies the doctor, and the letter N plus the Arabic numerals 1-4 identifies the nurse. A gift ($10 value) was given to each respondent researcher after all surveys were completed.

The sample size of the interviews was determined based on the principle of information saturation, and after three consecutive interviews with three interviewees and still no new responses appeared, we considered that the collected data had reached saturation, and the data collection was completed.

2.4 Data analysis

This study applies a rooted theory approach to analyze the health information avoidance behaviors and influencing factors of cancer patients in the age of smart media. For the collected data, the transcribed text was imported into the qualitative research software NVivo 12, and the data materials were organized and coded. Data analysis is divided into three steps. In the first step, open coding was used to collect, organize, compare, and analyze every word, sentence, and event in the interview data, so that statements that completely express the same meaning can be used as labels for the next step of conceptualization to lead to the formation of more categories. During the open coding process, in order to avoid subjective bias on the part of the researcher and to minimize the influence of the researcher on the content material of the interviews, the original responses from the interviews were used in all of this study, and transcripts of the interviews that did not have substantive content were deleted. In the second step, principal axis coding is used, i.e., through deduction and induction, the different categories obtained in open coding are continuously compared. In the third step, selective coding was used to study the connection between the main categories from the perspective of logical relationships, create a clear story line through repeated deliberation and reasoning, determine the path relationship between the main categories, and ultimately construct a theoretical model of the factors influencing the health information avoidance behavior of cancer patients in the age of smart media. and integrated into higher-level principal categories, and conceptual categories for some research phenomena are developed. In the third step, selective coding was used to study the connection between the main categories from the perspective of logical

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2.5 Ethical approval

The study was approved by the Ethics Committee of Bengbu Medical University (2024298). Informed consent was obtained from all participants. All data was collected anonymously and kept confidential.

3. Results

3.1 Sample characteristics

We interviewed a total of 34 respondents, including 21 cancer patients, 4 family members of cancer patients, 5 doctors, and 4 nurses. The basic information about the cancer patients is shown in Table 3.

Table 3. Basic characteristics of cancer patients (n=21)

variant	N (%)
Gender	
Male	10(48)
Female	11(52)
Age group	
20-30	2(9.5)
31-40	2(9.5)
41-50	9(43)
>50	8(38)
Highest educational level[a]	
Primary	16(76)
Intermediate	2(9.5)
Senior	3(14.5)
Monthly household income（CNY）	
<2000	1(5）
2001-4000	10（48）
4001-8000	6（28）
>8000	4（19）
Type of Cancer	
lymphoma	9（43）
lung cancer	2（9）
kidney cancer	2（9）
liver cancer	4（19)
thyroid cancer	1(5）
pancreatic	1（5）
cervix	1（5）
Malignant tumor of the mediastinum	1（5）

Notes: a: Primary (primary and junior high school); intermediate (secondary vocational education or senior high school); and senior

(college, bachelor's degree and above).

3.2 Category Extraction of Factors Influencing Health Information Avoidance Behavior

We summarized the influencing factors affecting cancer patients' health information avoidance behaviors into five aspects by analyzing the interview content, <u>as shown in Schedule 1 for details.</u>

