

China should emphasize key issues inherent in rational medication management for the elderly

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SUMMARY According to China's Seventh National Census, 18.70% of a total of 1.41 billion people were 60 or older and 13.50% were 65 or older, so China's population is increasingly aging. In conjunction with China's socioeconomic and scientific and technological development and its promotion of medical insurance-related policies, rational medication management for the elderly is a concern in order to control the risk of polypharmacy. This paper summarizes and discusses the following five key issues inherent in rational medication management: *i*) an increase in serious polypharmacy and the potential risks of medication; *ii*) a lack of medication consultation service and medication withdraw without healthcare providers' supervision; *iii*) poor medication compliance among the elderly; *iv*) insufficient quantity and incompetence of pharmaceutical staffing; and *v*) limited awareness of pharmaceutical services and lack of trust in the ability of pharmacists. Based on a discussion of factors influencing these issues, suggestions have been put forward in the hopes that China emphasizes rational medication management in order to reduce the risk of polypharmacy and the disease burden of the elderly in China.

Keywords polypharmacy, aging of the population, clinical pharmacy, medication compliance

1. Introduction

On May 11, 2021, the State Council of China released the results of the country's Seventh National Census, which indicated that there are a total of 1.41 billion people in China (1). Of the total population, 18.70% were age 60 or older and 13.50% were age 65 or older. Compared to figures from 2010, this represented a 5.44% increase in people age 60 or older and a 4.63% increase in people age 65 or older. These figures indicate that the population is increasingly aging, and it is urgent to address challenges posed by aging.

One of the challenge is that the elderly with serious comorbidities are more prone to take multiple medications (2). In conjunction with China's socioeconomic and scientific and technological development and its promotion of medical insurance-related policies, the elderly have more accessibilities to medical treatment and therapeutic drugs, resulting in an increased risk of irrational drug use (3). Due to the heavy concealment, high risk, and little attention paid to polypharmacy in the elderly, rational medication management for the elderly is a concern.

Rational medication management involves the whole process from prescription to taking a medication, including related policies and regulations, resource allocation, rational drug use-related training, medication taking behavior, physician care, provision of pharmaceutical services, and patient compliance with medication.

Based on the Donabedian model (structure, process, and outcomes) and Stakeholder theory, a theoretical framework for rational medication management was created (Figure 1), and issues inherent in rational medication management for the elderly were systematically identified in the literature and interviews and then compiled into a list. Through expert discussion, five key issues inherent in rational medication management for the elderly were ultimately identified (Figure 2), and those issues are discussed in this paper.

2. Key issues in terms of the elderly patients

A point worth noting is that three of the five key issues primarily involve patients, which implies that medication revolves around the elderly themselves.

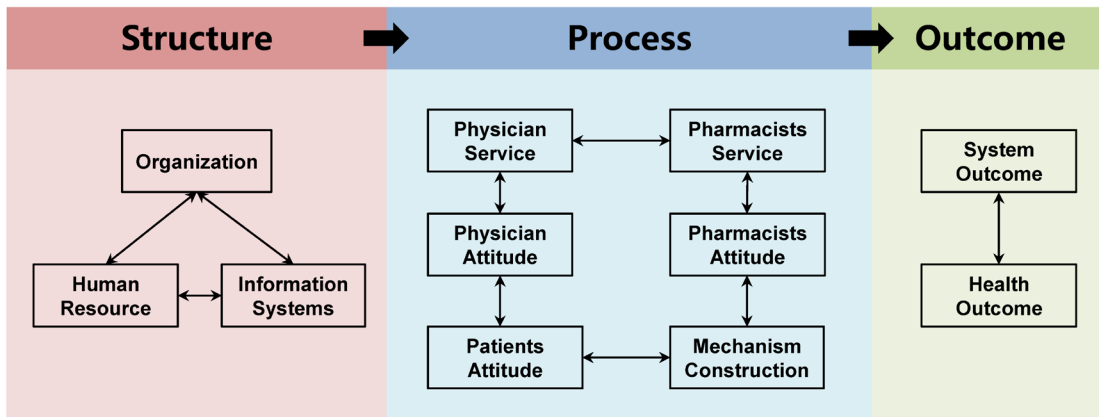


Figure 1. The theoretical framework for rational medication management. Rational medication management was defined, and an analytical framework for rational medication management was devised based on the Donabedian model (structure, process, and outcomes) and Stakeholder theory.

