Postprint: Determinants of User Information Disclosure Behavior on E-Health Websites

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Abstract

[Purpose/Significance] This study aims to identify the influencing factors of information disclosure behavior, optimize the ecological environment of e-health websites, and indirectly facilitate the achievement of the "Healthy China 2030" strategic objectives.

[Method/Process] Adopting qualitative research methods, interview data were analyzed through three-level coding to extract 17 main categories and 5 core categories influencing user information disclosure on e-health websites, thereby constructing a model of influencing factors for user information disclosure behavior on e-health websites.

[Results/Conclusion] User information disclosure behavior on e-health websites is primarily influenced by perceived utility, perceived risk, subjective norms, service quality, and illness characteristics. Specifically, perceived utility represents the most significant influencing factor, perceived risk the second most important, subjective norms a relatively important factor, while service quality and illness characteristics are relatively unimportant influencing factors. Based on these findings, relevant implications are summarized from three dimensions: government departments, e-health websites, and users.

Full Text

Preamble

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Research on Influencing Factors of User Information Disclosure Behavior in eHealth Websites

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Abstract

[**Purpose/Significance**] This study aims to identify the influencing factors of information disclosure behavior, optimize the ecological environment of eHealth websites, and indirectly contribute to the realization of the "Healthy China 2030" strategic goals. [**Method/Process**] Using qualitative research methods, this study conducted three-level coding of interview data to extract 17 main categories and 5 core categories affecting user information disclosure in eHealth websites, and constructed a model of influencing factors for user information disclosure behavior in eHealth websites. [**Result/Conclusion**] User information disclosure behavior in eHealth websites is primarily influenced by perceived utility, perceived risk, subjective norms, service quality, and illness characteristics. Among these, perceived utility is the most important influencing factor, perceived risk is the second most important, subjective norms are relatively important, while service quality and illness characteristics are relatively less important. Based on these findings, relevant implications are summarized from three dimensions: government departments, eHealth websites, and users.

Keywords: eHealth; eHealth websites; information disclosure; qualitative research
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In recent years, eHealth—a new field in medical health—has ushered in a new wave of "Internet Plus" entrepreneurship, demonstrating vigorous development momentum. As the service carrier of eHealth, eHealth websites have also flourished in the industry. With the deep integration of information technology and the medical field, a large number of eHealth websites such as Chunyu Doctor and Haodf.com have emerged, each with nearly 100 million registered users.

Compared with physical medical environments, eHealth websites represent a more free and convenient healthcare ecosystem. Their development and application not only help network and informatize offline physical medical resources, achieve rational allocation of medical resources, and alleviate the imbalance in medical resource distribution [1], but also help users access the latest and most comprehensive health and medical information resources, easing the difficulties of "getting medical treatment, affording medical treatment, and receiving timely medical treatment." They also help promote social equity.

User information disclosure is the foundation for eHealth website service delivery and a necessary condition for the scientific and sustainable development of eHealth websites. It can be said that the service nature of eHealth websites determines the necessity of user information disclosure behavior. So when do users utilize eHealth websites? Under what circumstances do users disclose information on eHealth websites? What factors influence this behavior? This study addresses these questions by investigating user information disclosure behavior in eHealth websites, aiming to identify the influencing factors of disclosure behavior, thereby optimizing eHealth website services, promoting their healthy de-

velopment, and indirectly supporting the "Healthy China 2030" strategic goals.

2 Theoretical Foundation

2.1 eHealth and eHealth Websites

Currently, there is no unified definition of eHealth (electronic health, eHealth, E-health). Some scholars believe eHealth is the use of information technology to provide higher quality and more efficient medical and health services [3]; others view it as an interactive iterative process that comprehensively uses various information technologies to collect, manage, and analyze user health data through multi-party collaboration for learning, compliance, and feedback to achieve health management goals [4]; still others consider eHealth as the comprehensive application of information technology in healthcare fields including prevention, diagnosis, and follow-up [5]. This study defines eHealth as the general term for using information technology and other means to assist and strengthen a series of service processes in medical and health fields including prevention, diagnosis, monitoring, treatment, and management.

eHealth websites refer to platforms that obtain health-related information or service resources through network channels, such as Chunyu Doctor, Haodf.com, and DXY.cn. Users in these websites may know each other or be strangers [6-7], but they primarily enter eHealth websites to obtain medical information, communicate with patients with similar medical histories, and provide mutual recognition and support [8-9].

Many scholars have conducted research on eHealth website-related topics. For example, A. Edmunds et al. [10] found that groups with higher education, higher income, females, and adolescents are more willing and more likely to accept eHealth website information. M. L. Jung et al. [11] studied the influencing factors of elderly people's use of eHealth websites, concluding that the usefulness and ease of use of eHealth website services are decisive factors for elderly groups, while users' trust in eHealth websites and their compatibility with users' lifestyles are important factors affecting elderly usage. Zhang Keyong et al. [12] studied the influencing factors of knowledge sharing in online health communities and found that social identity, altruism, social trust, perceived usefulness, and self-efficacy are positively correlated with users' knowledge sharing (including public health knowledge and personal health knowledge), while perceived risk is negatively correlated with users' personal health knowledge sharing but not significantly related to public health knowledge sharing.