Further, we applied NVivo12 software to code the 13 subcategories constructed by the coding of this study to form a hierarchical map of factors influencing the health information avoidance behavior of cancer patients in the age of smart media. The hierarchical map includes information factors, ability factors, psychological factors, personal factors, and environmental factors. Due to the difference in the frequency of being mentioned at different coding points, the distribution of the hierarchy of factors influencing the health information avoidance behavior of cancer patients varies, and the higher the frequency of being mentioned, the larger the area it occupies in the hierarchy diagram. The results of the analysis are shown in Figure 1.
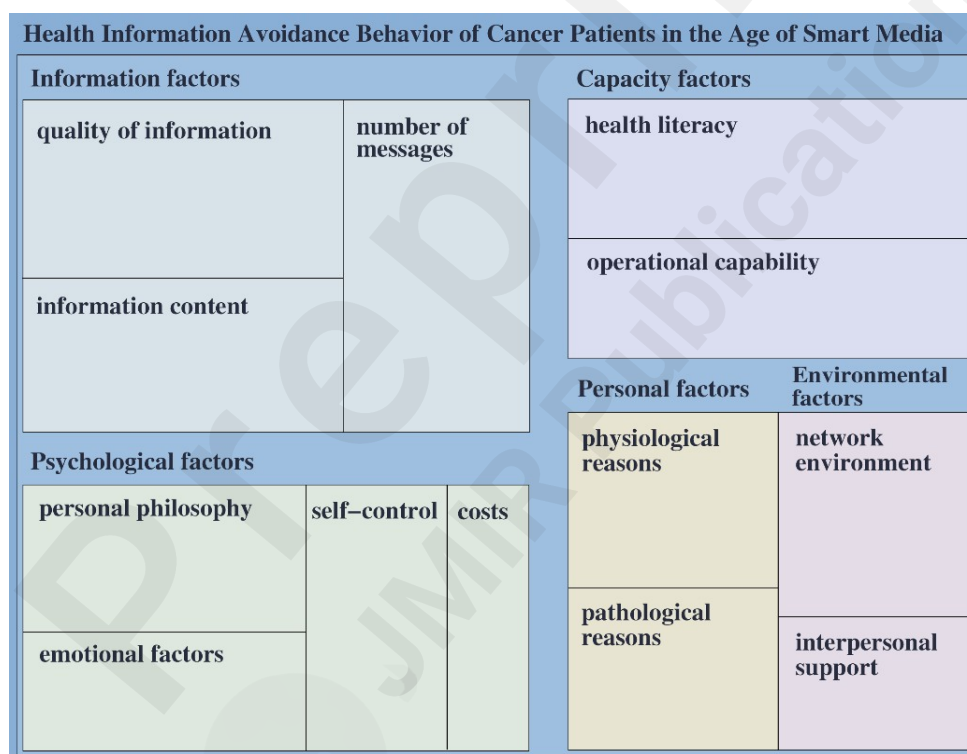

Figure 1. Hierarchy of Factors Influencing Health Information Avoidance Behavior of Cancer Patients in the Smart Media Era

3.3 Construction of a Theoretical Model of Cancer Patients' Health Information Avoidance Behavior in the Smart Media Era

3.3.1 Formulation of the Research Hypothesis

1. Intermediary relationship

In this study, we formulated three research hypotheses about mediated relationships based on respondents' answers.

P17: Now that I am older, I need to wear presbyopia glasses when I look at health information on my cell phone, which I find particularly troublesome and usually forget after I have read it, and I

blame myself for my memory problems, which makes me depressed, and I don't want to go online to look at health information (hypothesis 1).

N1: Cancer patients will reject any health information during chemotherapy because their physical condition at this time is more difficult, their mood is also very low, they can't listen to any knowledge you tell them, and they won't want to listen to health promotion or health knowledge education (hypothesis 1).

P8: If I go online to search for health knowledge, let's say I type in a health problem that I don't understand. The cell phone page will come out with explanations from experts in various hospitals, but their explanations are superficial, not in-depth, or even ambiguous or talking about objective axioms, which can't help me, and then it will make me get bored with the online health knowledge, and I don't want to continue to read about it anymore (hypothesis 2).

P11: Since I got sick, a lot of platforms started to push knowledge and videos about my illness to me. If the videos pushed to me are some videos released by individuals, not official information, or originated from some experts, which I think are less credible and push so much information that I can't browse them completely, I will start to get tired of the health information, and I will start to avoid the health information (hypothesis 2).

P12: When I want to go online to inquire about my health, I find that some health counseling platforms require me to fill in basic personal information, at which point I am afraid that filling in my personal information will lead to privacy leakage, and I am less inclined to continue to inquire about my health information (hypothesis 3).

