

Investigating Influencing Factors of Public Information Seeking Behavior in Major Public Health Emergencies: Postprint

Authors: Wang Xinyue, Liu Chang

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Abstract

[Purpose/Significance] In major public health emergencies, the public demonstrates strong demand for relevant information, with information seeking becoming a critical pathway for understanding and responding to risks. How do public attitudes toward information seeking shape their actual behaviors? What factors influence these attitudes and behaviors? Are there differences across demographic groups? Addressing these questions facilitates the provision of targeted information services, enhances individual coping efficacy, and supports effective epidemic prevention efforts. [Method/Process] This study employs an online questionnaire survey of 719 domestic respondents to investigate the factors influencing public information seeking attitudes and behaviors during major public health emergencies. [Results/Conclusions] The findings indicate that public information seeking attitudes and behaviors differ significantly across regions, age groups, and education levels. Perceived risk, emotional response, information sufficiency, subjective information norms, and perceived behavioral control positively influence both attitudes and behaviors toward information seeking. Information seeking attitude mediates the relationship between these factors and information seeking behavior. Based on these results, recommendations are offered from the perspectives of information dissemination channels, information transmission processes, and information search platforms.

Full Text

Preamble

Abstract: [Purpose/Significance] In major public health emergencies, the public has a strong demand for relevant information, and information seeking has become an important way for the public to understand and respond to risks.

When facing risk information, how does the public's attitude toward information seeking shape their behavior? What factors influence public attitudes and behaviors toward information seeking? Are there differences among different groups? Answering these questions helps provide targeted information services for the public, enhance individual coping effectiveness, and carry out effective epidemic prevention work. [Method/Process] An online questionnaire survey was conducted among 719 domestic respondents to explore the factors influencing public attitudes and behaviors toward information seeking in major public health emergencies. [Result/Conclusion] The study shows that: public information seeking attitudes and behaviors differ significantly across regions, ages, and education levels; perceived risk, emotional response, information sufficiency, information subjective norm, and perceived behavioral control positively influence public information seeking attitudes and behaviors; information seeking attitude mediates the relationship between these factors and information seeking behavior. Based on the findings, suggestions are proposed from the perspectives of information release channels, information dissemination processes, and information search platforms.

Keywords: information seeking behavior; information seeking attitude; risk information seeking; public health emergencies

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Major public health emergencies are characterized by strong spread and high harm, with rapid transmission speed, wide infection scope, and difficult prevention and control, making them highly likely to evolve from public safety incidents involving national health into social problems involving negative public opinion. However, in major public health emergencies, problems such as rumor proliferation and information redundancy often emerge, potentially leading to public psychological imbalance [1]. With the formulation of the "Healthy China" strategy, citizens' awareness of health risk cognition has increased. In the internet environment, information seeking behavior has become an important manifestation of the public's response to external stimuli [2], and the public's attitudes and behaviors toward information seeking have changed. When individuals perceive uncertainty in their risk cognition, they often actively search, query, and browse information through mobile internet. The cognitive paradigm of information science emphasizes studying individual information behavior within contexts [3]. Exploring the factors influencing public information seeking in major public health emergencies can help construct information dissemination pathways from information publishers through information sources to information receivers, improve information dissemination efficiency, and ensure that necessary information reaches the public quickly; it can also help respond to such risk situations and enhance the systematic collaborative effectiveness of effective information dissemination and reception.

1 Theoretical Foundation

1.1 Risk Information Seeking and Processing Model (RISP)

In 1999, J. Griffin et al. proposed the Risk Information Seeking and Processing (RISP) model [4], which suggests that when facing specific health risks, differences in individual characteristics may lead different individuals to seek and process information in different ways and affect their possible behavioral patterns. The social amplification process of risk goes through four stages: “risk event—information dissemination—social response—ripple effect” [5]. After a public emergency occurs, the production, dissemination, and interpretation of risk information among multiple communication subjects play a role in amplifying or attenuating risk [6]; therefore, reasonable control of the information process is crucial.

This study uses the RISP model to construct its research framework. The RISP model proposes that individuals’ desire for “sufficiency” triggers a shift from heuristic processing to systematic processing [7], thereby generating more stable attitudes. In risk situations, the public is willing to process risk information more systematically rather than heuristically, that is, to expend more cognitive effort to search for as much information as possible. On this basis, the RISP model incorporates basic elements of the Theory of Planned Behavior [4]. The model proposes that factors influencing individuals’ information seeking include individual characteristics, perceived risk, emotional response, information insufficiency, information subjective norm, information seeking attitude, and perceived behavioral control [8]. This model shifts the focus from information content to the “person” in context, promoting a humanized understanding of risk information seeking mechanisms [9].

1.2 Empirical Research on the RISP Model

In recent years, the Risk Information Seeking and Processing model has been widely applied in health risk research, such as diseases [10], vaccines [11], and disaster response research, such as the 9/11 incident [12] and flood disasters [13]. Different researchers have repeatedly tested and actively expanded the model, affirming its explanatory power for seeking behavior [14].