2.2 User Information Disclosure Behavior and Its Driving Factors

User information disclosure refers to users' intentional act of making their information public or stating it through certain channels, primarily aimed at obtaining more positive benefits [13], including broader interpersonal relationships [14] and stronger organizational belonging [15]. C. Forman et al. [16] demonstrated

that users who disclose their personal information online can consolidate their existing social circles and gain a sense of organizational belonging and identity.

Information disclosure behavior involves multiple fields including sociology, psychology, management, and economics. Through literature review, this study found that considerable research exists on driving factors of information disclosure behavior. For instance, studies by C. Dwyer et al. [17], S. Taddei et al. [18], and Li Gang et al. [19] show that website trust has a significant positive impact on user information disclosure behavior. S. Livingstone [20] and R. Bohme et al. [21] indicate that peer norms are important influencing factors of user information disclosure behavior. L. N. Zlatolas et al. [22] believe that user information disclosure is influenced by privacy policies, privacy concerns, and privacy social norms. Strater et al. [23] confirmed that user habits are positively correlated with personal information disclosure willingness and behavior; H. C. Ko [24] further verified that user habits are also a major factor affecting users' continuous information disclosure. M. J. Metzger [25] and A. H. Krasnova et al. [26] found that in the Internet environment, privacy risk is the main obstacle to user information disclosure. Shi Shuo [27] conducted an in-depth study on user information disclosure behavior from the perspective of privacy calculus theory, concluding that significant perceived benefits encourage user information disclosure, while privacy concerns hinder it, with privacy concerns being influenced by users' information control ability and perceived risk.

Current research shows that abundant studies on information disclosure behavior in various online contexts exist, but few researchers have focused on the special cross-disciplinary field of eHealth websites. Moreover, existing research on information disclosure behavior mostly adopts quantitative methods, with few attempting qualitative analysis. Research using qualitative methods to analyze influencing factors of user information disclosure behavior in eHealth websites is even rarer. Additionally, whether factors affecting user information disclosure behavior in other online contexts apply to the eHealth website environment remains to be verified. Therefore, this study attempts to use eHealth websites as the research platform, eHealth website users as the research subjects, and identifying influencing factors of disclosure behavior as the research objective, employing qualitative research methods to explore user information disclosure behavior in eHealth websites.

3 Research Design

3.1 Research Method

This study employs qualitative research methods, which differ from quantitative research and are particularly suitable for exploratory research. This approach does not rely on quantitative data and methods but follows an "interpretivist" route, where researchers conduct comprehensive and in-depth studies on the nature of phenomena through notes, interviews, recordings, videos, field observations, and other means, and build theoretical models to obtain reasonable

explanations [28-29]. Since this method typically combines semi-structured interviews [30] and grounded theory methods [31], it is more rigorous than the statistical analysis methods used in traditional interview surveys. Currently, this method has been widely applied domestically and internationally, demonstrating its high feasibility and reliability and gaining general recognition in academia [32-33]. Therefore, this study adopts qualitative research methods, collecting data through semi-structured interviews and conducting data coding analysis according to grounded theory requirements.

3.2 Sample Selection and Data Collection

Since the main audience of eHealth websites consists of digital immigrants and digital natives, this study selected research subjects primarily from young groups with relatively high education levels. The determination of the number of research subjects followed the principle of theoretical saturation, that is, the sample size is bounded by the point where new samples can no longer provide new information [34]. R. E. Fassinger et al. [35] found that a sample size of 20-30 is appropriate for qualitative research. Accordingly, this study ultimately selected 22 subjects as the analysis sample on the basis of ensuring theoretical saturation, including 10 males and 12 females with basically balanced gender distribution; all were aged 18-28, conforming to the World Health Organization and UNESCO's definition of youth; all respondents had bachelor's degrees or above and had used eHealth websites.

This study collected data through one-on-one in-depth interviews using a semi-structured interview format, with all interviews completed by two researchers. One researcher was responsible for interview outline design and questioning, while the other handled recording, transcription, and supplementary questions. The entire data collection process lasted three weeks (including voice transcription). All interviews and recordings were conducted with the consent of the respondents, with a total recording time of 576 minutes and an average interview duration of 26.2 minutes. Face-to-face interviews were the primary method, accounting for 81.2% of all interviews, with only four respondents interviewed by telephone. After transcription and standardization, 22 documents were formed, each representing one respondent's interview data. These documents were named R01-R22 according to the interview order. The 22 documents constitute the final sample for qualitative analysis, with 18 used for coding analysis and 4 reserved for theoretical saturation testing. Based on the sample setting and selection process, all respondents met the interview requirements, and the sample size was sufficient for studying the specific subject [36]. The basic information of interviewees is shown in .