N2: When patients go online for health knowledge, some platforms may involve patients' health problems. Patients do not want their health issues to be known by others because patients are afraid that their condition will be known by others. I think the patient's most worrying issue is that he is afraid of others knowing his privacy, and at the same time, he is afraid of others knowing how long he has left to live, and he is also afraid of others proliferating and exploiting his condition (hypothesis 3).

Based on the above analysis, we propose research hypothesis 1: Psychological factors mediate the relationship between personal factors and health information avoidance behavior. Research Hypothesis 2: Psychological factors mediate the relationship between information factors and health information avoidance behavior. Research hypothesis 3: Psychological factors mediate the relationship between environmental factors and health information avoidance behavior is proposed.

2. Regulatory relationship

Further, we formulated two research hypotheses about the moderating relationship based on the

responses of the remaining respondents.

P4: Now that I am sick, I will use my cell phone to look up health information about diet, but nowadays the health information on the Internet is inconsistent. Some say you can eat cilantro, and some say you can't, and I don't know whose advice to follow. Since I am also less educated and do not have the ability to differentiate, this makes me feel very conflicted, and I do not want to continue reading about health (hypothesis 4).

C4: My mother simply looks at the health information on her cell phone and doesn't take it seriously; after all, online health information comes from many places, and not every piece of health information is correct. Since we are in the hospital, we don't trust the health information on our cell phones because we can't tell if it is right or wrong, but instead we see negative information and think about ourselves, which increases my mother's anxiety. I will tell my mother not to look at the health information on the internet and to listen to the doctor (hypothesis 5).

Based on the above analysis, we propose research hypothesis 4: Capacity factors play a moderating role in the chain of factors from information factors to psychological factors to health information avoidance behaviors. Research hypothesis 5: Capacity factors play a moderating role in the chain of factors from environmental factors to psychological factors to health information avoidance behaviors.

3.3 Causal relationship

In order to analyze the relationship between the paths of action as comprehensively as possible, we further analyzed the responses of the interviewees.

D3: Most patients find it difficult to accept when they are first diagnosed with cancer, and patients worry that their disease will not be cured, and in turn, patients develop anxiety and depression, at which point they choose to avoid health knowledge (hypothesis 6).

N2: Failed or aggravated treatment has a greater impact on cancer patients, when the patient's mood will be very low and they no longer have any hope for life, thus any health knowledge patients will not believe (hypothesis 6).

Based on the above analysis, we propose research hypothesis 6: psychological factors present a causal relationship with health information avoidance behavior.

3.3.2 Construction of theoretical models

By summarizing the relationship between the influencing factors, we find that the relationship between the influencing factors is in line with the paradigm of the SOR model theory. The "stimulus-organism-response" theoretical model suggests that the mechanism of action of human information activities is not a simple "stimulus-response" model; there is a process of information internalization

in which the individual receives external information stimuli, and the information content is transmitted to the individual's mental level and produces cognitive responses, which in turn change the individual's information behavior [24].

The main influences on the health information avoidance behaviors of cancer patients include personal factors, ability factors, psychological factors, information factors, and environmental factors. Among them, personal factors, information factors, and environmental factors belong to the external factors (S) in the process of users' exposure to health information; psychological factors and ability factors are the internal factors (O) resulting from users' reception of health information stimuli; and information-avoidance behaviors are the final performance of users (R).

