Research Progress and Intervention Strategy Analysis on the Current Status of Drug Literacy in Stroke Patients

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Abstract: Stroke, as an acute cerebrovascular disease, is characterized by high incidence, high mortality, and high disability rate, thus attracting great attention from the medical community. Medication literacy, on the other hand, is an active, comprehensive, and sustainable concept of health management, which includes the learning of health knowledge and the guidelines for healthy behaviors, and directly affects the treatment effect and health safety of patients. This paper conducts an in-depth study on the current research status of medication literacy in stroke patients, analyzes its influencing factors, and explores specific intervention strategies from multiple perspectives, aiming to provide a theoretical reference for improving patients' medication management ability and optimizing clinical prognosis.

Keywords: Stroke; Medication literacy; Intervention strategies

1. Introduction

Stroke, also known as cerebrovascular accident, is a disorder of cerebral blood circulation characterized by a sudden onset, lasting for more than a full day, and resulting in death or focal neurological impairment. In China, the incidence rate of stroke is approximately 30 per 10,000 people, and the number of stroke patients is showing an annual upward trend, imposing a heavy burden on society and families. Domestic and international studies have found that the occurrence of ischemic stroke is influenced by a combination of different factors. For patients who have experienced a cerebrovascular accident, it is necessary to control risk factors to avoid recurrence. Only by doing a good job in secondary prevention for stroke patients and emphasizing long-term standardized medication can the condition be controlled, and the occurrence of complications be delayed or reduced. However, most stroke

patients bear an excessive medication burden. Many of them suffer from one or more chronic primary diseases and need to take medications for life. In addition, many stroke patients are relatively old, with poor memory, weak self-care ability, and a large number of medications to take. Poor medication behavior will increase the probability of recurrence, which requires thinking about how to standardize medication use and solve related problems. Studying the current status of medication literacy among stroke patients and exploring effective intervention strategies is of great significance for improving patient prognosis and enhancing medical quality.

2. Research progress on the definition of medication literacy and methods for assessing medication literacy

2.1. Definition of medication literacy

Medication literacy refers to an individual's ability to obtain, understand, and process essential information, use medications scientifically, and make health decisions, thereby achieving the goals of safe medication use, disease control, and improved quality of life. Among relevant studies, Chesser *et al.* argue that medication literacy is a type of literacy specifically focused on medication use skills, including abilities such as calculating medication dosages, reading drug instructions, and taking immediate action in case of dosage errors. Medication literacy is a crucial factor that predicts and influences patients' medication behaviors. A higher level of medication literacy helps patients better recognize the significance of drug therapy for disease recovery, thereby forming correct medication attitudes, actively participating in medical decision-making and treatment processes, and adopting positive medication practices [1]. Zhong *et al.*, focusing on hypertension cases, pointed out that patients need to acquire specific medication knowledge through various channels, make correct judgments, and reasonably apply medication skills supported by medication beliefs to effectively control blood pressure [2]. Although there is no unified definition of medication literacy, domestic and international understandings share common ground. In summary, medication literacy includes patients' comprehension, application, and practical abilities during medication use, involving issues related to safe medication. However, against the backdrop of widespread improper medication use among stroke patients, the medical field has not paid sufficient attention to medication literacy. This necessitates an analysis of the shortcomings in current research to promote rational medication use.

2.2. Methods for assessing medication literacy

Among foreign medication literacy assessment tools, the most commonly used and valuable one is the Medication Literacy Assessment Tool in Spanish and English (MedLitRxSE). This scale, developed by Sauceda *et al.*, is specifically designed to evaluate patients' medication literacy levels. Currently, this scale consists of 14 items and simulates 4 medication use scenarios during application, including following medical advice to use injectable insulin and administering over-the-counter fever medication for children. Each scenario requires corresponding props. This assessment tool is mainly used to measure patients' abilities in reading, calculating, understanding, and handling medication-related issues in medical settings, and can analyze medication literacy levels [3]. In addition to MedLitRxSE, other foreign medication literacy assessment tools include the Numerical Understanding in Medicine Instrument (NUMi) and the Montana State University Complementary and Alternative Medicine Health Literacy Scale (MSUCAM), etc. However, these tools also overlook the decision-making ability regarding other skills in medication use [4, 5].

In China, the main tool used is the Chinese version of Medication Literacy Assessment (MedLitRxSE). For

example, Han (2023) applied the Chinese version of the Medication Literacy Assessment Scale in her research. This scale was originally developed by professors from the Department of Psychology at the University of Texas, and it assesses medication literacy by testing patients' abilities in reading, calculating, understanding, and handling medication use in medical settings [6]. In 2024, Chen used the Medication Literacy Questionnaire (MLQ), which is also used to evaluate discharged patients' understanding of their own medication knowledge, including elements such as the types and names of medications taken upon discharge. In the research, they introduced relevant data through the stroke information follow-up platform to carry out the investigation and research [7].

3. Analysis of influencing factors on medication literacy in stroke patients

3.1. Individual factors

(1) Age factor

Among all patients, young people have relatively higher scores in medication literacy, and their scores in questionnaires are generally higher than those of the elderly. On one hand, with the increase of age, the cognitive and comprehension abilities of the elderly generally decline, leading to deficiencies in their ability to understand and apply drug information. On the other hand, elderly patients usually have a longer course of disease and a longer medication history. They tend to take drugs based on their previous experience without paying attention to the drug labels on the packaging. In contrast, middle-aged and young patients have a relatively shorter course of disease, stronger awareness of medication safety, and can actively consult medical staff to ensure the correct use of drugs [8].

(2) Educational level

Medication literacy is related to the patient's educational level. Patients with a higher educational level pay more attention to the disease progression and medication process, and will fully understand relevant drug information. In contrast, patients with a lower educational level need to ask medical staff for advice or take drugs based on their own ideas and experience, resulting in relatively lower medication literacy.