Domestic researchers have also actively drawn on the RISP model to test its applicability in local cultural environments. Liu Lijuan’s research shows that the model can help explain and predict domestic public’s intention to seek information about genetically modified organisms, with information subjective norm, existing knowledge, and effective media cues all playing positive predictive roles [15]. Ding Yixia investigated college students’ cognition of food risks and their use of different media to search for food risk information through questionnaires and interviews [16]. Lan Xue focused on college students, drawing on the Risk Information Seeking and Processing model to reveal how health risk cognition affects information seeking by analyzing the cognitive needs behind college students’ information seeking behavior [17]. Cao Jindan, based

on the sense-making theory and combined with relevant elements of the RISP model, explored the factors influencing health risk information interaction behavior and their relationships in health risk cognition contexts, pointing out that users' health risk information interaction behavior is influenced by user individual characteristics, health risk cognition, emotion, information insufficiency, perceived information collection ability, and information characteristics [3]. Currently, related research suffers from problems such as limited domains, lagged investigation timing, reliance on specific emotions to replace emotional responses, and single respondent groups. Research on risk information seeking behavior from the perspective of information management needs to be further expanded [3].

1.3 Application of the RISP Model in This Study

Faced with sudden public health events characterized by long duration, rapid development stage changes, unknown risk resolution time, and lack of public coping experience, studying individuals' attitudes toward information seeking and information seeking behavior can help understand public information seeking motivations in public emergency contexts to better provide information services. The Risk Information Seeking and Processing model emphasizes attitudes and feelings related to information, with contextual factors and individual characteristics that are comprehensive and intervenable. Attitudes are closely linked to behavior, influencing information judgment and decision-making processes, and thus can also influence corresponding behaviors. The Technology Acceptance Model can help identify behavioral patterns to explain user information behavior when accepting new technologies or systems. This model proposes that behavioral intention is determined by usage attitude, and attitude is an important mediator between other factors and usage attitude [18]. Based on the RISP model and combined with the Technology Acceptance Model perspective, this study exploratorily examines information seeking attitude as a mediating factor.

2 Research Hypotheses

2.1 Individual Characteristics

Individual characteristics include demographic/sociocultural backgrounds and related experiences. Most risk perception research introduces various demographic or sociocultural variables to help explain differences in dependent variables. During SARS, the public showed differences in coping behaviors across gender, age, education level, and community epidemic severity [19]. Risk events often have distinct stage and regional characteristics, and perceived risk may differ among the public in different regions. Researchers surveyed residents in three different cities after the 9/11 incident and found differences in required information types across geographic regions [12]. Meanwhile, the public tends to use past experiences as reference standards to guide their thinking and behavior

in new situations [20]. Therefore, beyond basic demographic factors, the public's past experiences with similar risks and their severity are important indicators.

In summary, this study incorporates six demographic and sociocultural background factors—gender, age, education level, location during the epidemic, related experiences, and losses—to explore differences in perceived risk, information subjective norm, perceived behavioral control, information seeking attitude, and information seeking behavior among different groups facing public health emergencies.

Thus, the hypotheses are: - H1a: Individuals with different characteristics differ in information seeking behavior; - H1b: Individuals with different characteristics differ in information seeking attitude; - H1c: Individuals with different characteristics differ in perceived risk; - H1d: Individuals with different characteristics differ in information subjective norm; - H1e: Individuals with different characteristics differ in perceived behavioral control.

2.2 Information Seeking Attitude

Information seeking attitude refers to views and attitudes held toward information seeking. This study does not focus on specific search content but rather on individuals' general attitudes toward information seeking [21]. Generally, perceived information needs depend on whether information seeking is perceived as useful and instrumental. Individuals who perceive information seeking as effective will adopt proactive information acquisition strategies [8]. Attitudes include instrumental attitude and experiential attitude [22]. Instrumental attitude includes whether information seeking itself is valuable, beneficial, and helpful; experiential attitude is assessed by asking respondents to subjectively judge whether information seeking behavior is good or bad.

Thus, the hypothesis is: - H2: Information seeking attitude positively influences information seeking behavior.

2.3 Information Sufficiency

Information sufficiency is an individual's perceived need for additional information, representing the knowledge perceived as necessary to adequately respond to risk. Research indicates that the motivation for needing additional information is a decisive factor influencing individuals' decisions to seek more information to understand risk [7]. This shows that the need for information sufficiency motivates the public to search for information more proactively. Individuals who need more knowledge are more likely to hold positive attitudes toward information seeking and hope to obtain information through it.

Thus, the hypotheses are: - H3a: Information sufficiency positively influences information seeking behavior; - H3b: Information sufficiency positively influences information seeking attitude; - H3c: Information seeking attitude mediates the effect of information sufficiency on information seeking behavior.