This study builds on the initial concepts, categories, and master categories obtained from the pre-coding and further theoretical condensation and integration to construct a theoretical model of the factors influencing health information avoidance behaviors in cancer patients, as shown in Figure 2. The theoretical model was constructed based on the consideration of internal and external factors with five aspects, namely, personal factors, ability factors, psychological factors, information factors, and environmental factors, which can explain the health information avoidance behaviors of cancer patients in the age of smart media in a holistic way.
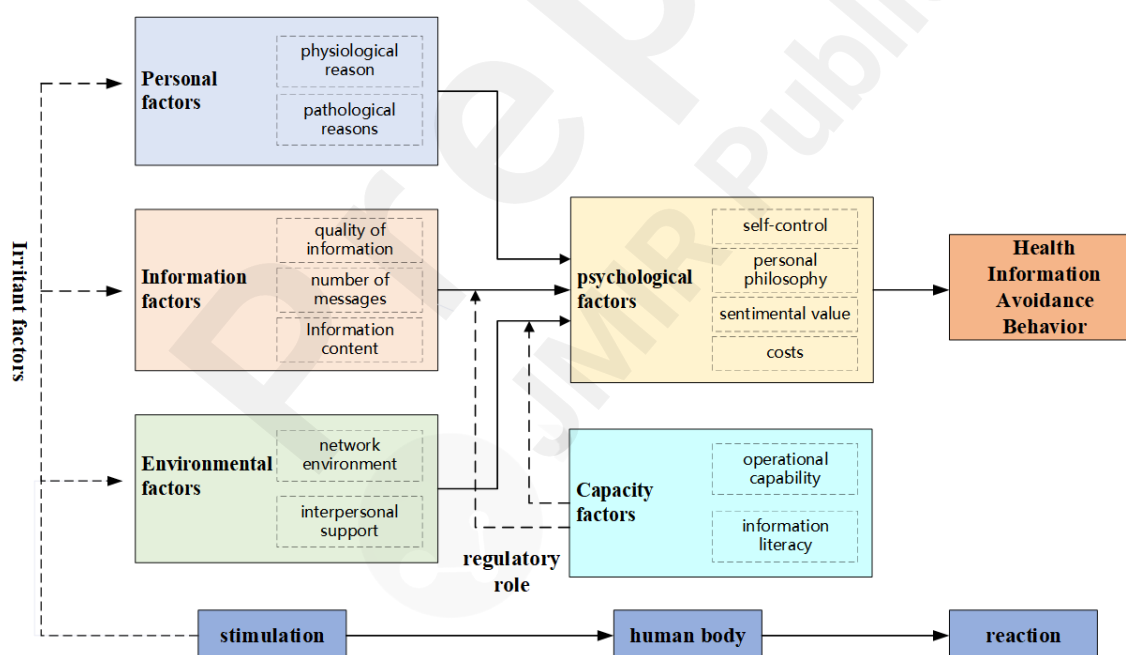

Figure 2. Theoretical Model of Factors Influencing Health Information Avoidance Behavior of Cancer Patients in the Smart Media Era

4. Discussion

In this study, we initially explored the factors influencing the health information avoidance behavior of cancer patients through face-to-face interviews. The factors that may influence cancer patients' health information avoidance behaviors are diverse.

The influence of personal factors on the occurrence of health information avoidance behaviors

in cancer patients is an issue that deserves to be explored in depth. In this study, personal factors are mainly influenced by physiological and pathological reasons. According to research, the incidence of cancer increases exponentially from the age of 40 onwards, and the majority of cancer patients are in the middle-aged and elderly stage [14], in which patients are prone to problems such as vision loss and memory aging, which diminish the ability of cancer patients to comprehend, memorize, accept, and learn from health information and increase the likelihood that cancer patients will develop health information avoidance behaviors. In addition, diagnosis and treatment can be very stressful and painful events for cancer patients. According to previous surveys, it was found that up to 52% of cancer patients have significant psychological distress [24]. Psychological distress is an unpleasant emotional experience, and these experiences can affect a patient's willingness to inquire about and access health information, thereby increasing the willingness of the patient to engage in health information avoidance behaviors.

