ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

Identification of triggers and differentiated countermeasures for digital medical disorders in the elderly from the perspective of age stratification

Piao Siqi

Trinity International College, 51 Kampong Bugis #01-03 Kallang Riverside, Singapore
13612713766@163.com

Abstract: *Against the background of the intertwining of aging and digitalization, the social problems of the "digital divide" encountered by the elderly in hospitals are more prominent. The analysis of this article points out that elderly people of different ages have clear "digital divide" boundaries. The young elderly find it difficult when facing the complex operation process. Due to changes in physical function, the elderly cannot even pass the most basic fingerprint or face recognition, making technology a barrier to their medical treatment. The reason is that there is obvious conflict between the natural decline of physiological function and the rigid logic of technical design. Most current improvement measures remain superficial and fail to fit the physical conditions of the elderly. At the same time, children often choose to act directly on behalf of the elderly in order to save time, resulting in older adults losing opportunities to use and practice digital technology. Coupled with the lack of on-site guidance in hospitals and the psychological burden of elderly people who fear operating slowly or causing trouble, the superposition of these factors makes the elderly more and more isolated in the digital medical system. In response to these problems, it is suggested that the system operation should be more flexible by improving the inclusiveness of the software; guiding family members to change from "working on behalf of the elderly" to "teaching the elderly"; hospitals should set up fixed guidance personnel; and carry out more field exercises in the community. Through multi-party efforts, a warm support network will be established to ensure that the elderly of different ages can receive fair and dignified medical treatment in the digital age.*

Keywords: *Age Stratification; Digital Divide; Medical Treatment Barriers; Intergenerational Feedback; Precise Governance*

1. Introduction

With the deepening of population aging and the continuous improvement of social digitalization, China's overall development environment has also undergone many new changes. According to data released by the National Bureau of Statistics, as of the end of 2024, China's population aged 60 and above had reached 310 million, accounting for 22.0% of the total population [1]. With the rapid development of digital technology, the traditional medical service model is also gradually changing. For example, medical services such as appointment registration, online payment, online consultation, and electronic reports have also begun to shift from offline to online. As a result, many elderly people will encounter various problems when using smart devices and related applications, and the "digital divide" problem faced by the elderly has gradually attracted the attention of society. In response to this situation, the country has successively introduced a number of policies to improve the current situation. In 2020, the General Office of the State Council issued the "Implementation Plan on Effectively Solving the Difficulties of the Elderly in Using Intelligent Technology", emphasizing that while promoting technological innovation, we should also retain the traditional service mode that the elderly are more familiar with, and maintain offline services in multiple life scenarios [2]. In 2021, the Ministry of Industry and Information Technology launched the "Special Action for Internet Applications for Aging and Barrier-free Transformation" to promote medical apps and applets to increase the "elder mode" with large characters and easy operation. By the end of 2024, more than 3,000 websites and applications across the country have completed age-friendly adaptations [3]. These practices show that helping the elderly cross the digital barrier when seeking medical treatment has become an important part of building a "healthy China".

In recent years, the academic community has done a lot of research on the digital divide for the

ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

elderly, and the research perspectives are getting richer and richer. At the theoretical level, the research focus of the digital divide has shifted from the earliest "access divide" to the "use gap" and "knowledge gap", paying more attention to the differences in digital skills and information acquisition of different groups of people. Through field research and data statistics, scholars analyze the actual use of the Internet by the elderly and obtain empirical data on the digital divide in the supply of medical services for the elderly. On this basis, scholars also pay attention to the relationship between digital capabilities and the use of medical services. These studies provide important insights into what digital divides exist when the elderly use medical services, what causes these divides, and how solutions can be developed. On the basis of existing research, this article sorts out the relevant literature and analyzes the real situation of the elderly's use of digital medical services in combination with the actual medical scenarios of the elderly. On this basis, this article analyzes the reasons and puts forward directions and suggestions for improvement.