3.3 Data Processing

3.3.1 Data Coding The data coding process in this study includes three steps: open coding (first-level coding), axial coding (second-level coding), and

selective coding (third-level coding), with the coding process fully complying with grounded theory requirements.

(1) Open Coding. Open coding, also known as open login, refers to the operation process where researchers adopt an open mindset, "suspend" personal or industry preconceptions, break down all collected data, assign concepts or categories, and reorganize them in new ways. The essence of this stage is coding and reorganizing data content. At this stage, researchers must neither believe everything nor doubt everything [37]. Concepts or categories formed during first-level coding are marked as free nodes—"independent" nodes without associations with other nodes. In this stage, this study collected 185 original statements (i.e., reference points), "labeled" them, and after grouping similar labels, extracted 48 free nodes such as spam advertisements, convenience, special experiences, lifestyle habits, and past experiences.

(2) Axial Coding. Axial coding, also called axial login or relational login, is the operation process of connecting concepts or categories aggregated in the first-level coding stage to form higher-level categories (i.e., main categories). It mainly serves a "connecting" role to discover vertical deep relationships between different categories. The essence of this stage is refining larger category nodes and establishing node relationships. Main categories formed in the second-level coding stage are conceptual categories based on free nodes. In this stage, this study summarized and integrated the 48 free nodes extracted in the first stage to obtain 17 main categories such as irrelevant information, information distortion, critical illness, user habits, etc.

(3) Selective Coding. Selective coding, also called selective login or core login, is based on axial coding to sort out and summarize relationships among various categories and extract core categories with overarching functions. The essence of this stage is concept association and relationship verification. Core categories formed in the third-level coding stage are higher-level conceptual categories based on main categories. In this stage, this study deeply refined the 17 main categories and ultimately obtained five core concepts: service quality, perceived risk, illness characteristics, perceived utility, and subjective norms. The detailed picture of the coding process is shown in .

Among these five core categories, there are still primary and secondary distinctions, with the distinguishing criterion being the weight of reference points in each category [38]. The primary and secondary distribution of core categories in this study is shown in [Figure 1: see original paper], where each rectangle corresponds to different categories, same corner colors indicate same-level categories, black-corner rectangles represent core categories, white-corner rectangles represent main categories, and rectangle size represents the weight of reference points in each category.

3.3.2 Reliability, Validity, and Theoretical Saturation Testing Research reliability refers to the consistency of research results when the same

method is used to measure the same case repeatedly [39]. To ensure reliability, this study conducted group discussions before starting, designed and determined a feasible interview outline, and fully complied with grounded theory normative requirements throughout the research process. In the coding stage, which involves greater subjectivity, this study adopted a method of one person coding and another checking to identify divergence points and reached consensus through group discussions and literature review to ensure data objectivity and accuracy.

Research validity refers to the accuracy and generalizability of research results [40]. To ensure validity, this study adopted a "triangulation" [41] strategy, using multiple methods for multi-dimensional cross-validation of the same case to avoid erroneous judgments due to researcher subjective bias. This study obtained research materials through in-depth interviews with different educational groups and corroborated findings by pooling knowledge and experience from relevant field researchers and literature review, thereby effectively implementing the triangulation strategy and ensuring high research validity.

Theoretical saturation means that collected data can no longer provide new information, insights, or categories. However, to date, theoretical saturation remains a subjective concept without objective measurement indicators, requiring researchers to weigh it based on personal experience [42]. Accordingly, building on previous researchers' testing methods, this study adopted the testing method used by J. J. Francis et al. [43]: first coding the interview content of 18 respondents. The results showed that when coding the 16th interview document, basically no new concepts or categories emerged. The study then continued coding the remaining two documents. After completion, the reserved four interview documents were used for concept comparison, and the results showed no new concepts, categories, or categorical relationships emerged, indicating that the concepts in the previous 18 interview documents had covered the content of the subsequent interviews. Therefore, the author determined that the collected data and information had reached theoretical saturation.

3.3.3 Theoretical Model Construction After conducting three-level coding of all interview materials and testing reliability, validity, and theoretical saturation, the relationships among theoretical categories determined at each coding level became basically clear. By constructing the "storyline" of this study, the influencing factor model of user information disclosure behavior in eHealth websites was obtained, as shown in [Figure 2: see original paper].

4 Data Analysis

Through data processing, the main influencing factors of user information disclosure behavior in eHealth websites were extracted, as shown in . The specific content of each factor is as follows:

4.1 Service Quality

Research shows that eHealth website service quality is one of the influencing factors frequently mentioned by respondents, with 10 users stating that their disclosure behavior is affected by this factor. The coding reference point proportion for this factor is 17.3%, mainly including four aspects: irrelevant information, personalized service, content quality, and convenience.

Irrelevant information refers to information provided by eHealth websites that is inconsistent with user needs. The results show that the more irrelevant information on eHealth websites, the worse users' service quality experience, and the less likely they are to disclose information. For users, common irrelevant information mainly refers to advertisements and promotions. For example, R04 stated, "If there are many spam advertisements on the website, then I'm not willing to disclose information because I might never visit this website again." R05 also expressed, "When you input some minor symptoms on a website, and then an advertisement page pops up, this kind of website is very annoying and must be avoided."

