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Practical Dilemmas and Practical Paths of Community Elderly Care Empowered by Digital Technology

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Abstract: At present, China has entered an aging society and shows a continuously accelerating trend. As an external supplement to family-based elderly care, community elderly care has gradually attracted attention from the academic community in recent years. With the rapid development of digital technology, new practical paths have emerged for community elderly care to meet the diversified needs of the elderly. However, in the process of practical operation, community elderly care is faced with such problems as insufficient digital literacy among the elderly, a lack of elderly-friendly product design, and inadequate data security and privacy protection, leading to insufficient empowerment of digital technology for community elderly care. In response to these issues, this study proposes practical paths from the aspects of publicity and education, institutional guarantees, product upgrading, and talent support, aiming to provide a certain reference for relevant researchers.

Keywords: Digital technology; Community elderly care; Practical dilemmas; Practical paths

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1. Practical dilemmas of digital technology empowering community elderly care

1.1. Inadequate digital literacy of the elderly

Against the backdrop of the digital age, the lack of digital literacy among the elderly not only easily leads to "derailment" in their personal social life but also restricts the improvement of community elderly care quality. Firstly, this is because the elderly have insufficient ability to accept new things and are at a loss when faced with a wide variety of emerging digital technologies. Surveys show that most elderly people cannot proficiently master various smart elderly care devices and online elderly care service platforms available on the market. For instance, smart health bracelets, which focus on real-time monitoring of the elderly's health, can theoretically upload the elderly's physical information (such as pulse and blood pressure) to smart clients in real time for their children

or doctors to access. However, in reality, the elderly often put these devices aside due to issues like complex connections and inconvenient operation, preventing them from fulfilling their intended functions [1]. Secondly, the elderly have relatively few channels and opportunities to learn digital technologies. Although some social sectors occasionally organize training activities related to digital technologies, these activities are limited by the number of participants and coverage scope, making it impossible for the elderly to acquire truly systematic and in-depth knowledge. Meanwhile, as the elderly age, their physical functions gradually decline, making them more prone to feelings of frustration when learning new knowledge. This significantly undermines their patience and confidence in learning, ultimately affecting the learning effect [2].

1.2. Insufficient elderly-friendly product design

Currently, although the ultimate purchasers and users of digital products for elderly care are the elderly, the designers and sellers are mainly young people. This leads to an asymmetry between supply and demand in product design, widening the digital "divide" for the elderly. Some scholars point out that, first of all, the design of operation interfaces for current digital products for elderly care is relatively complex and cumbersome—they simply enlarge the font size without resetting the logic. Secondly, their function design is rather flashy and impractical; some functions are added merely for the sake of gimmicks, while the real needs of the elderly in terms of basic functions are not met [3]. In addition, there is also a lack of elderly-friendly services for these products. After-sales service hotlines usually do not have dedicated service channels for the elderly, making it difficult for the elderly to obtain timely and patient answers and guidance when they encounter problems. Moreover, instruction manuals of the products often use professional terminology, and the lack of intuitive explanations makes it hard for the elderly to operate the products [4].

1.3. Inadequate data security and privacy protection

Existing digital technologies can obtain the elderly's personal characteristics, financial information, and health data in real time from both hardware and software perspectives. They then use big data technology to build accurate profiles for the elderly, thereby accurately identifying the elderly's community elderly care needs. However, in reality, on the one hand, the elderly lack data protection awareness, and on the other hand, service institutions lack sound data security protection mechanisms—this has led to the repeated occurrence of personal information leakage incidents involving the elderly. In recent years, cases of the elderly suffering from telecom harassment and telecom fraud have surged sharply, from which it is not difficult to see the current situation of insufficient data security and privacy protection faced by the elderly [5]. At the same time, some digital elderly care service providers lack standards and transparency in terms of data use and sharing. They may use the elderly's personal data for commercial purposes, such as precision marketing, without fully informing the elderly. Due to their limited knowledge of digital technologies, the elderly often find it difficult to detect the improper use of their data. Additionally, in the process of data sharing, there is a lack of a clear definition of responsibilities and supervision mechanisms. Once data security incidents occur, it is difficult to hold the relevant parties accountable [6].