2. Literature review

Judging from the existing literature, the academic community has produced valuable research results on this topic. Academic discussion on the digital inclusion of the elderly generally shows a research trend from describing the current situation to exploring underlying mechanisms.

First of all, regarding digital differences within the elderly group, the internal "non-homogenization" has become the basic premise of the discussion. Jin Yongai and Zhao Menghan used large-scale data to point out that the digital life of the elderly in China is not homogeneous, but there is an obvious "age fault" [4]. Specifically, the young group aged 60 to 69 and the elderly over 70 years old show completely different proficiency in equipment operation, online use, etc. This discovery breaks the stereotype of simply classifying the elderly as "digitally abandoned people" and provides research inspiration for analyzing the characteristics of the elderly of different ages in terms of use in specific medical scenarios. However, judging from the existing literature, most studies still focus on the macro level. Research that truly delves into specific medical scenarios, such as appointment registration and online consultation, and observes the individual situations of elderly people of different ages—especially the oldest-old—is still relatively insufficient.

Secondly, judging from the research on the correlation between the digital literacy of the elderly and the use of medical care, the research of Wang Lianjie and others has established an explanation framework of "ability-driven efficiency" [5]. That is, the more proficient the use of the Internet, the stronger the sense of access to medical services. This conclusion seems clear, but it leaves a question worth thinking about: is this driving force constant? When the elderly enter a higher age stage and their physiological function gradually declines, whether the role of digital literacy will weaken remains an open question. The existing empirical research on the capture of this "attenuation effect" is still obviously insufficient.

In addition, "family support" is repeatedly emphasized in the research on how to help the elderly cross the digital divide. Whether it is the concept of "digital feedback" proposed by Zhou Yuqiong or the argument of Lu Jiehua and Wei Xiaodan on narrowing the digital gap to improve health, intergenerational support is regarded as the key [6-7]. However, it is worth noting that although family support is widely discussed, few studies have analyzed "age" as the core research factor. Most studies only regard age as background information and ignore the possibility that it may directly affect the "feedback" effect.

In general, existing research has not clearly explained how age stratification affects the path from intergenerational feedback to digital medical service utilization. If this differentiated adjustment path cannot be clarified, so-called “age-friendly” policies may inevitably become “one-size-fits-all” measures, and it is difficult to truly achieve precise policies. Based on this consideration, this paper puts age stratification at the center of the analysis. By examining the differentiated impact of digital feedback on the medical behavior of the elderly in different life cycles, it provides a more solid empirical basis for the formulation of accurate policies.

3. The current situation of the "digital divide" in medical services for the elderly

At present, medical services are developing rapidly in the direction of comprehensive digitalization. Online links such as appointment registration, mobile payment, and inspection report inquiry have gradually become an "invisible threshold" that is difficult for many elderly people to cross when they

ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

seek medical treatment. According to the research results of Jin Yongai's team on middle-aged and elderly netizens, about 82.9% of people will encounter various obstacles in the process of online operation. Among them, the proportion of elderly people aged 70 and above facing Internet difficulties has further increased to 87.9% [4]. Through actual investigation, it is not difficult to find that the digital-use dilemma encountered by the elderly group does not occur evenly in the whole group, but shows very clear differences with the growth of age.

(1) Young elderly group (60–70): basic operation is feasible but technical maladaptation is frequent

Most of the young elderly people aged 60 to 70 have mastered the basic smartphone operation methods. In the face of complex medical apps, there will still be obvious problems of "technical dissatisfaction". The relevant evaluation results show that the interaction process of most medical applications on the market is too cumbersome. When the elderly fill in the registered information and bind the medical insurance account, they often accidentally touch the screen and miss key information, resulting in the interruption of online operation. Although major platforms have launched the "caring mode" one after another, according to the proposal of the Peasants and Workers' Party during the Two Sessions in 2024, most of the current aging-friendly transformation is only on the surface, only enlarging the home page font, but once you enter the secondary page such as appointment and payment, the interface layout will change back to the original complex appearance [8]. This incoherence of visual effects and operation logic makes the young elderly learn the basic operation, but when encountering system updates or process adjustments, they still have to rely on the help of others to complete it.