The hypothetical model is shown in Figure 1 [Figure 1: see original paper].

2.4 Emotional Response

After major public health emergencies, the public's emotions clearly become more negative. During the COVID-19 pandemic, 79% of the public experienced "worry," along with emotions such as "fear" and "anxiety" [23]. Typically, anxiety, fear, helplessness, and panic are considered primary emotions during disasters. In risk contexts, individual emotions are essentially negative. However, positive emotions may also emerge. For example, after the 9/11 terrorist attacks, researchers found that emotions such as hope, gratitude, and love significantly increased after the crisis [24].

Unlike previous studies that mostly started from negative emotions, this study incorporates positive emotions. For a long time, researchers believed that emotions characterized by uncertain assessment, such as hope and anxiety, could promote systematic processing [25]. Both negative emotions [26] and positive emotions [27] can drive information seeking. The public experiencing positive emotions (such as hope and optimism) may broaden and build comprehensive cognitive evaluations by obtaining more information seeking alternative strategies [28]. Positive emotions can also promote cognitive processes to find creative solutions to problems [29].

This study exploratorily incorporates negative emotions such as fear, anxiety, and worry, as well as positive emotions such as hope, optimism, and gratitude, to explore possible effects of emotional responses on information seeking behavior and attitude. At the same time, there is also an influence relationship between emotional response and attitude. The traditional Theory of Planned Behavior does not fully consider the role of emotions in behavioral decision-making processes. However, increasing research reveals that emotions have an important influence on attitude formation and change [30]. Related experiments have verified that emotions, as a determinant of attitude, have a direct influence on attitude independent of cognitive structure [31]. Individuals' attitudes toward specific things arise from emotional experiences with those things [32], and attitudes are more likely to change under emotional information persuasion [33].

Thus, the hypotheses are: - H4a: Positive emotion positively influences information seeking behavior; - H4b: Positive emotion positively influences information seeking attitude; - H4c: Information seeking attitude mediates the effect of positive emotion on information seeking behavior; - H4d: Negative emotion positively influences information seeking behavior; - H4e: Negative emotion positively influences information seeking attitude; - H4f: Information seeking attitude mediates the effect of negative emotion on information seeking behavior.

The hypothetical model is shown in Figure 2 [Figure 2: see original paper].

2.5 Perceived Risk

Perceived risk includes individuals' estimates of the likelihood of harm to themselves, others, or the environment [13], representing the public's cognitive evaluation of potential risks that influences information seeking behavior [27]. Risk judgment includes subjective perception of the probability of personal harm from risk (i.e., "perceived likelihood") and perception of harm severity (i.e., "perceived severity"). Meanwhile, perceived personal control over risk (i.e., "personal control") is also considered. In haze risk contexts, research found that perceived haze risk prompted individuals to adopt more active coping behaviors [34]. When risk is salient, risk perception guides most subsequent individual actions, and shaping perceived risk can encourage information seeking [35], while attitude plays a significant mediating role between risk perception and behavioral intention [36].

Thus, the hypotheses are: - H5a: Perceived risk positively influences information seeking behavior; - H5b: Perceived risk positively influences information seeking attitude; - H5c: Information seeking attitude mediates the effect of perceived risk on information seeking behavior.

The hypothetical model is shown in Figure 3 [Figure 3: see original paper].

2.6 Information Subjective Norm

Information subjective norm refers to individuals taking action to actively seek information to maintain a socially desirable image. This concept is inspired by normative beliefs in the Theory of Planned Behavior, referring to the public's tendency to act according to social norms [22]. Information subjective norm includes two meanings: the expectations of important others that individuals should be knowledgeable about specific risk information, and the motivation to comply with others' expectations [9]. To meet others' expectations of their information level, people will engage in more active information seeking. That is, the public may search for information to maintain a socially desirable image and to talk about specific risk topics adequately and with unique insights. Related to risk information seeking, it emphasizes that when the public believes others want them to understand risk issues, they are more likely to take action.

Meanwhile, subjective norm is not independent of attitude; subjective norm has a significant positive effect on seeking attitude [37]. Recommendations from group others and communication with others indirectly influence an individual's attitude formation [38]. At the same time, people consider others' behaviors appropriate and successful [39]. Therefore, in uncertain situations, people have the motivation to conform to group norms, that is, they tend to obtain implementation information from the external society [40]. When a person obtains key information about performing a behavior from others in the group, they develop a positive attitude toward that behavior [41]. Researchers have also explored the effect of subjective norm on behavioral attitude in the Theory of Planned Behavior [42].

Thus, the hypotheses are: - H6a: Information subjective norm positively influences information seeking behavior; - H6b: Information subjective norm positively influences information seeking attitude; - H6c: Information seeking attitude mediates the effect of information subjective norm on information seeking behavior.

The hypothetical model is shown in Figure 4 [Figure 4: see original paper].

