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Discussion on the Current Situation and Implementation Models of Pharmaceutical Science Popularization Communication in China

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Abstract: At present, the general public has limited knowledge of pharmaceutical products, which to a certain extent increases the risk of medication. Strengthening pharmaceutical science popularization education is particularly important for promoting rational drug use, reducing medication risks, and improving national health literacy. Based on this, this paper analyzes the current situation and main implementation models of pharmaceutical science popularization communication in China, reveals the prominent challenges faced, and explores specific countermeasures on this basis. It is expected to provide useful references for the high-quality development of China's pharmaceutical science popularization cause and contribute to the construction of Healthy China.

Keywords: Pharmaceutical science popularization; Communication current situation; Implementation models; Rational drug use; New media communication

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1. Introduction

The national Healthy China Action (2019–2030) clearly includes rational drug use popularization in the key tasks of health promotion, and the Three-Year Action Plan for Improving National Health Literacy (2024–2027) further incorporates pharmaceutical science popularization into the core content of healthy promotion hospital construction. In 2025, the national residents' health literacy level reached 33.69%, but the problem of irrational drug use is still prominent. Drugs are one of the most basic intervention methods for chronic disease treatment. Data from the World Health Organization shows that about 50% of patients worldwide have irrational drug use behaviors, posing a serious threat to their own health. Drugs are powerful tools to protect health, but incorrect medication or improper prescriptions will instead cause secondary harm to patients. Therefore, the popularization of pharmaceutical knowledge is of great significance for improving public health literacy, reducing drug abuse and misuse, saving medical resources, and promoting social harmony and development. This paper briefly sorts out the current situation characteristics and mainstream implementation models of pharmaceutical science popularization

communication in China, analyzes the current challenges, and proposes optimization paths to provide references for the high-quality development of the pharmaceutical science popularization cause.

2. Current situation characteristics of pharmaceutical science popularization communication in China

2.1. Online-offline integrated communication form, with new media as the main carrier

At present, the development of pharmaceutical science popularization in China has made considerable progress. The publicity forms are no longer limited to traditional lectures and distribution of promotional materials; new media platforms such as Weibo, WeChat, Douyin, and Xiaohongshu have become the main carriers [1]. For example, WeChat, a social software with a large user base, can spread information in a timely manner, and many hospitals or pharmaceutical departments take it as the main position for pharmaceutical science popularization; numerous doctors and experts have also settled on short video platforms, using their professional knowledge and clinical experience to create concise and easy-to-understand popular science works.

Although more and more people obtain health knowledge through online platforms, offline communication still plays an irreplaceable role, especially for the elderly. For them, online information is complex and inconvenient to operate, and they need more offline popular science services. Offline forms such as hospital pharmaceutical consultation windows, community popular science lectures, campus education, home pharmacist home visits, and popular science exhibitions are still important carriers of pharmaceutical science popularization [2]. Online popular science allows users to obtain health knowledge more quickly and can drive more people to participate in consultations, free clinics and other activities; offline lectures and activities can expand the coverage of popular science and improve its pertinence.

2.2. Communication content focuses on practical needs, with continuously expanding coverage scenarios

In the past, pharmaceutical science popularization content mainly focused on explaining the dosage and usage of drugs to the public. Now, it mainly centers on the public's high-frequency medication needs, becoming more diversified and refined. In particular, the physiological, biochemical and pathological mechanisms of the elderly, children, pregnant and lactating women and other groups are different from ordinary people, with different pharmacokinetic and pharmacodynamic characteristics, so medication safety needs more focused attention. In recent years, traditional Chinese medicine (TCM) popularization and the communication of knowledge on the homology of medicine and food have become increasingly popular. Some hospitals interpret TCM prescriptions through allusions, legends, animations, etc., correcting some misunderstandings about TCM [3]. For example, Pingyi County Traditional Chinese Medicine Hospital has created a column of TCM culture stories, telling the origin of drug names such as "Liujinu" and allusions like "Jujing Quanxiang"; Shanghai Seventh People's Hospital has produced the animation series *Zhizi Seeks Medical Advice* to popularize TCM knowledge.

2.3. Pharmacists as the main communication subject, with a preliminary formation of a diversified participation pattern

Pharmacists are the main force for rational drug use and the core subject of pharmaceutical science popularization. They participate in popular science work by writing popular science articles, making videos, and giving lectures.

The pharmacy department of hospitals is the core force of popular science organizations. Many hospitals have set up full-time publicity teams to release popular science content, or cooperate with TV stations, universities and other institutions to improve the professionalism and communication power of popular science works [4].