(2) Oldest-old group (over 80 years old): digital medical barriers under the dual constraints of physiological decline and technological exclusion

For the elderly over 80 years old, digital medical treatment faces a dual rejection of physiology and technology. The first is the failure of biometric recognition, such as worn fingerprints, iris opacity or facial aging characteristics. The failure rate of mainstream verification methods such as face recognition is extremely high, and the compatibility of existing AI algorithms for elderly biometric features is obviously insufficient. The second is the fault between cognition and equipment. The elderly lack understanding of concepts such as "verification code" and "payment key", and the holding rate of smartphones is low. Data shows that the probability of the elderly aged 86 and above using telemedicine is much lower than that of the younger group. In the actual situation, this group almost completely relies on family members to accompany or substitute for medical treatment. At present, there are only 3.5 million elderly caregivers nationwide, which is far from enough to provide the high external dependence required for digital medical services for the elderly, so that the elderly are very likely to fall into a "medical island" in the absence of intergenerational support [1].

Digital medical services not only do not provide convenience for this group, but also increase the barriers to medical treatment for this group.

Generally speaking, the dilemma of the young elderly is "insufficient technical adaptation", while the elderly face "technical access failure". The above-mentioned young elderly groups and elderly groups have obvious age-stratification characteristics when seeking medical treatment. This phenomenon shows that no single-perspective aging-friendly policy can accurately cover the real medical demands of the elderly at different stages. Therefore, in order to meet the medical needs of the elderly of different ages, it is necessary to deeply explore the reasons why their demands are difficult to achieve, and accordingly, provide accurate policy suggestions for the medical needs of the elderly of different ages.

4. Analysis of the causes of the "digital divide" in medical services for the elderly

The "digital divide" encountered by the elderly when they go to the doctor is actually not a simple "technical operation" problem, but a dilemma caused by physiological function, technical logic, family environment and lack of social manpower.

First of all, there is a profound conflict between the degradation of physiological function and the "exclusivity" of digital product design. Wang Lianjie and other scholars believe that the Internet can improve the efficiency of medical treatment, but this conclusion mainly applies to younger people [5]. At the old age stage, just like the "age fault" mentioned by Professor Jin Yongai's research, the physical condition of the elderly has become the biggest obstacle. Due to fingerprint wear, sagging skin, or iris opacity caused by cataracts, many elderly people can't even pass the basic face brushing and fingerprint verification. This gap is essentially due to the high technical threshold — this "high" is mainly reflected

ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

in the rigid requirements for identification accuracy and response time. For example, many medical apps require users to blink or open their mouths within a few seconds, and the system often judges it as a recognition failure because the elderly move a little slower or have deeper facial wrinkles. According to CCTV News, in order to activate medical insurance, there was a 94-year-old man in Hubei who could not stand up to cooperate with the face recognition machine. He was forced to be lifted up by his family and repeatedly adjusted the angle in front of the counter to face the camera. Finally, the old man was so tired and out of breath [9]. This vividly reflects the rejection of the physiologically vulnerable at the bottom of technology. Most of the current aging-friendly transformations are just "enlarged fonts", which is actually just a kind of superficial care. If the hard thresholds of verification time and operation accuracy are not solved, even if the elderly see the words clearly, their bodies can't keep up and will still be blocked outside the door.