2.7 Perceived Behavioral Control

Perceived behavioral control reflects individuals' perceived abilities. Consistent with the original concept of perceived behavioral control, risk information seeking research typically conceptualizes perceived control as two dimensions: internally-focused perceived self-efficacy and externally-focused perceived control [43]. The time and effort spent searching for and processing relevant information are potential costs. Therefore, when requiring more cognitive effort or conducting non-routine information seeking, individuals need to have control over the necessary steps for information seeking and processing to achieve their goals [13]. When the public is motivated to search for information, they need a sense of efficacy, that is, the ability to obtain information and confidence in successfully completing the task. If individuals lack the efficacy to obtain and understand risk information, their behavioral intention significantly decreases. Research found a positive relationship between perceived behavioral control and information seeking behavior [44].

In the structural model of the Theory of Planned Behavior, based on a common theoretical foundation, behavioral attitude, subjective norm, and perceived behavioral control are both independent and pairwise correlated [45]. Behavioral attitude not only influences behavioral intention but can also exist as a mediating variable between perceived behavioral control and behavioral intention [46].

Thus, the hypotheses are: - H7a: Perceived behavioral control positively influences information seeking behavior; - H7b: Perceived behavioral control positively influences information seeking attitude; - H7c: Information seeking attitude mediates the effect of perceived behavioral control on information seeking behavior.

The hypothetical model is shown in Figure 5 [Figure 5: see original paper].

3 Research Methods

3.1 Questionnaire Design

Due to questionnaire anonymity, the self-report form can reflect the authentic perceptions and feelings of the public across regions and age groups, and can be distributed in a targeted manner, thereby providing corresponding suggestions supported by objective data. Therefore, this study uses the COVID-19

pandemic as the background and employs a questionnaire survey method. Specific measurement items and sources for each variable are shown in Table 1. Information sufficiency uses a 100-point scale, while other variables use a five-point Likert scale from 1-5 representing strongly disagree to strongly agree. The questionnaire also collected respondents' gender, age, education level, location, epidemic-related experiences, and loss severity information.

3.2 Data Collection

This study conducted two rounds of questionnaire distribution. After the initial questionnaire design, a small target group survey was conducted to revise and improve item descriptions, ensuring respondents could clearly understand the questions. Subsequently, some items were modified and distributed a second time. This survey used online distribution, supported by the Wenjuanxing platform during the COVID-19 pandemic, collecting a total of 719 questionnaires. To ensure data quality, questionnaires with missing data, overly short completion times, and answer repetition rates exceeding 80% were eliminated, resulting in 695 valid questionnaires.

3.3 Reliability and Validity Testing

In the initial analysis, the reliability and validity of perceived risk were low because the perceived risk variable consists of three dimensions: individual perceived control, perceived likelihood, and perceived severity. To maintain consistency with existing studies using the same model, this study does not modify perceived risk. The information sufficiency item was measured with only one question and therefore was not included in reliability and validity calculations. As shown in Table 2, except for perceived risk, the reliability of this questionnaire is close to 0.8, indicating high reliability. Except for perceived risk, the AVE values of factors are greater than 0.5 and CR values are greater than 0.7, indicating high convergent validity of the questionnaire.

Table 3 analyzes discriminant validity. The minimum square root of AVE values corresponding to each factor is 0.585, which is greater than the maximum correlation coefficient of 0.437 between variables, meaning the research data has good discriminant validity. The KMO value is 0.850, greater than 0.8, and Bartlett's sphericity test $p = 0.000 < 0.001$. Variance inflation factor tests show that multicollinearity is within an acceptable range (VIF values between 1.113-1.318). When measurement items were loaded onto a single factor for confirmatory factor analysis, the model fit was poor, ruling out common method bias. Pearson correlation coefficients indicate the strength of relationships. As shown in Table 3, positive emotion and perceived risk are not correlated; negative emotion and information seeking behavior are not correlated; other variables show significant correlations.

4 Research Results

4.1 Individual Difference Analysis

Among respondents, 54.68% were female and 45.32% were male, with a relatively balanced gender ratio. Most respondents were between 18-25 years old (56.26%), 14.39% were 26-30 years old, 13.53% were 31-40 years old, and 15.83% were 41 years old and above. In terms of education, most individuals had a bachelor's degree or above (89.78%); 25.46% of respondents were in severely affected epidemic areas (Wuhan City and Hubei Province). Respondents with epidemic-related experiences (51.22%) and without such experiences (48.78%) were roughly equal. Among respondents, 11.51% reported no losses due to the epidemic, 16.55% reported minor losses, 15.97% reported moderate losses, 5.18% reported relatively large losses, and 2.01% reported severe losses.