Content quality is an important indicator of service quality, reflecting the degree of consistency between information provided by eHealth websites and objective facts. The results show that the higher the content quality of eHealth websites, the better users' service quality experience, and the more likely they are to disclose information. For example, R04 believed, "If doctors answer questions accurately, I will feel that this website is relatively reliable, and then I'm more willing to share my personal information on this website." Meanwhile, R06 stated, "I'm not very willing to disclose my personal information, and I don't often use eHealth websites because they tend to exaggerate some symptoms, but in reality, they might not be that serious."

Convenience is also a common indicator of service quality, reflecting the convenience and speed of information services provided by eHealth websites. The study found that the higher the convenience of eHealth websites, the better users' service quality experience, and the more likely they are to disclose information. For example, R02 stated, "If information security is guaranteed, I still like this method very much. Such websites are very convenient, and sometimes minor ailments don't require going to the hospital." R14 also expressed, "I will state my personal information online. I think it's quite convenient and can save a lot of time."

Personalized service refers to the ability of eHealth websites to provide information tailored to individual users and meet different user needs. The results show that the higher the degree of personalized service, the better users' service quality experience, and the more likely they are to disclose information. For example, R13 believed, "There are specialized doctors on the website who will recommend what medicine you should take based on your symptoms, which feels pretty good." R14 stated, "I can consult questions on the website and also make appointments. These functions work quite well."

4.2 Perceived Risk

Perceived risk refers to users' subjective judgment of potential negative consequences from disclosing information on eHealth websites. The study shows that perceived risk is the second most important factor affecting user information disclosure behavior in eHealth websites, with 15 respondents mentioning its significant impact. The coding reference point proportion for this factor is 24.9%, including three aspects: information distortion, information leakage, and privacy concerns.

Information distortion refers to the degree to which information provided by eHealth websites deviates from objective facts. The results show that the more serious the information distortion, the stronger users' perceived risk, and the less likely they are to disclose information. For example, R04 stated, "Many aspects of medicine are not well done and are very sensitive. For instance, headaches are difficult to judge accurately, so this is one reason why I'm not very willing to disclose personal information." R18 believed, "Who knows if the so-called experts on the website are real experts? If they are real, I would still disclose my information."

Information leakage is the most impactful indicator of perceived risk, referring to eHealth websites disclosing users' unwilling-to-public information externally. The study found that the greater the possibility of information leakage on eHealth websites, the greater users' perceived risk, and the less likely they are to disclose information. For example, R01 believed, "There are still very few reliable websites. Most may leak personal privacy, and I'm also afraid that doctors are not reliable and might sell personal information. Generally, I won't say too much to doctors online." R09 also expressed, "The information on medical websites nowadays is not very secure. I'm worried that personal health information will be leaked. As for how much I would say online, it depends on the situation."

Privacy concerns refer to users' own emphasis on personal private information. The results show that the higher users' concern for their information privacy, the greater their perceived risk, and the lower the likelihood of information disclosure. For example, R11 believed, "I'm not willing to disclose personal health information on health websites because I pay more attention to personal privacy. It feels strange to tell others about my private health information online." R17 also stated, "I'm worried that the website will archive personal health information, but its security and credibility are not high enough, which would hinder me from disclosing personal health information."

4.3 Illness Characteristics

The study found that illness characteristics are another factor affecting user information disclosure behavior in eHealth websites, with 11 respondents stating they were affected by this factor. The proportion of reference points for this factor is relatively low compared to the other four factors, accounting for only

11.4%, mainly including four situations: critical illness, private issues, minor ailments, and serious or chronic difficult-to-treat conditions.

Critical illness refers to urgent medical situations where there is no nearby hospital or insufficient time. The results show that in such situations, users usually choose to disclose information on eHealth websites. For example, R06 stated, "When I don't have time to see a doctor, but the symptoms are relatively serious, I might search online." R08 believed, "When the situation is particularly urgent and there is no hospital nearby, only then would I consider disclosing health information online for urgent help."

Private issues refer to diseases involving personal privacy that are difficult to discuss face-to-face with doctors. The results show that in such situations, users with high privacy concerns mostly choose physical hospitals for diagnosis and treatment. For example, R15 stated, "The questions I consult on websites are not particularly private. For more private issues, I would still go directly to the hospital because after all, hospitals are safer." However, users with lower privacy concerns often choose to disclose personal information on eHealth websites to obtain needed medical services. For example, R02 believed, "For more private conditions, sometimes I might be too embarrassed to tell the doctor, so I would choose to input this information online to seek help."

Minor ailments refer to conditions that are not serious, do not affect users' normal lives, and can be treated or left untreated. The results show that in this state, users usually choose to disclose personal information on eHealth websites to solve problems. For example, R01 stated, "For minor issues like weight loss or facial acne, I would search for solutions on websites." R05 also expressed, "Now for some minor illnesses, such as colds and fevers, there's no need to go to the hospital; they can be resolved directly on websites."