<p>Issues Collection</p>	<p>Literature Research Approach</p> <p>From 2010 to 2020 5454 papers were detected (removed duplicate and screened) 323 articles were included</p>	<p>Interview Research Approach</p> <p>Between August and September 2020 5 interviews were conducted A total of 50 people (included family doctors, pharmacists, and health managers)</p>
<p>Issues List Formation</p>	<p>Merge Collected Issues</p> <p>Expert argumentation by 82 experts From 10 administrative regions of Shanghai (included family doctors, pharmacists, and health managers) A list of 35 issues were identified and formed</p>	
<p>Key Issues Identification</p>	<p>Identify Key Issues</p> <p>Expert argumentation by 82 experts from expert base 5 key issues through experts rated the severity, importance and solvability</p>	

Figure 2. Flow chart for identification of key issues. Three hundred and twenty-three sources were reviewed by searching the relevant literature and excluding sources with little relevance to issues inherent in rational medication management. Fifty experts, including medical personnel and personnel rationally managing patient medication, in Shanghai were selected to identify issues inherent in rational medication management for the elderly. Thirty-five issues were identified and compiled into a list. Eighty-two experts rated the seriousness, significance, and solvability of the 35 issues and identified 5 key issues that need to be prioritized.

The elderly themselves are ultimately the ones taking medications so instructions in rational drug use, intervention by primary care physicians, and supervision by family members are particularly important.

2.1. An increase in serious polypharmacy and the potential risks of medication (*Key issue 1*)

First, a majority of the elderly need to take multiple

medications for multiple comorbidities over a prolonged period time, resulting in a complex medication therapy and high risk of polypharmacy. Studies have found that elderly Chinese patients suffering from polypharmacy are taking an average of 10.3 ± 5.1 medications (4), and the incidence of polypharmacy in the elderly age 80 and over is as high as 82.4% (5).

Second, due to the high degree of specialization in medical care in China, elderly patients tend to visit physicians across specialties and medical institutions,

which results in dispersed treatment and medication information. Since information systems in medical facilities at all levels haven't not yet connected with one another, physicians in different medical facilities may prescribe the same or similar medications and primary care physicians may have difficulty determining contraindicated medications, increasing the risk of polypharmacy.

Third, misuse of supplements and traditional Chinese medicines without definitive indications is seriously widespread in the elderly. And due to the deeply rooted concept that "medicine and food homology" in China, most elderly believe that "the more medicines, the better" At the same time, improvement of the healthcare system means that the elderly are more accessible to medications and various healthcare products, increasing the risk of polypharmacy.

2.2. A lack of medication consultation service and medication withdraw without healthcare providers' supervision (*Key issue 2*)

First, some elderly perceive they have gained enough medical knowledge to treat themselves with long term sick experience. So they would prefer to choose medications based on their own experiences or information from people with similar symptoms, instead of consulting a physician or pharmacist at a regular medical facility. A study of 380 elderly outpatients found that 47.9% had self-medication experiences with no diagnosis from a physician (6), and a survey in a community found that 88.43% of the elderly purchased and used drugs or other healthcare products without seeking advice from physicians or pharmacists (7). This is mainly due to a lack of trust in physicians and pharmacists among the elderly, as well as the limited effectiveness of instruction in rational drug use.

Second, the elderly tend to seek information from informal information sources because of a lack of communication with primary healthcare physicians. They often purchase drugs based on advertisements or recommendations from friends, which mainly stems from gimmicks and false claims, and it can result in adverse consequences for the elderly if unattended or unsupervised by family members.