1.4. Inadequate construction of collaborative mechanisms

The collaborative supply mechanism for digital technology-empowered community elderly care is a systematic mechanism in which multiple subjects (including the government, social organizations, enterprises, communities, and the elderly) provide effective services to the elderly in communities within a standardized institutional

framework. The construction of this mechanism requires systematic thinking: in accordance with the basic principles of collaborative governance, a multi-agent collaborative engine with clear positioning and close connections among subjects should be built through the institutional design of cooperation, competition, and assessment, as well as internal vertical and horizontal information networks, covering links such as collaborative environment, collaborative motivation, collaborative process, and collaborative outcomes. This will thereby promote the transformation of digital technology-empowered community elderly care from disorder to order. In practice, however, this mechanism should cover the entire process of community elderly care. The government, based on the current development reality, should conduct corresponding collaborative actions with multiple subjects, integrate the advantages of funds, technology, and skills among these subjects, establish communication networks, coordinate interest conflicts, and ensure the satisfaction of the elderly's needs through the construction of a systematic and sound mechanism. Nevertheless, from the perspective of the current institutional design of community elderly care, it fails to give full play to the effectiveness of digital technology, resulting in the development of the community elderly care system tending to be in a static state rather than forming a dynamically collaborative mechanism with orderly circulation. Therefore, the lack of systematic thinking among responsible subjects makes it impossible to achieve overall and systematic arrangements, and essentially, it is difficult to form collaboration and coupling among multiple subjects in the supply process. The inadequate construction of collaborative mechanisms is also reflected in the uneven development of the same type of community elderly care against the backdrop of digital technology equity.

2. Practical paths for digital technology-empowered community elderly care

2.1. Strengthening digital literacy education for the elderly

First, develop diversified digital literacy training courses. As the "main coordinator" of community elderly care, communities should take the initiative to connect with relevant service institutions, senior universities, and support teams to regularly offer digital skills improvement classes for the elderly, helping them use electronic devices and online apps. For elderly people with mobility difficulties, home-based or online teaching methods can be adopted [7]. Second, focus on enhancing the practicality and interestingness of training. Communities can organize interactive activities such as case discussions and group competitions based on the training content to create an interesting training atmosphere, fully arouse the elderly's enthusiasm for participation, and help them effectively master and understand digital tools. In addition, the training content should be combined with the actual needs of the elderly, enabling them to truly feel the convenience brought by digital technology and improving their learning effectiveness [8]. Finally, to sustainably enhance the training effect, communities should timely monitor and provide feedback on the elderly's training progress, accurately understand and grasp the actual situation of the elderly using digital technology, and adjust and optimize the training content and methods in a targeted manner based on feedback. Furthermore, communities should encourage the elderly to communicate and share experiences with each other, fostering a positive learning atmosphere within the community [9].

2.2. Optimize and innovate the design of elderly-friendly products

The design of elderly-friendly products is an issue that most institutions or enterprises must pay attention to as society enters an aging phase (with a growing population of advanced age). First, regarding the design concept of elderly-friendly products, relevant institutions or enterprises should adhere to the people-oriented principle—

they need to put themselves in the elderly's shoes when thinking about issues, understand the real needs of elderly end-users, and clarify the underlying logic of design. Second, in terms of innovating elderly-friendly products, relevant institutions or enterprises should move beyond the traditional reliance on simple measures such as enlarging images or fonts. Instead, they should design functions tailored to different scenarios. For example, through the combination of smart wearable devices and home sensors, fall warning devices for the elderly can be developed: once an elderly person falls, the device will immediately issue a warning and send feedback to emergency contacts, ensuring that relevant responsible entities can provide timely rescue. Finally, in terms of after-sales services for elderly-friendly products, considering that the elderly may have declining learning abilities and insufficient ability to adapt to new things, relevant institutions and enterprises should provide comprehensive after-sales support. They should proactively offer after-sales solutions for the elderly, such as instructional videos (on product use), on-site services, and remote assistance [10].

2.3. Improve the data security assurance mechanism

In the actual operation of community-based elderly care services, the following measures should be taken: First, relevant responsible entities should formulate strict system access authorization standards, define the scope and level of operations for staff, and stipulate that only authorized personnel can query, operate, and use data within the specified scope. For instance, community doctors can only access information related to the elderly's health care, while community managers can only view service records and relevant basic information [11]. Second, institutions and enterprises providing elderly care services should actively adopt cutting-edge encryption technologies. Whether for data transmission or data storage, all data must be stored and transmitted in the form of ciphertext. Meanwhile, a sound data backup and recovery mechanism should be established. Third, communities should set up a data security emergency response mechanism. When a data security incident occurs, the emergency response process can be activated promptly, and effective measures can be taken to address the issue. Relevant personnel should be notified in a timely manner; the scope of impact and severity of the incident should be assessed; and corresponding measures should be implemented for remediation and prevention—all to minimize the impact of data security incidents on the rights and interests of the elderly and the operation of community-based elderly care services [12].