Serious or chronic difficult-to-treat conditions refer to users suffering from serious illnesses or chronic conditions that are difficult to cure. The results show that in such cases, users' perceived risk is very low, and since physical hospitals cannot meet users' needs, users often adopt a "give it a try" mentality to search the all-encompassing online world for famous doctors or new medications. For example, R03 believed, "If there are very serious problems with my health, I would disclose personal information on websites. When health has major problems at that point, who still cares about personal information?" R07 stated, "For instance, with hypertension that requires long-term attention, it's very distressing, so I would definitely pay long-term attention online to see if any new radical cure has emerged. Cancer patients probably do this even more."

4.4 Perceived Utility

To date, there is no clear definition of perceived utility. Some scholars believe perceived utility is the deviation between user expectations and their actual feelings [44], while others believe it refers to users' overall evaluation of decision-making objects [45]. In the specific context of this study, perceived utility is

defined as users' overall evaluation of whether information disclosure in eHealth websites can generate positive benefits. The study found that perceived utility is the most important factor affecting user information disclosure behavior in eHealth websites, with 15 respondents mentioning its significant impact. The coding reference point proportion for this factor is as high as 25.4%, covering three aspects: personal experience, user habits, and perceived value.

Personal experience refers to users' evaluation of their previous experiences with similar websites. The results show that the worse users' past experiences with similar websites, the less likely they are to disclose information on eHealth websites. For example, R02 stated, "I previously searched online for answers about cold-related symptoms without registering, but after a while, a hospital called to ask if I would like to visit their hospital. I found this too terrifying." R03 revealed, "I used to have a classmate whose account was stolen, and I was asked to help her buy things online. Only later did I discover the information was stolen, and then I was cheated. Anyway, now I won't easily disclose my personal information online anymore."

User habits refer to the processing methods users typically choose when encountering medical and health problems. The results show that if users have the habit of frequently obtaining information online, they are more likely to disclose information on eHealth websites. For example, R02 revealed, "I usually search on websites first, such as Baidu and Sina. For instance, if I have a cold, I would ask whether fever and cough count as a cold." User R14 also stated, "Anyway, if I get sick, I will definitely first look at health websites like Baidu (Muzhi) Doctor."

Perceived value refers to users' subjective feelings about whether they can benefit from disclosing information on eHealth websites before using them. The results found that the greater users' perceived value, the higher the likelihood of information disclosure. For example, R04 revealed, "If this website can indeed provide me with some help, I would be willing to disclose information on the website." R15 believed, "Even if the website might not be secure, if its medical power is strong, the doctors are particularly reliable, and the advice given can quickly solve my problem, then I would still choose to disclose information."

4.5 Subjective Norms

Subjective norms, also known as social norms, reflect the degree to which users are influenced by important people (such as family, relatives, and friends) [46-47]. In the specific context of this study, subjective norms are defined as the degree of influence from others, organizations, or social factors that users experience before disclosing information on eHealth websites, such as recommendations from others and website reputation. The study found that subjective norms are relatively important factors affecting user information disclosure behavior in eHealth websites, with almost all respondents (17) stating that their information disclosure behavior on eHealth websites was influenced by this factor.

The coding reference point proportion for this factor is 21.1%, including three indicators: online reputation, offline recommendations, and platform strength.

Online reputation refers to the overall evaluation of eHealth websites by online users. The results show that the better the online reputation of eHealth websites, the more likely users are to use them and disclose information on them. For example, R01 stated, "I usually compare website evaluations. If a website has good evaluations, I will disclose more information on it." R17 believed, "If user comments are good, the website has high visibility and a very good reputation, then I will confidently disclose my personal information to these websites."

Offline recommendations are an important form of word-of-mouth, referring to users who have used eHealth websites and had good service experiences encouraging their relatives and friends to use them. The results show that the stronger the offline recommendations, the more likely users are to disclose information. For example, R09 stated, "Recommendations from friends might prompt me to disclose my personal health information." R10 also believed, "Recommendations from friends are relatively reliable. After all, I trust my friends, and I might be willing to disclose my personal health information on websites recommended by friends."

Platform strength refers to the influence exerted by eHealth websites through their scale, services, and team building. The results show that the stronger the platform strength of eHealth websites, the more likely users are to disclose information. For example, R01 stated, "If the doctors in the website are authoritative doctors recognized by official authorities, I would disclose more information on the website." R05 revealed, "For relatively authoritative websites, that is, information websites opened by relatively authoritative hospitals, they should be more reliable, and I would consider disclosing more personal information on such websites."

5 Research Results

The research results indicate that user information disclosure behavior in eHealth websites is mainly influenced by five core categories: perceived utility, perceived risk, subjective norms, service quality, and illness characteristics.