Secondly, intergenerational feedback often shows obvious "efficiency orientation" in real scenarios rather than real empowerment. Although Lu Jiehua and other scholars have emphasized the importance of family support, this logic is easy to fail in the fast-paced medical scenario. Even if some young elderly people can match the medical services they need according to the requirements of the medical app, they often encounter operation speed issues. As a result, their accompanying children habitually act directly on behalf of the elderly to save time—for example, to secure a registration slot or meet a payment deadline. This kind of result-oriented help makes the elderly people have a serious sense of dependence, resulting in no improvement in their actual digital ability. For the elderly, it is already very difficult to guide them to learn these basic digital skills. Therefore, family members will also choose to do it directly, ignoring the ability of cultivating the elderly to gradually adapt to digital medical technology. That is to say, for both the young elderly and the advanced elderly, in real intergenerational feedback scenarios, most family members, driven by efficiency orientation, ignore the fact that direct agency actually deprives the elderly of opportunities to operate digital medical services independently. In addition, the deeper problem of "direct agency" is that young people now generally face great pressure in the workplace, and this pressure is reversely transmitted to the elderly, especially the elderly. In a survey on 'digital medical treatment', authoritative media such as "Half Moon Talk" once pointed out that " empty-nest elderly people would rather give up treatment without telling their families for fear of delaying their children from working outside", which reveals the prevailing mentality of "fear of adding trouble" to the elderly [10]. This emotional burden of fear of becoming a "burden" for children makes the elderly choose to take the initiative to retreat when facing digital barriers. This psychological pressure hidden behind warmth is an angle that is easily ignored in the current intergenerational support research.

In addition, the serious "lack of manpower" in the social support system is a real bottleneck that leads to the insurmountable digital divide. According to statistics, by the end of 2024, the number of elderly people aged 60 and above in China has reached 310 million, while there are only about 3.5 million licensed elderly care personnel nationwide. This means that on average, each caregiver has to deal with nearly 90 elderly people. With such a huge difference in human resources, the focus of nursing resources is bound to be occupied on the physical care of daily life, which is unable to cover the needs of complex and time-consuming digital medical guidance. The current situation of "someone feeds food, no one clicks the mobile phone" intuitively proves that it is not realistic at the current stage to cross the digital divide with the support of existing manpower alone.

Finally, through communication with many elderly people, it is found that there is a lack of digital training in social resources for serious scenarios such as medical treatment. This vacuum of digital care makes the young elderly have a strong sense of panic when the operation fails, such as the fear of attracting the dislike of others because of slow operation. The "attenuation effect" brought to the young elderly due to the lack of digital training is more obvious. For the elderly with more degraded physiological functions, they are in a complete vacuum of digital care. The psychological pressure brought about by the "lack of organization" is often more difficult to overcome than the technology itself. It can be seen that without a normalized volunteer organization to fill this double gap of manpower and emotion, it is difficult to make the 310 million elderly truly integrate into the digital age by technical fine-tuning alone.

5. Conclusions and Discussions

Solving the digital dilemma in the process of medical treatment for the elderly is essentially a systematic project involving physiological adaptation, intergenerational relations and social resource reorganization. It is difficult to fundamentally reverse the status quo by technical iteration alone.

ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

In the field of technology research and development, aging transformation needs to shift from superficial visual optimization to deep logical compatibility. At present, most medical apps are only in the primary stage of font magnification, but generally ignore the biometric problems caused by fingerprint wear or skin sagging in elderly patients. For such physiological obstacles, the technical side should optimize the algorithm logic, appropriately extend the recognition time or reduce the threshold of verification accuracy, and introduce alternative means such as voice pattern verification. In addition, an automatic trigger mechanism for manual fallback services should be added to the app, that is, when the failure of the user's continuous operation is detected, the system should be able to jump to the manual service channel immediately to ensure that the elderly can still obtain basic medical protection through traditional manual channels when the digital path is blocked.