2.4. Establishing a systematic and efficient collaborative mechanism

As a basic-level public affair, digital technology-empowered community elderly care involves multiple subjects, including the government, communities, society, and the elderly. To advance this initiative, it is necessary to accurately grasp the connotation of grassroots governance. The author believes that the collaborative governance concept from the field of new public management can be introduced to build a collaborative mechanism for community elderly care [13]. This mainly includes four steps: establishing a collaborative motivation mechanism, improving a multi-subject decision-making mechanism, formulating a multi-dimensional incentive mechanism, and setting up a supervision and feedback mechanism. Firstly, the motivation for each subject to participate in community elderly care stems either from the pursuit of their own interests or the need to safeguard public interests. However, their specific interest demands vary across different contents and links, resulting in differences in what satisfies their needs. Therefore, the establishment of the motivation mechanism must focus on three key aspects: collaborative goals, interest incentives, and resource integration. Secondly, community elderly care concerns all members of the community. To achieve a pattern of multi-subject collaborative supply, it is essential

to develop a sound multi-subject decision-making mechanism, which includes an information sharing mechanism, a communication and negotiation mechanism, and a decision-making coordination mechanism. Thirdly, only when the participation of various subjects in elderly care service provision is encouraged and recognized can their sustained motivation to participate be maintained. Thus, targeted incentive measures should be adopted based on the nature and characteristics of different participating subjects. Finally, a systematic and efficient collaborative mechanism cannot function without supervision and feedback. Efforts can be made to build this mechanism by focusing on the development of both a supervision mechanism and a feedback mechanism [14].

2.5. Attracting professional teams to participate

Community elderly care emphasizes the participation of multiple subjects. Against the backdrop of empowerment by digital technology, community elderly care projects should involve professional organizations in the specific design of operations. Professional organizations possess extensive industry-related backgrounds, project experience, and digital knowledge and skills. In practical operations, they can not only carry out project implementation well but also effectively help communities reduce potential risks. In the early stage of project operation, on-site research and learning from domestic and international experience should be conducted, which mainly includes collecting elderly residents' demands for elderly care services, analyzing project recognition, and predicting residents' participation. Based on these efforts, a preliminary operational framework for community elderly care should be established, internal and external resources integrated, and a community elderly care system truly suitable for the local community built, starting from the actual needs of community residents [15]. Currently, the knowledge level and understanding of elderly care among most practical providers of community elderly care still remain in the traditional mindset. Therefore, the professional teams brought in should strengthen digital skills training for service providers, so as to improve the service quality of these providers and better meet the elderly's needs for community elderly care.

3. Conclusion

To sum up, digital technology has brought new opportunities and possibilities to community elderly care, but it also faces many practical dilemmas, and there is no way to solve them overnight. Therefore, under the joint attention of the entire community, it is necessary to take the following measures: first, strengthen digital literacy education for the elderly to help them integrate better into the digital age and enjoy the convenience brought by digital technology; second, optimize and innovate elderly-friendly product design to make digital elderly care products better align with the actual needs of the elderly and enhance their real user experience; third, improve the data security assurance mechanism to eliminate the "digital crisis" faced by the elderly due to information leakage; fourth, establish a systematic and efficient coordination mechanism to stimulate the synergetic force for promoting the precision, digitalization, and intelligentization of community elderly care; fifth, attract professional teams to participate, so that more elderly people can enjoy professional and high-quality elderly care services under the background of digital community elderly care. However, empowering community elderly care with digital technology remains a long-term and arduous task. It requires the participation of multiple stakeholders, as well as their persistent efforts and exploration. Only by identifying and solving problems in practice can feasible paths be summarized, which will provide sustained impetus for the high-quality development of community elderly care. In this way, the elderly in the new era can enjoy the convenience brought by digital technology and live a happy and healthy old age.

Disclosure statement

The author declares no conflict of interest.

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