(1) **Perceived utility** includes three main categories: personal experience, user habits, and perceived value, and is the most important factor affecting user information disclosure behavior in eHealth websites. Personal experience and perceived value are positively correlated with user information disclosure behavior in eHealth websites; that is, the better users' personal experiences, the greater the likelihood of information disclosure; the greater users' perceived value, the higher the likelihood of information disclosure. Regarding user habits, if users have the habit of frequently obtaining information online, they are also more likely to disclose information on eHealth websites.

(2) **Perceived risk** includes three main categories: information distortion, information leakage, and privacy concerns, and is the second most important factor affecting user information disclosure behavior in eHealth websites. The three main categories of perceived risk are negatively correlated with user information disclosure behavior in eHealth websites; that is, the higher the information distortion, the lower the likelihood of information disclosure; the smaller the possibility of information leakage, the greater the likelihood of information disclosure; the lower users' concern for information privacy, the higher the likelihood of information disclosure.

(3) **Subjective norms** include three main categories: online reputation, offline recommendations, and platform strength, and are relatively important factors affecting user information disclosure behavior in eHealth websites, also the factors most frequently mentioned by respondents. The three main categories of subjective norms are positively correlated with user information disclosure behavior in eHealth websites; that is, the better the online reputation, the higher the likelihood of information disclosure; the stronger the offline recommendations, the greater the likelihood of information disclosure; the stronger the platform strength, the higher the likelihood of information disclosure.

(4) **Service quality** includes four main categories: irrelevant information, personalized service, content quality, and convenience, and is the relatively least important factor among the five core categories affecting user information disclosure behavior in eHealth websites, also the factor least frequently mentioned by respondents. Among the four main categories of service quality, personalized service, content quality, and convenience are positively correlated with user information disclosure behavior in eHealth websites, while irrelevant information is negatively correlated; that is, the higher the degree of personalized service, the greater the likelihood of information disclosure; the better the content quality, the greater the likelihood of information disclosure; the higher the convenience, the greater the likelihood of information disclosure; while the greater the degree of irrelevant information, the lower the likelihood of information disclosure.

(5) **Illness characteristics** include four main categories: critical illness, private issues, minor ailments, and serious or chronic difficult-to-treat conditions, and are the least important factor among the five core categories affecting user information disclosure behavior in eHealth websites. Among them, when users face critical illness, minor ailments, or serious/chronic conditions that are difficult to treat, they usually choose to disclose information on eHealth websites to solve problems. For private issues, users with high privacy concerns mostly choose physical hospitals for diagnosis and treatment, while users with lower privacy concerns mostly choose to disclose personal information on eHealth websites to obtain services.

Additionally, the study found that many influencing factors of information disclosure behavior on general websites also apply to eHealth websites. For exam-

ple, perceived utility, perceived risk, subjective norms, and service quality also affect user information disclosure behavior on eHealth websites. However, the lower-level concepts (i.e., main categories) under these core category influencing factors are not identical, and the influence degree of each core category is also inconsistent. For instance, in eHealth websites, since they involve more personal information, users tend to pay more attention to the core category of perceived risk, especially the two main categories of information leakage and privacy concerns. On general websites, users pay more attention to factors such as personalized service and content quality. It should be noted that the core category of illness characteristics is a unique influencing factor for user information disclosure behavior in eHealth websites and does not exist in general websites.

This study uses qualitative research methods to construct a model of influencing factors for user information disclosure behavior in eHealth websites and analyzes it from three dimensions: government departments, eHealth websites, and users. The following implications are drawn:

(1) **From the government level**, strengthen standardized management and information security construction. Government departments should, on the one hand, strengthen management and monitoring of eHealth websites, certify qualified eHealth websites, and ban illegal websites according to law. On the other hand, they should strengthen information security construction from a macro perspective, prevent information leakage, and strengthen the construction of information leakage punishment mechanisms, enabling relevant practitioners to truly have laws to abide by and strictly enforce them. Departments and personnel who leak information, especially those who intentionally leak or even sell user health information, should be severely cracked down on, using government mandatory means to safeguard the information security environment for user information disclosure on eHealth websites.

(2) **From the eHealth website perspective**, improve service capabilities and enhance user experience. On the basis of ensuring user health information security, use a "push-pull" combined strategy to enhance website influence and attractiveness. On the one hand, websites should effectively improve their service capabilities, including enhancing personalized service capabilities, service convenience, and content quality. On the other hand, they should create a good user experience, including not only website pages and privacy protection mechanism construction but also cultivating online and offline reputation and visibility, and gradually achieving online-offline integration to realize seamless connection between websites and physical entities.

(3) **From the user perspective**, transform traditional thinking and enhance eHealth literacy. The foothold of user information disclosure behavior on eHealth websites still lies with users. Today, healthcare behavior is not limited to offline settings. Therefore, on the one hand, users need to transform the traditional mindset of "going to the hospital for any

illness," develop awareness of disclosing information on eHealth websites, reduce their own privacy concerns and privacy anxiety, and establish a certain perspective of privacy as a resource. On the other hand, users should enhance their eHealth literacy and improve their ability to sense and control unknown risks during the information disclosure process on eHealth websites.