Within the family, the intergenerational support model should shift from “doing things on behalf of the elderly” to “capacity empowerment.” In real medical scenarios, children often operate directly instead of the elderly because of efficiency problems, which actually inhibits the learning of digital skills of the elderly. In this regard, we should advocate a guided participation model and encourage the elderly to establish process awareness in practice. For example, children actively participate in encouraging the elderly to operate by themselves, and give guidance on the problems arising in the operation, so as to build the confidence and ability of the elderly to operate themselves. In addition, to achieve this transformation, it is also necessary to guarantee at the institutional level. In order to effectively reduce the time pressure of children and promote the enthusiasm of children to tutor the elderly, the implementation of policies such as flexible medical leave can be explored. The system can optimize the time cost and make the tutoring within the family more feasible, so as to weaken the deep digital dependence of the elderly on their children from the source and promote the ability of the elderly to cross the digital divide.

In response to the manpower gap caused by social resources, building a multi-dimensional auxiliary system that is professional and voluntary has become a top priority. In the face of the current situation of "someone feeds and no one teaches mobile phones", it is necessary for medical institutions to add digital medical assistants to provide immediate assistance to unaccompanied elderly patients. At the same time, the basic digital medical guidance should be integrated into the vocational skills assessment system of elderly caregivers, and the willingness and ability of nursing staff to provide digital services should be improved through special subsidies and other incentives. In this way, nursing staff can play a bridging role in providing digital technical support in addition to daily physical care to prevent the elderly from becoming marginalized in the highly digital medical system.

Finally, eliminating the technological panic psychology of the elderly is the emotional premise of crossing the digital divide. The retreat of some elderly people is not due to lack of ability, but to fear of difficulties caused by lack of psychological expectations. This requires increasing digital practical education for the elderly at the community level, specifically by expanding the scope of the original theoretical lectures and turning more to the simulation practice of practical scenarios. For example, such programs should organize field drills for the whole process of online registration and payment, so that they can get psychological desensitization before entering the real medical scene. At the same time, the introduction of social volunteer organizations to provide emotional support can provide the elderly with a sense of support after making mistakes. Only by making the elderly group feel that the technical environment is inclusive and error-correctable can their endogenous motivation to integrate into the digital medical system be fundamentally released.

References

[1] National Bureau of Statistics of China. (2025). Statistical communiqué of the People's Republic of China on the 2024 national economic and social development. China Statistics, (3), 4-21.
[2] General Office of the State Council. (2020). Circular of the General Office of the State Council on issuing the implementation plan to effectively solve the difficulties encountered by the elderly in using intelligent technology. Gazette of the State Council of the People's Republic of China, (34), 20-25.
[3] Bu, X. (2020, December 29). Ministry of Industry and Information Technology issued the "Special action plan for age-friendly and accessibility renovation of internet applications." People's Post and Telecommunications, p.1.
[4] Jin, Y., & Zhao, M. (2019). Internet use and active aging of the elderly in China: An analysis based on the 2016 China Longitudinal Aging Social Survey. Population Journal, 41(6), 44-55.
[5] Wang, L. (2018). Research on the influence mechanism of internet use on the physical and mental health of the elderly: Empirical analysis based on CGSS (2013) data. Modern Economic Research, (4),

ISSN 2706-6827 Vol. 8, Issue 2: 96-101, DOI: 10.25236/IJFS.2026.080212

101-108.
[6] Zhou, Y. (2014). Digital divide and cultural feedback: A quantitative investigation of the "quiet revolution" within families. Modern Communication (Journal of Communication University of China), 36(2), 117-123.
[7] Lu, J., & Wei, X. (2021). Analytical framework, concepts and path choices for governing the digital divide of the elderly: Based on the perspectives of digital divide and knowledge gap theory. Population Research, 45(3), 17-30.
[8] Central Committee of the Chinese Peasants and Workers Democratic Party. (2024). Proposal on accelerating age-friendly renovation of internet medical services to further enhance medical convenience for elderly patients. In The Second Session of the 14th National Committee of the Chinese People's Political Consultative Conference. Beijing.
[9] China National Radio. (2020, November 23). 94-year-old man held up for facial recognition to activate social security card; involved bank apologizes [Online news article].
[10] China Comment. (2023). "Digital medical services" should not force the elderly to "conceal illnesses and give up treatment." China Comment.