4.1.1 Differences in Information Seeking Behavior Among Different Characteristics Through ANOVA, the study found significant differences in information seeking behavior among individuals with different education levels and epidemic-related experiences, supporting hypothesis H1a. LSD post-hoc comparisons revealed that education level showed significance for information seeking behavior ($F = 5.127$, $p = 0.006 < 0.05$, $\text{Partial } \eta^2 = 0.015$), with significant mean differences: “college and high school or below > bachelor's degree; college and high school or below > master's degree and above,” as shown in Figure 6 [Figure 6: see original paper]. Past epidemic experiences and loss severity also showed significant differences in information seeking behavior, with “moderate loss > no epidemic-related experience; moderate loss > no loss” ($F = 2.242$, $p = 0.049 < 0.05$, $\text{Partial } \eta^2 = 0.016$), as shown in Figure 7 [Figure 7: see original paper].

4.1.2 Differences in Information Seeking Attitude Among Different Characteristics ANOVA revealed significant differences in information seeking attitudes among individuals of different ages and locations, supporting hypothesis H1b. Age showed significance for seeking attitude ($F = 3.616$, $p = 0.013 < 0.05$, $\text{Partial } \eta^2 = 0.036$), with significant mean differences: “18-25 years old > 41 years old and above,” as shown in Figure 8 [Figure 8: see original paper]. Location showed significance for seeking attitude ($F = 6.000$, $p = 0.003 < 0.05$, $\text{Partial } \eta^2 = 0.034$), with significant mean differences: “other provinces and cities > Wuhan City,” as shown in Figure 9 [Figure 9: see original paper].

4.1.3 Differences in Perceived Likelihood Among Different Characteristics Through ANOVA, the study found significant differences among individuals from different locations in the perceived likelihood dimension of perceived risk, supporting hypothesis H1c, as shown in Figure 10 [Figure 10: see original paper]. LSD test results showed that location was significant for perceived likelihood ($F = 8.147$, $p = 0.000 < 0.001$, $\text{Partial } \eta^2 = 0.023$), with significant mean differences: “Wuhan City > other provinces and cities; Hubei Province

(excluding Wuhan) > other provinces and cities.”

4.1.4 Differences in Information Subjective Norm Among Different Characteristics

ANOVA revealed significant differences in information subjective norm among individuals with different education levels, supporting hypothesis H1d, as shown in Figure 11 [Figure 11: see original paper]. Education level showed significance for information subjective norm ($F = 10.096$, $p = 0.000 < 0.001$, Partial $\eta^2 = 0.056$), with significant mean differences: “college and high school or below > bachelor’s degree; college and high school or below > master’s degree and above; bachelor’s degree > master’s degree and above.”

4.1.5 Differences in Perceived Behavioral Control Among Different Characteristics

Through ANOVA, the study found significant differences in perceived behavioral control among individuals of different genders and ages, supporting hypothesis H1e. LSD results showed that gender was significant for perceived behavioral control ($F = 5.023$, $p = 0.025 < 0.05$, Partial $\eta^2 = 0.007$), with females reporting stronger information seeking efficacy, as shown in Figure 12 [Figure 12: see original paper]. Age was significant for perceived behavioral control ($F = 3.378$, $p = 0.018 < 0.05$, Partial $\eta^2 = 0.056$), as shown in Figure 13 [Figure 13: see original paper], with significant mean differences: “18-25 years old > 41 years old and above; 26-30 years old > 41 years old and above.”

4.2 Influencing Factor Analysis

4.2.1 Analysis of Information Seeking Behavior Influencing Factors

As shown in Table 4, negative emotion ($\beta = 0.048$, $p = 0.05$) had no significant effect on information seeking behavior, so hypothesis H4d is not supported. Information seeking attitude ($\beta = 0.235$, $p = 0.000 < 0.001$), information sufficiency ($\beta = 0.165$, $p = 0.000 < 0.001$), positive emotion ($\beta = 0.071$, $p = 0.006 < 0.05$), perceived risk ($\beta = 0.085$, $p = 0.004 < 0.05$), information subjective norm ($\beta = 0.234$, $p = 0.000 < 0.001$), and perceived behavioral control ($\beta = 0.359$, $p = 0.000 < 0.001$) all had significant positive effects on information seeking behavior, supporting hypotheses H2, H3a, H4a, H5a, H6a, and H7a.

4.2.2 Analysis of Information Seeking Attitude Influencing Factors

As shown in Table 5, information sufficiency ($\beta = 0.142$, $p = 0.000 < 0.001$), positive emotion ($\beta = 0.314$, $p = 0.000 < 0.001$), negative emotion ($\beta = 0.138$, $p = 0.000 < 0.001$), perceived risk ($\beta = 0.156$, $p = 0.000 < 0.001$), information subjective norm ($\beta = 0.219$, $p = 0.000 < 0.001$), and perceived behavioral control ($\beta = 0.137$, $p = 0.000 < 0.001$) all had significant positive effects on information seeking attitude, supporting hypotheses H3b, H4b, H4e, H5b, H6b, and H7b.