In addition to medical institutions, pharmaceutical associations, pharmaceutical enterprises, universities and other subjects also actively participate. For example, the Guangdong Pharmaceutical Association hosts AI application training to improve pharmacists' popular science skills; the PSM Guangdong Pharmaceutical Science Popularization Research Fund supports the development of popular science projects such as stroke prevention and treatment. However, the construction of the popular science talent team still needs to be strengthened. Many pharmacists lack relevant popular science training, as well as skills such as new media operation and video production, which affects the quality of popular science [5].

2.4. Differences in communication effects, with overall efficiency to be improved

Nowadays, pharmaceutical science popularization communication has achieved certain results and attracted widespread attention. However, there are obvious differences in the effects of popular science communication. Urban residents have a higher level of understanding, trust and practice of popular science content than rural residents; people with high educational levels have significantly higher health literacy than those with low educational levels; groups such as the elderly and rural residents have more limited channels to obtain popular science knowledge [6]. On platforms, for example, WeChat official accounts rely on fan bases for communication, and their exposure will decrease over time; although platforms like Bilibili can achieve continuous communication through algorithm recommendations, differences in user preferences on the platform will lead to differentiated communication effects.

3. Main implementation models of pharmaceutical science popularization communication in China

3.1. New media matrix linkage model

The so-called new media matrix linkage model relies on multiple media platforms to build a differentiated communication matrix and expand the coverage of popular science. It mainly uses the attributes and user characteristics of different media to formulate adaptive content [7]. WeChat official accounts usually publish graphic content to conduct popular science in the form of pictures and texts. Douyin is usually used to release fast-paced short videos to attract users. Bilibili is more suitable for creating long video popular science series and designing interactive narrative structures to guide bullet screen comments.

3.2. AI-enabled full-process model

Artificial intelligence can optimize links such as popular science creation and production, improve the efficiency and quality of popular science, and is an innovative direction of pharmaceutical science popularization in recent years. AI tools can be used to assist topic selection, generate scripts, and produce videos. AI tools such as DeepSeek and Doubao can sort out hot demand and create vertical content, parallel content, and hot topic integration content [8]. Inputting structured prompts can generate initial scripts. In the production stage, Tencent Zhiying is used to create digital humans, and JianYing's voice cloning and AI subtitle functions are used to reduce production costs and shorten the cycle. Before the release of works, AI tools can also be used to screen

the scientificity of the content and check for sensitive words, and professional review can be carried out by the medical team.

3.3. Diversified integrated service model

The diversified service model aims to break the single boundary between online and offline, inside and outside the hospital, and provide the public with popular science services in various popular science forms. It mainly includes three dimensions: in-hospital popular science, community extension, and home services. In-hospital popular science is based on pharmaceutical consultation windows, promotional electronic screens, and pharmaceutical clinics to provide timely and professional medication guidance; community extension sinks services to the grassroots through popular science lectures, free clinics, and health record establishment; home services rely on family pharmacist teams to provide personalized services such as home visits and medication monitoring for key groups such as chronic disease patients and the elderly [9].

3.4. Professional team operation model

The development of popular science work requires a professional team. Therefore, a professional popular science team composed of pharmacists, clinicians, new media operators, designers, etc. can be established, responsible for content planning, professional review, production and communication and other links. Team members need to learn knowledge such as popular science creation processes and relevant laws and regulations, and also review the scientificity, professionalism and compliance of popular science works [10]. The operation of a professional team can effectively solve problems such as scattered popular science creation and uneven quality, and is an important guarantee for the output of high-quality popular science works.

3.5. Demand-oriented dynamic adjustment model

This model aims to take public demand as the core and timely adjust the content and form of popular science through data monitoring, extensive research, clinical feedback and other methods. For example, design personalized popular science content for needs, formulate healthy recipes for office workers, and produce chronic disease medication guidance for middle-aged and elderly groups; evaluate the communication effect through indicators such as the number of views, interaction rate, and knowledge awareness rate of works on various platforms, and adjust and improve the popular science content [11].

4. Main challenges faced by pharmaceutical science popularization communication in China

4.1. Insufficient resources and capabilities of professional personnel

Professional pharmaceutical personnel have limited time and energy, and their daily work tasks are already heavy, which compresses the time for popular science creation. In addition, a prominent problem is that the ability of popular science talents needs to be improved. Many medical personnel have not received popular science training and do not have skills such as script creation, video editing, and platform operation.

4.2. Prominent contradiction between homogenization and adaptability of popular science content

A large number of popular science contents have poured into the online space, but problems such as repetitive

themes, lack of innovation, and serious homogenization of works will make the public tired. It is necessary to design targeted content and forms based on the preferences of users on different platforms and the differences in the knowledge levels of different groups, which is currently insufficient [12]. The spread of pseudo-science and false information has disrupted the normal popular science order. Misleading content such as health preservation rumors and folk remedies is also spreading rapidly with the help of new media. Some members of the public delay treatment due to blind following, while the public's ability to distinguish popular science information is weak, which further aggravates the communication chaos.