2.3. Poor medication compliance among the elderly (*Key issue 3*)

First, the elderly have difficulty taking medication on time and as instructed by a physician; they often take medication by mistake, forget to take it, or adjust the dosage according to the symptoms themselves. A study of the elderly living at home found that only 41.9% of the patients were able to follow a physician's instructions (8). This is mainly due to poor memory, low awareness, and frequent change of medication therapy.

Second, psychological factors influence the medication taking behavior of the elderly a lot. For instance, some elderly choose to reduce the dosage with a fear of side effects, yet others choose to increase the dosage with an eagerness to get well. This is mainly due to the lack of direct communications between physicians and patients. In addition, unrecorded medication taking behavior at home results in huge information gap, and physicians cannot offer appropriate advice according to patients' actual medication taking scenarios.

3. Key issues in terms of care and service providers

The remaining two key issues are related to care and service providers. Specifically, they are related to the quantity and quality of care and service providers and the public's views of pharmaceutical personnel.

3.1 Insufficient quantity and incompetence of pharmaceutical staffing (*Key issue 4*)

In order to provide pharmaceutical services, medical facilities need to be staffed with sufficient pharmacy technicians. According to the Regulations on the Administration of Pharmaceutical Affairs in Medical Facilities, pharmacy personnel shall account for no less than 8% of all healthcare personnel in a medical facility (9). However, there is a serious dearth of pharmacists, and especially clinical pharmacists, which seriously restricts development of pharmaceutical services. As of 2018, there were only 460,000 pharmacists (practitioners) in China, which is far smaller than the number of licensed (assistant) physicians (3.607 million) and registered nurses (practitioners) (4.099 million) (10).

This lack of personnel is mainly due to 3 reasons. First, a relatively small number of pharmacists graduate in clinical pharmacy in China, and an even smaller number choose to work in clinical pharmacy. Second, there are no set criteria for promotion or forms of employment for pharmacists in China. Pharmacists are poorly paid, and many are leaving the profession. Third, the lack of a mechanism of assessing pharmacists providing pharmaceutical services seriously affects the quality of pharmaceutical personnel. In short, a pharmaceutical service fee needs to be determined and imposed.

3.2 Limited awareness of pharmacy services and lack of trust in the ability of pharmacists (*Key issue 5*)

A survey of patients and their families in 30 tertiary hospitals in Shanghai found that only 48.0% of patients and their families felt that they were familiar with the job of a clinical pharmacist, and 39.7% of patients knew little about clinical pharmaceutical services but had heard of them (11).

This is mainly due to three reasons. First,

pharmacy is still young profession in China, which is transitioning from traditional pharmacy to "patient-centered" clinical pharmacy. The public has little familiarity with pharmacists, so patients and physicians have limited awareness and trust in pharmacists and pharmaceutical services. Second, clinical pharmacists have difficulty doing their work properly due to the lack of corresponding standards for clinical pharmacists. Third, pharmacists and patients lack channels of communication. A few minutes when providing a patient with his or her medication is not enough time for pharmacists to fully understand the status of the patient's medications.

4. Suggestions

On March 29, 2017, the WHO proposed Medication Safety as the third Global Patient Safety Challenge (12). Governments need to take urgent measures to deal with polypharmacy by enhancing rational medication management for the elderly. As living conditions improve and medical technology advances, the demands of and consumption by the Chinese population, including the rational drug use by the elderly, will increase. A discussion identified several key issues with rational medication management for the elderly in China: *i*) a shortage of pharmaceutical personnel; *ii*) lack of a mechanism for compensation, such as a pharmaceutical service fee; and *iii*) inadequate an-home management of medication. Accordingly, China needs to: *i*) promote reforms in and the updating of pharmaceutical education; *ii*) establish a price system for pharmaceutical services; *iii*) energize primary pharmaceutical services using "Internet Plus", and *iv*) increase public awareness of rational medication management.

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