4.3 Mediating Effect Analysis

Regression analysis shows significant relationships between various factors and both information seeking attitude and behavior. To test mediating effects, three regression equations must be examined: the mediator on the independent variable (Model 3 in Table 6), the dependent variable on the independent variable (Model 1 in Table 6), and the dependent variable on both independent and mediator variables (Model 2 in Table 6). When the mediator is controlled, if the independent variable's effect on the dependent variable significantly decreases or disappears, the mediator has a full mediating effect; if the effect decreases but remains significant, the mediator has a partial mediating effect [48].

As shown in Table 6, information seeking attitude fully mediates the effects of negative and positive emotions on information seeking behavior. After adding information seeking attitude, the effects of emotional responses on information seeking become non-significant, meaning emotional responses first affect information seeking attitude, which in turn influences information seeking behavior, supporting hypotheses H4c and H4f. Information seeking attitude partially mediates the effects of information sufficiency, perceived risk, information subjective norm, and perceived behavioral control on information seeking behavior. That is, information sufficiency, perceived risk, information subjective norm, and perceived behavioral control have direct effects on information seeking attitude and also influence information seeking behavior through information seeking attitude, supporting hypotheses H3c, H5c, H6c, and H7c.

5 Analysis and Discussion

5.1 Research Conclusions

In the COVID-19 pandemic, individuals' proactive information seeking behavior can increase their knowledge and provide them with preventive knowledge and methods, which is significant for individual health, public safety, and social stability. Based on the Risk Information Seeking and Processing model, this study examines public seeking behavior in the context of COVID-19 to broaden the model's applicable domain and provide timely and practically meaningful research.

5.1.1 Differences Among Different Characteristics Unlike previous studies that often neglected individual characteristic factors, this study fully explores the effects of factors such as gender, age, and location to discuss differences in how different publics treat information seeking attitudes and behaviors. In information seeking behavior, individuals with college and high school or below education or those who suffered moderate losses due to the epidemic engaged in more information seeking behavior. This may be because individuals with lower education levels have stronger information subjective norms, possibly resulting from their need to obtain "conversation material" or manage impressions. In terms of perceived behavioral control, females generally

perceived stronger ability to search for information anytime, anywhere, and find desired content compared to males. Individuals aged 18-30 have stronger efficacy, possibly because this age group has received more information seeking training and has richer information seeking experience, thus perceiving stronger information seeking ability.

In information seeking attitude, significant differences exist among individuals of different ages and locations, with those aged 18-25 holding more positive information seeking attitudes. Unexpectedly, results show that respondents in Wuhan, the epicenter of the epidemic, considered seeking behavior least helpful, followed by Hubei Province, while other provinces and cities had more positive seeking attitudes. This may be because information work in Wuhan was more comprehensive, and respondents could receive information through community broadcasts, mobile carrier text messages, etc. Meanwhile, groups closer to the epidemic had better preventive measures and direct understanding of the situation, thus holding more negative attitudes toward actively seeking more information. In perceived risk, Wuhan and Hubei Province residents had stronger perceived likelihood of illness, closely related to epidemic severity. In the COVID-19 pandemic, Wuhan had the most severe epidemic, followed by Hubei Province and other provinces. In information subjective norm, individuals with college and high school or below education had stronger information subjective norms, possibly the result of education-limited individuals seeking “conversation topics” or engaging in impression management.

5.1.2 Mediating Role of Information Seeking Attitude This study found that public information seeking attitudes are influenced by multiple factors, and information seeking attitude positively influences information seeking behavior. Individuals who hold positive attitudes toward seeking public health emergency information are more likely to engage in information seeking behavior. This aligns with the Technology Acceptance Model’s view that to promote user adoption, information retrieval systems should be perceived as useful and easy to use; information sources should be reliable and identifiable; and information dissemination should be timely and effective [49]. Attitude can significantly predict behavioral change, and information seeking attitude is the link between other factors and information seeking behavior. This study exploratorily uses information seeking attitude as a mediating factor, emphasizing the importance of correct seeking attitudes when facing epidemic information.

As shown in Figure 14 [Figure 14: see original paper], perceived risk, emotional response, information sufficiency, perceived behavioral control, and information subjective norm influence information seeking attitude and behavior, and affect information seeking behavior through information seeking attitude. Generally, individuals who perceive strong risk, experience positive emotions, believe they need to master more information, perceive that people around them are seeking information, can quickly find needed information, and believe that seeking

relevant information is helpful are more likely to engage in information seeking behavior.

5.1.3 Effect of Emotional Response This study also detailed and categorized the roles of positive and negative emotions in information seeking. Regression analysis found that both positive and negative emotions have significant effects on information seeking attitude. Respondents experiencing strong emotions consider information seeking more useful, effective, and valuable, possibly because they view information seeking as a means to strengthen positive emotions like hope brought by positive information or correct negative emotions like anxiety brought by negative information. Meanwhile, emotional responses affect information seeking behavior through information seeking attitude. Different from previous research, after adding information seeking attitude, the effect of emotional response on information seeking behavior is no longer significant, because this study reveals the mediating factor through which emotional response influences information seeking behavior—emotional response's effect on information seeking behavior is fully realized through the mediating variable of information seeking attitude.