This study has certain limitations, mainly reflected in the small number of users and the fact that research subjects are mostly young audiences. The research conclusions have not covered all user group types, thus the generalizability of the conclusions is somewhat lacking. The influencing factors of information disclosure behavior for other non-youth groups on eHealth websites still need to be considered. Future research should conduct relevant studies on broader user groups, continuously explore models of user information disclosure behavior on eHealth websites, and conduct empirical research through quantitative analysis and other methods to provide solid theoretical support and empirical foundations for the development and optimization of eHealth websites.

References

[1] Wang Ling, Li Jian. Research on the Equity of Medical and Health Resource Allocation in Liaoning Province [J]. Journal of Northeastern University (Social Science Edition), 2012, 14(6): 521-525. [2] Qi Mingzhu, Tong Yufen. Research on Population Equity of Medical Resource Allocation Among Districts and Counties in Beijing [J]. Beijing Social Sciences, 2010(5): 27-33. [3] Eysenbach G. What is e-health? [J]. Journal of medical Internet research, 2001, 3(2): 20-21. [4] Guo Xitong, Zhang Xiaofei, Liu Xiaoxiao, et al. Data-driven eHealth Service Management Research: Challenges and Prospects [J]. Management Science, 2017, 30(1): 3-14. [5] Peng Yuhua, Wu Yaqin, Liu Weifeng, et al. Research on eHealth and Its Development [J]. Journal of Medical Informatics, 2011, 32(7): 7-10. [6] Brown JS, Duguid P. Knowledge and organization: a social-practice perspective [J]. Organization science, 2001, 12(2): 198-213. [7] Wasko ML, Faraj S. Why should I share? Examining social capital and knowledge contribution in electronic networks of practice [J]. MIS quarterly, 2005, 29(1): 35-57. [8] Galegher J, Sproull L, Kiesler S. Legitimacy, authority, and community in electronic support groups [J]. Written communication, 1998, 15(4): 493-530. [9] Johnston AC, Worrell JL, Gangi PM D, et al. Online health communities: an assessment of the influence of participation on patient empowerment outcomes [J]. Information technology & people, 2013, 26(2): 213-235. [10] Edmunds A, Morris A. The problem of information overload in business organisations: a review of the literature [J]. International journal of information management, 2000, 20(1): 17-28. [11] Jung ML, Loria K. Acceptance of Swedish e-health services [J]. Journal of multidisciplinary healthcare, 2010, 3: 55-63. [12] Zhang Keyong, Li He. Research on Influencing Factors of Knowledge Sharing in Online Health Communities [J]. Library and Information Service, 2017, 61(5): 109-116. [13] Sun Xiaoling, Cheng Yang, Zhu Qinghua. Research on Influencing Factors

of User Privacy Disclosure Intention in Social Search [J]. Journal of Intelligence, 2017, 36(10): 172-179. [14] Nosko A, Wood E, Molema S. All about me: disclosure in online social networking profiles: the case of Facebook [J]. Computers in human behavior, 2010, 26(3): 406-418. [15] Christofides E, Muise A, Desmarais S. Information disclosure and control on Facebook: are they two sides of the same coin or two different processes [J]. Cyberpsychology & behavior, 2009, 12(3): 341-345. [16] Forman C, Ghose A, Wiesenfeld B. Examining the relationship between reviews and sales: the role of reviewer identity disclosure in electronic markets [J]. Information systems research, 2008, 19(3): 291-313. [17] Dwyer C, Hiltz SR, Passerini K. Trust and privacy concern within social networking sites: a comparison of Facebook and MySpace [C]//Proceedings of the thirteenth Americas conference on information systems. Keystone: AMCIS, 2007: 1-12. [18] Taddei S, Contena B. Privacy, trust and control: which relationships with online self-disclosure? [J]. Computers in human behavior, 2013, 29(3): 821-826. [19] Li Gang, Wang Dandan. Research on Influencing Factors of Social Network Site Users' Personal Information Disclosure Intention—Taking Sina Weibo as an Example [J]. Information and Documentation Services, 2015, 36(1): 35-41. [20] Livingstone S. Taking risky opportunities in youthful content creation: teenagers' use of social networking sites for intimacy, privacy and self-expression [J]. New media & society, 2008, 10(3): 393-411. [21] Böhme R, Pötzsch S. Collective exposure: peer effects in voluntary disclosure of personal data [C]//International conference on financial cryptography and data security. Berlin: Springer, 2011: 1-15. [22] Zlatolas LN, Welzer T. Privacy antecedents for SNS self-disclosure [J]. Computers in human behavior, 2015, 45(C): 158-167. [23] Strater K, Richter H. Examining privacy and disclosure in a social networking community [C]//Proceedings of the 3rd symposium on usable privacy and security. New York: ACM, 2007: 157-158. [24] Ko HC. The determinants of continuous use of social networking sites: an empirical study on Taiwanese journal-type bloggers' continuous self-disclosure behavior [J]. Electronic commerce research and applications, 2013, 12(2): 103-111. [25] Metzger MJ. Privacy, trust, and disclosure: exploring barriers to electronic commerce [J]. Journal of computer-mediated communication, 2004, 9(4): Jcmc942. [26] Krasnova H, Spiekermann S, Koroleva K, et al. Online social networks: why we disclose [J]. Journal of information technology, 2010, 25(2): 109-125. [27] Shi Shuo. Exploration of Social Network Site Users' Privacy Disclosure Behavior: Integration of Privacy Calculus Theory and TPB Model [D]. Nanjing: Nanjing University, 2011: 1-5. [28] Chen Xiangming. Qualitative Research Methods and Social Science Research [M]. Beijing: Educational Science Publishing House, 2000: 2. [29] Bogdan RC, Biklen SK. Qualitative research for education: an introduction to theory and methods [M]. Boston: Allyn and Bacon, 1982: 214-215. [30] Lu Yonghe, Luo Xin. Information System Research Model Based on Research Interviews [J]. Information Studies: Theory & Application, 2008, 31(5): 711-714. [31] Glaser BG, Strauss AL, Strutzel E. The discovery of grounded theory; strategies for qualitative research [J]. Nursing research, 1968, 17(4): 377-380. [32] Brand-O C, Miguez J. Using NVivo to assess a program of goal corrected empathic skills: a case study in the context of higher education [J].