4.3. Imperfect guarantee mechanisms and supervision

The incentive mechanism is not perfect. The evaluation standards for popular science contributions vary in different regions, and a fair and unified professional title evaluation and performance appraisal system has not been formed. The weight of popular science achievements in professional title promotion and selection of excellent employees is low, making it difficult to fully mobilize the enthusiasm of pharmaceutical practitioners. Some platforms lack professional review processes, leading to the proliferation of unprofessional and unscientific content. Popular science work lacks unified guiding standards and evaluation systems. The quality of popular science activities carried out by various regions and institutions is uneven, making it difficult to conduct effective supervision and effect evaluation [13].

4.4. Imbalanced allocation and accessibility of popular science resources

There is an obvious problem of uneven regional allocation of pharmaceutical popular science resources in China. Popular science resources are particularly scarce in underdeveloped areas and rural areas, making it difficult to meet the popular science needs of local people. At the same time, the personalized popular science needs of special groups have not been fully considered, and the targeted popular science supply for groups such as the elderly, children, pregnant and lactating women is insufficient. Among them, the elderly and rural residents are limited by access channels and find it difficult to easily obtain high-quality pharmaceutical popular science knowledge, which further widens the health literacy gap between different groups and is not conducive to the realization of the goal of universal coverage of pharmaceutical popular science.

5. Countermeasure suggestions for optimizing pharmaceutical science popularization communication in China

5.1. Improve guarantee mechanisms and strengthen policy support

Improve the incentive system, and incorporate popular science works and activities into the performance evaluation of health professional and technical talents. For example, medical institutions can clearly specify that popular science works and popular science awards can be used as the basis for professional title promotion, establish quantitative assessment indicators for popular science work, and link them with performance rewards. At the same time, encourage cooperation among multiple subjects such as medical institutions, pharmaceutical associations, and enterprises to integrate funds, technology, and talent resources to form a joint force for popular science. Establish unified standards, formulate unified norms for the creation, review, and communication of popular science content, and build a relatively complete evaluation system to improve the standardization level of popular science work.

5.2. Strengthen capacity building and improve popular science quality

Construct a hierarchical training system, carry out special training on popular science creation, new media operation, AI tool application, etc. for medical personnel, and establish an internal training mechanism to expand the coverage of training. Cultivate professional teams, support medical institutions to set up full-time popular science teams, absorb diverse talents such as pharmacists, clinicians, and new media operators, and clarify the division of labor and cooperation [14]. Promote the application of AI, and use AI technology to improve the accuracy of topic selection, production efficiency, and review quality.

5.3. Optimize the communication system and improve coverage efficiency

Improve the new media matrix, and customize content according to the characteristics of different platforms. For example, WeChat official accounts focus on pictures, texts and long videos, Douyin and Kuaishou focus on short, flat and practical content, and Bilibili creates serialized long videos. Promote resource sinking, establish an inter-regional popular science cooperation mechanism, and extend high-quality popular science resources to underdeveloped areas and rural areas through the "Internet + popular science" model [15]. Carry out activities such as "popular science entering campuses, communities, and villages", and combine offline lectures, free clinics, and promotional brochures to improve the accessibility of popular science for special groups and grass-roots people. With the help of big data analysis, push personalized popular science content for different groups and different disease types. Provide aging-friendly popular science products for the elderly and people with low educational levels, such as simplified video instructions and audio popular science.

5.4. Improve supervision mechanisms and purify the communication environment

Strengthen review and management, use AI tools for preliminary scientific verification and sensitive word screening, conduct re-review by the medical professional team, and review compliance by new media operators. Crack down on the spread of pseudo-science, strengthen cooperation with cyberspace administration, market supervision and other departments, and severely deal with behaviors that spread misleading medication information. Improve the public's ability to distinguish, incorporate popular science information discrimination skills into pharmaceutical popular science content, guide the public to obtain medication knowledge through authoritative channels, and cultivate scientific health concepts.

6. Conclusion

With the in-depth advancement of the Healthy China strategy and the rapid development of digital technology, China's pharmaceutical science popularization communication is moving towards intelligence, precision, and universalization. AI technology will be further integrated into the popular science process, playing a role in topic selection, production, distribution, review and other links. Popular science models will be more diversified, and personalized and scenario-based popular science content will become the mainstream. However, pharmaceutical science popularization has a long way to go and requires the joint participation of the whole society. Based on science, oriented by demand, and driven by innovation, we will make rational drug use knowledge deeply rooted in the hearts of the people and protect the medication safety and health of the whole people.

Disclosure statement

The authors declare no conflict of interest.

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