(3) Economic status

Stroke is a disease with a relatively long course, requiring long-term rehabilitation treatment. Stroke patients with high incomes pay more attention to their quality of life than those with low incomes, and are more concerned about drug usage, dosage, ingredients, and other information. High-income groups can easily afford medical expenses, which also indicates that they pay more attention to the specific details of disease treatment, thereby improving the subsequent recovery of the disease [9].

3.2. Disease-related factors

(1) Type and severity of stroke

There are differences in drug treatment regimens between patients with hemorrhagic stroke and those with ischemic stroke. Patients with hemorrhagic stroke have concerns about the use of some antiplatelet drugs, which may affect their ability to make medication decisions. In addition, patients with more severe neurological deficits have poorer self-management abilities and lower levels of medication literacy.

(2) Number of comorbidities

Stroke patients with multiple chronic diseases such as hypertension, diabetes, and coronary heart disease often need to take multiple drugs. The complex medication regimens increase the difficulty of

management, leading to a decline in medication literacy [10].

3.3. Social and environmental factors

(1) Medical service system: Insufficient time for pharmacists to provide medication guidance when picking up drugs at outpatient clinics, and the lack of systematic medication education by medical staff during hospitalization. These deficiencies in medical service links limit patients' access to medication knowledge.

(2) Family and social support: The level of medication knowledge of family caregivers directly affects patients' medication management. If caregivers lack correct medication concepts, they may mislead patients. In addition, insufficient community rehabilitation resources and lack of professional medication management guidance are also not conducive to the improvement of patients' medication literacy.

(3) Accessibility of drug information: The language of drug instructions is too professional and lacks popular interpretation; popular science materials for patients are not targeted enough and fail to combine the characteristics of stroke medication. These factors all lead to insufficient accessibility of drug information [11].

4. Analysis of intervention strategies for medication literacy in stroke patients

4.1. Strengthen medication knowledge education

Enhance medication knowledge education for stroke patients, focusing on explaining to patients and their families the mechanism, type, name, administration method, and precautions of medications. Only by strengthening publicity and education can adverse reactions be better managed and medication information be effectively organized.

4.2. Improve patients' awareness of medication adherence

Patients' non-adherence to medication is often due to their reluctance to take drugs and preference for minimizing medication use. Therefore, healthcare providers need to find more effective ways to alleviate patients' concerns about medications and emphasize that taking medications can reduce the risk of future strokes. In clinical care, nurses and doctors can use communication skills to help patients understand the importance of medication adherence, thereby fostering their belief in taking medications. Nursing staff can communicate with patients through empathy to understand their psychological thoughts, alleviate their negative emotions, and build confidence in medication adherence [12].

4.3. Standardization of drug labels

During the medication process, patients and their families should be encouraged to use labels for memory aids, thereby enhancing medication safety. Some cards can be used to clearly indicate the patient's medication treatment status, with the basic information of medication recorded in written form to remind patients to take their medicines on time. Moreover, mobile phone alarms should be set to remind patients to take their medicines at fixed times, which helps standardize medication use. Corresponding medicine distribution boxes should be prepared for patients, requiring them to place the doses for morning, afternoon, and evening of each day in boxes of different colors, with different times labeled, to ensure the safety and accuracy of medication use. The main caregivers of stroke patients should be authorized and informed to ensure medication safety [13].

4.4. Optimization of medical service processes

Establish a multidisciplinary medication management team. During the patient's hospitalization, the medical and nursing team should provide systematic medication education to the patient, explaining the basic properties of drugs, dosage, administration methods, and precautions, and conducting corresponding feedback work. After discharge, it is also necessary to do a good job in tracking and following up with the patient to ensure the whole-process tracking and supervision of the patient's medication. Furthermore, when formulating specific treatment plans, doctors need to consider the selection of drugs based on the actual situation of the patient, choosing drugs with simple formulations and important application value.

4.5. Strengthening of social support mechanisms

First, carry out training activities for family caregivers. Relevant knowledge training courses should be conducted to enable caregivers to master correct medication methods, understand adverse situations, and handle emergencies properly, making them important supporters in the patient's medication management.

Second, attach importance to the development of community rehabilitation intervention work. Community health service centers can set up medication management groups for stroke patients, where general practitioners and community nurses regularly organize group activities. Through peer support, experience sharing, and other methods, patients' medication literacy can be improved. Third, promote the optimization and improvement of drug information. Pharmaceutical management departments should standardize the compilation of drug instructions and encourage medical institutions and public welfare organizations to produce medication science popularization materials suitable for stroke patients [14, 15].

5. Conclusions

In summary, the current status of medication literacy among stroke patients needs to be improved. There are relatively many assessment tools at this stage, but each has its own advantages and disadvantages, and there is a lack of assessment tools specifically for stroke patients. Clinical workers and researchers should comprehensively consider the applicable populations of different scales, select appropriate medication literacy assessment tools, so as to conduct accurate assessments and reduce work burdens. Improving patients' medication literacy is essential to ensure their subsequent lives. This requires medical staff to attach great importance to educational guidance for patients. Pay attention to elderly patients with low education levels and low economic income, encourage family members to participate in patients' medication management, enhance patients' awareness of taking medicines, optimize the process of medical services, strengthen social support mechanisms, and thus ensure the effectiveness of medication administration. Moreover, it is necessary to build a "hospital-community-family" trinity medication management system to achieve full-course and continuous support for patients. Through continuous and in-depth research and practice, it is expected to comprehensively improve the medication literacy of stroke patients, laying a solid foundation for improving patient prognosis and reducing the disease burden.

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Disclosure statement

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