We found that capacity factors are key factors influencing the occurrence of health information avoidance behaviors in cancer patients. The capacity factors in this study consisted of two main categories: operational capacity and health information literacy. Health information literacy is mainly influenced by physical fitness, literacy, and the ability to use information. According to the motivational information management theory, the ability of users to process information affects their assessment of efficacy, and if the efficacy of processing information is low, users tend to avoid information [25]. We have found that most cancer patients have low levels of health information literacy and that these patients tend to be bound by an "information cocoon," in which they are unable to fully understand and process health information and will only pay attention to and receive health information that matches their own views and interests. The phenomenon of health information with cognitive conflict and, thus, health information avoidance behavior is consistent with the findings of Peng Li Hui and other scholars [26]. We found that operational capacity also influences the occurrence of health information avoidance behaviors in cancer patients. Similar ideas were validated in a study of head and neck cancer survivors in the north-west of England [27]. And our study agrees with this point of view, especially that older and less educated cancer patients generally responded to a series of problems, such as difficulties in the use of smart devices and capacity in the operation of querying health knowledge, the existence of which will further deepen the degree of health information avoidance behavior of cancer patients. At the same time, with the full arrival of the digital era, the widespread use of smart devices will make middle-aged and elderly users fall into the dilemma of the "digital divide" [28]. In mainland China, however, there is a lack of health awareness among cancer patients [29] and relatively limited health education resources [30].

This suggests that we should enhance health information literacy education for cancer patients, thereby reducing the occurrence of health information avoidance behaviors among cancer patients.

Psychological factors, as the internal feelings of an individual, have an important and direct role in generating health information avoidance behaviors in cancer patients, which belong to the internal factors, and they will prompt cancer patients to develop health information avoidance behaviors when they are faced with a situation that is not in line with their psychological situation. According to previous studies, it has been proven that people often tend to seek health information that is consistent with their prior knowledge, beliefs, and perspectives and avoid exposure to information that is internally conflicting [31]. The main psychological factors we analyzed in the data from the survey included self-control, personal philosophy, emotional value, and costly costs. We found that self-control is a double-edged sword in terms of health information avoidance behaviors; cancer patients with high self-control will follow the advice of their healthcare providers and read only the health information recommended by the hospital, thus avoiding distress caused by invalid or false health information. Cancer patients with low self-control show disinterest in health information and don't want to think about it, which may lead to a delayed recovery from the disease. Based on the traditional relationship between information dissemination and individual behavioral response mechanisms, people often tend to seek out information that is consistent with their prior knowledge, beliefs, and perspectives and avoid exposure to information that conflicts with these internal states. We found that some cancer patients follow health concepts that they have previously possessed, believing that they have personally experienced health knowledge recovery advice to have a certain degree of truthfulness. Our study also found that most cancer patients have a strong psychological burden and that negative information and fearfulness, as well as feelings of helplessness, enhance the occurrence of health information avoidance behaviors in cancer patients. Health information avoidance behavior occurs when cancer patients may experience certain negative emotions when viewing health information about the poor prognosis of their disease. Consistent with the findings of Miles and other scholars [32]. This suggests that we should build cancer patients' healing confidence strategies to help cancer patients reduce their fear of the disease. At the same time, future health education and online information content about cancer patients should be written in a neutral tone so as not to cause fear among cancer patients and to inform patients about the possibility of a cancer cure. In addition, the occurrence of health information avoidance behavior in cancer patients is not the result of impulsiveness but of a relatively rational decision-making scheme based on cost perception and comprehensive consideration of time cost, economic cost, and health risk. Previous research has found that using more resources to process unwanted health information often

corresponds to a higher chance of information avoidance [33]. Our study agrees with this view that cancer patients' perceived costs of health information are mainly in the form of time and financial consumption, and when their perceived costs are greater than their perceived benefits, cancer patients develop health information avoidance behaviors.