5.1.4 Effect of Information Sufficiency Information sufficiency refers to the public's self-assessment of how much relevant knowledge they need, reflecting the public's need for sufficient information, which positively influences information seeking behavior and attitude. In major public health emergencies, the public needs substantial knowledge and information about the epidemic's causes, transmission routes, and development stages. Individuals who need more sufficient information are more likely to pin their hopes on information seeking, consider information seeking effective, and hold positive attitudes toward it. Meanwhile, due to the need for adequate information, the public will actively respond, thus enhancing information seeking motivation.

5.1.5 Effect of Perceived Risk Previous research shows that the relationship between information seeking attitude and perceived risk and perceived benefit is mutual. Individuals with higher perceived risk hold more positive attitudes toward information seeking, and individuals with higher perceived risk are also more likely to seek information [50]. This study's conclusions support related research, showing that perceived risk is an important predictor of information seeking attitude and behavior. Specifically, individuals with higher perceived disease severity and likelihood of illness, but without relevant information, are more likely to seek risk information.

5.1.6 Effect of Information Subjective Norm Information subjective norm positively influences information seeking attitude. In the process of information seeking, if the public believes that others, especially important others, are conducting appropriate and successful information seeking, they will consider information seeking valuable. This study also aligns with previous

research' s conclusion that information subjective norm positively influences information seeking behavior [43]. On one hand, when people realize that others expect them to understand relevant information, they may strive to appear knowledgeable about the issue. On the other hand, people who follow social norms are more likely to actively pay attention to relevant information. The influence of information subjective norm on information seeking reveals that impression management is a motivation for information seeking [7]. When participating in social interactions, individuals have a tendency to try to make others view them positively. People who care about others' expectations of their knowledge acquisition are more likely to engage in self-action, and to meet others' recognition of their knowledge acquisition, they are more willing to search for information.

5.1.7 Effect of Perceived Behavioral Control In this study, individuals' perceived ability and efficiency in seeking behavior significantly influence their attitudes toward information seeking. Individuals who perceive they can discover useful information anytime, anywhere tend to hold positive information seeking attitudes. Meanwhile, perceived behavioral control is an important influencing factor of information seeking behavior. Individuals' self-efficacy or perceived behavioral control is crucial when performing a behavior. Due to potential time and effort costs, if substantial cognitive effort is required, it will reduce the public' s information seeking behavior. Individuals who believe they can obtain relevant knowledge anytime, anywhere, and understand knowledge platforms and channels tend to affirm the value of information seeking, hold more positive attitudes toward it, and are more likely to engage in seeking behavior.

5.2 Research Limitations and Future Directions Although this study included groups across multiple age ranges as much as possible, due to reasons such as online questionnaire distribution during the pandemic, data from the elderly population over 60 years old is limited. The elderly group is disadvantaged in physical and social adaptation, unable to equally, efficiently, and barrier-freely enjoy the conveniences of the information sharing era. In information acquisition, they are in a disadvantaged position [51]. Therefore, research on risk information seeking for the elderly group has its importance and necessity. Future research should strive to broaden the sample scope to include the elderly group or conduct research specifically targeting the elderly group.

6 Practical Recommendations

6.1 Broaden Information Release Channels and Release Refutation Information Promptly

The characteristics of media information dissemination include information collection, organization, and distribution [52]. Information openness and transparency are the most effective measures for preventing and controlling major

public safety emergencies. Sufficiently transparent and open information can help soothe social emotions and enhance public security. In addition to traditional media like television and newspapers, internet channels should be actively utilized for information release and rumor refutation. Information publishers should provide detailed and diversified information to meet public demand. Information on the internet is mixed, with various false and erroneous information emerging endlessly, misleading the public and causing losses. Therefore, after public health emergencies occur, providing reliable and timely refutation is particularly important. On one hand, information publishers should actively use push functions to deliver important and urgent relevant information in prominent positions. On the other hand, internet platforms should also ensure that the public can access high-quality and timely information sources.

6.2 Reduce Search and Processing Difficulty and Guide Information Subjective Norms

In the process of information release and dissemination, it is necessary to ensure that audiences with lower education levels and lower efficacy can access and understand risk information. Therefore, in future prevention and control work, targeted popular science education and information literacy improvement education should be actively conducted for different groups. Information subjective norm plays an important role in individuals' risk information seeking. Therefore, to better respond to possible risks, it is necessary to advocate attention to risk information within a controllable range, and cultivate sensitivity, observation, and analytical judgment of information across society. Meanwhile, it is necessary to improve the network public opinion guidance mechanism for emergencies to construct subjective norms. Related research has confirmed that opinion leaders have significant influence on information dissemination [53]. By cultivating "opinion leaders" to guide social public opinion, promote the dissemination of prevention and control information, drive society-wide "no rumor belief or spreading," eliminate false information dissemination, and publicize objective knowledge and positive anti-epidemic energy.