Universal access in the information society, 2017, 16(4): 863-876. [33] Yao Wei, Han Jiashan, Song Xinping, et al. Application of a Memetics-based Social Media Intelligence Analysis Model in CI [J]. Journal of the China Society for Scientific and Technical Information, 2016, 35(6): 605-613. [34] Zhao Hongdan, Peng Zhenglong. Research on Influencing Factors of Compulsory Citizenship Behavior Based on Grounded Theory [J]. Management Review, 2012, 24(3): 132-139. [35] Fassinger RE. Paradigms, praxis, problems, and promise: grounded theory in counseling psychology research [J]. Journal of counseling psychology, 2005, 52(2): 156-166. [36] Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability [J]. Field methods, 2006, 18(18): 59-82. [37] Strauss AL. Qualitative analysis for social scientists [M]. Cambridge: Cambridge University Press, 1987: 29. [38] Barbour JB, Rintamaki LS, Ramsey JA, et al. Avoiding health information [J]. Journal of health communication, 2012, 17(2): 212-229. [39] Yin RK. Applications of case study research. Applied social research methods series [J]. Organization studies, 2003, 34(1): 105-131. [40] Cook TD, Campbell DT, Day A. Quasi-experimentation: design & analysis issues for field settings [M]. Boston: Houghton Mifflin, 1979: 37. [41] Locke K. Qualitative research and evaluation methods [J]. Nurse education today, 2002, 23(6): 467. [42] Guo Anyuan. Research on Influencing Factors and Mechanism of Psychological Contract Violation Based on Grounded Theory [D]. Wuhan: Wuhan University, 2015: 90. [43] Francis JJ, Johnston M, Robertson C, et al. What is an adequate sample size? Operationalising data saturation for theory-based interview studies [J]. Psychology & health, 2010, 25(10): 1229-1245. [44] Yu Chao, Zhang Chongyang, Fan Zhiping. Service Element Optimization Configuration Method Considering Customer Perceived Utility [J]. Chinese Journal of Management, 2015, 12(5): 744-749. [45] Wang Chong, Li Yijun, Wu Jiabao. Analysis and Empirical Research on Consumer Shopping Channel Decision Based on Perceived Utility [J]. Management Review, 2012, 24(10): 85-93. [46] Schofield JWT. Effect of norms, public disclosure, and need for approval on volunteering behavior consistent with attitudes [J]. Journal of personality & social psychology, 1974, 31(6): 1126-1133. [47] Ajzen I. The theory of planned behavior [J]. Organizational behavior and human decision processes, 1991, 50(2): 179-211.

Author Contribution Statement

Zhang Kun: Responsible for data processing and analysis, model construction and revision, and paper writing and modification.
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Research on Influencing Factors of User Information Disclosure Behavior in Electronic Health Websites

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Abstract: [Purpose/Significance] The paper aims to determine the influencing factors of information disclosure behavior, optimize the ecological environment of eHealth websites, and indirectly help realize the strategic goal of "Healthy China." [Method/Process] The paper uses the qualitative research method to analyze the three-level code of interview data. It also constructs the influencing factors model of the user information disclosure of the eHealth websites and extracts the 17 main categories and 5 core categories which affect the user information disclosure behavior on the eHealth websites. [Result/Conclusion] The user information disclosure behavior of the eHealth websites is mainly influenced by perceived utility, perceived risk, subjective norm, service quality, and illness characteristic. The perceived utility is the most important influencing factor. The perceived risk is the sub-important factor. The subjective norm is the more important influencing factor. The service quality and the illness characteristic are the relatively influencing factors. Accordingly, from the three dimensions of government departments, electronic health websites, and users, the relevant suggestions are summarized.

Keywords: electronic health (eHealth); eHealth website; information disclosure; qualitative research

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