Information factors can have an impact on the occurrence of health information avoidance behavior in cancer patients. Information factors are external stimuli such as the quantity, content, and quality of information that cancer patients are exposed to during active searching or passive reception of information. In the environment of the Smart Media Era, the amount of health information on various platforms far exceeds the ability of users to process the information; excessive and repetitive information will cause unpleasant feelings; and frequent pushing will cause anxiety in users, which will lead to the occurrence of health information avoidance behavior. The low usefulness, utility, readability, and unreliable content of some of the health information is consistent with the findings of previous studies [34, 35]. We found that when cancer patients read health information, they pay special attention to the reliability, authenticity, authority, and other characteristics of the information and use this as the basis for judging whether the information is suitable for further reading. If the patient reads the information, more disturbing factors may cause cancer patients to exhibit health information avoidance behavior. This is consistent with the findings of Caiqiang Guo and other scholars [36], who studied users' avoidance behaviors towards online information on diabetes. Caregivers and healthcare professionals also expressed concerns about the quality of health information on the Internet. Similar issues have been found in studies in the United States [37] and Australia [38]. Our study shows that cancer patients are more concerned about health information with authority, and the sources of this information are mainly official videos released and health public numbers recommended by healthcare professionals. Lower-quality health information creates more decision-making difficulties for cancer patients in processing relevant information. This is in line with the findings of Barbour J. B. and other scholars [39] and Peng Li-Hui and other scholars [26], which indicate that the source and content of health information themselves are one of the reasons that lead to users' health information avoidance behavior.

Environmental factors, too, are an important factor in the occurrence of health information avoidance behavior in cancer patients. Environmental factors refer to external stimuli such as the online environment and interpersonal factors through which cancer patients are exposed to information. Previous research has found that cancer patients express concerns about the legitimacy and reliability of health information on the Internet [40]. We found that most cancer patients prefer to obtain and query health information from formal platforms and websites, and that cancer patients

perceive a higher risk of privacy leakage. Health information avoidance behaviors will be more likely to occur on online platforms that are less secure or require access to basic personal information. We also found through interviews that interpersonal factors also influence cancer patients' health information behavior. This is consistent with the findings of Yu Chi and other scholars [41], who emphasized social support as a key factor in health information acquisition among ovarian cancer patients. When cancer patients are supported by society and family, they are more willing to listen to health information shared by family and friends, which may also enable cancer patients' avoidance behavior towards health information to be transformed into access behavior.

In this study, although we used face-to-face interviews to initially explore the health information avoidance behaviors and influencing factors of cancer patients in the environment of the Smart Media Era, the results of this study are of great value in understanding the causes of health information avoidance among cancer patients in the environment of the Smart Media Era in mainland China. At the same time, this study is of great significance and value for subsequent research. First, this study is valuable in providing support for conducting relevant cross-sectional research investigations and research hypotheses at a later stage. Second, from the perspective of health education and health promotion, this study plays an important role in establishing effective coping strategies for health information avoidance behaviors in the future. Finally, in terms of significance from a clinical perspective, this study has significant clinical value for the construction and application of subsequent health information avoidance behavioral intervention programs for cancer patients.

5. Limitations

There are some limitations to this study. First, the research hypotheses that we have formulated in this study are only analyzed based on the content of the interviews, and the next step should be to verify these research hypotheses with data. Secondly, this study is a qualitative study, which merely analyzes the phenomenon; to go further and deeper to explain the reasons behind the phenomenon requires the design of a rigorous mixed qualitative and quantitative study. Third, it is difficult to include all types of cancer patients in the sample of interviews, and further comprehensive investigations are needed to further understand the factors influencing the health information avoidance behaviors of the remaining types of cancer patients.

6. Conclusions

In this study, we propose a theoretical model of the factors influencing cancer patients' health information avoidance behavior in the age of smart media. This model can summarize the influencing factors of cancer patients' occurrence of health information avoidance behaviors in the

environment of the Smart Media Era and provides research hypotheses and theoretical frameworks for further explaining the role-path relationships between the influencing factors. Based on this model, a theoretical framework was laid down for the later validation of relevant research hypotheses using cross-sectional survey methods, and support and assistance were provided for the subsequent development of relevant health education and health promotion work.

Appendix 1: Results of analysis of semi-structured interviews with respondents

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Supplementary Files

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Untitled.