6.3 Leverage Media' s Emotional Guidance Function and Pay Attention to Public Emotional Response

The public' s emotional response after major public health emergencies not only directly affects individual coping behavior at the micro level but also affects group coping behavior at the macro level, and has an important impact on social harmony and stability. Therefore, scientifically and reasonably guiding public emotions has always been an important component of public health emergency response work. Leveraging the media' s public emotional guidance function helps sort out public emotions, turn crises into safety, maintain social stability, and avoid crisis fermentation [54]. Therefore, when facing major safety incidents, in the process of information release and diffusion, public social environments, public perception of discovering and understanding risk information,

and emotional changes related to risk information should also be monitored, and content design should be actively conducted to guide public emotions and make timely adjustments.

6.4 Facilitate Information Seeking Process and Cultivate Positive Seeking Attitude

Based on higher risk perception and good attitudes toward information seeking, more frequent seeking behavior will result. When facing major emergency incidents and risk information, “sense of urgency” should be actively conveyed to effectively stimulate the public’s emotional response to the issue, thereby prompting the public to actively pay attention to information, search for information in a timely manner, and efficiently accept information. Information seeking attitude plays a mediating role in the influence of other factors on information seeking behavior. Therefore, cultivating correct understanding of information seeking across society has important value. When necessary, information publishers also need to emphasize potential negative consequences related to risk information, cultivate good attitudes toward understanding risk information and using search tools. Public information seeking attitude is closely related to public trust in information sources and the convenience of information seeking. It is necessary to provide true, timely, identifiable information sources and convenient, easy-to-use information search system platforms.

6.5 Specific Analysis for Specific Issues, Tailored to Local Conditions and Individuals

Information release and dissemination need to be based on the public perspective. Information publishers should provide information that the public truly needs rather than what publishers think the public needs. To respond to risks, in different emergency situations, what type of information to release and when requires specific analysis for specific issues. In severely affected areas of public health emergencies, the public perceives greater risk. Providing more comprehensive, reliable, and timely information can enhance individuals’ sense of control and alleviate individual anxiety, preventing the spread of anxious emotions. Meanwhile, there are differences in perceived behavioral control among individuals of different genders, ages, and education levels. Therefore, if different information push strategies can be adopted for different groups, combined with different platform characteristics and target audiences, to improve public information seeking efficiency and facilitate the public information seeking process, it would be greatly beneficial.

6.6 Highlight Online Data Advantages, with Intelligence System Support

In the era of all-media information, big data has played an incomparable role in information collection, processing, release, and dissemination. Actively using

technological innovation and technical means to support information publishers in delivering risk information and information receivers in searching for and processing risk information is of great significance for prevention and control. During the COVID-19 pandemic, government agencies at all levels and grassroots communities have used big data as a modern tool for precise epidemic prevention and decision support based on intelligence systems. To compensate for gaps in collaborative cooperation in emergency management systems, achieve joint prevention and control, and establish a comprehensive emergency management big data system requires cooperation from the entire society. It is necessary to break information silos, eliminate data chimneys, and achieve information interoperability and sharing between platforms. Meanwhile, multi-source, multi-dimensional information should be cross-verified to help establish a global perspective and reduce the risk of decision-making errors. Using technological advantages and data means to strengthen risk information management capabilities, assist emergency management processes, empower modern governance effectiveness, and turn crises into new opportunities for social development.

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Abstract: [Purpose/significance] In major public health emergencies, the public has a strong demand for relevant information, and information seeking has become an important way for the public to understand and respond to risks. When facing risk information, how does the public's attitude toward information seeking shape their behavior? What factors influence the public's attitude and behavior toward information seeking? Are there differences among different groups? Answering these questions helps provide targeted information services for the public, enhance individual coping effectiveness, and carry out effective epidemic prevention work. [Method/process] An online questionnaire survey was conducted among 719 domestic respondents to explore the factors influencing public attitudes and behaviors toward information seeking in major public health emergencies. [Result/conclusion] The study shows that: public information seeking attitudes and behaviors differ significantly across regions, ages, and education levels; perceived risk, emotional response, information sufficiency, information subjective norm, and perceived behavioral control positively influence public information seeking attitudes and behaviors; information seeking attitude mediates the relationship between these factors and information seeking behavior. Based on the findings, suggestions are proposed from the perspectives of information release channels, information dissemination processes, and information search platforms.

Keywords: information seeking behavior; information seeking attitude; risk information seeking; public health emergencies

Note: Figure translations are in progress. See original paper for figures.

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