

# Investigation and Analysis of Rational Drug Use of Residents in Changshou District of Chongqing, China

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**Abstract:** The objective of this study was to acquire the information about residents of Changshou District's knowledge levels and their behaviors of drug use so that implementation strategies of rational drug use can be formulated accordingly to promote and spread health education of rational drug use. Online and offline surveys were randomly conducted about rational drug use conditions of residents in Changshou District by questionnaires. Online questionnaires were sent to residents of Changshou District by Wenjuanxing, a professional platform used for surveys. Offline questionnaires were mainly distributed to residents of communities in Changshou District. All the online and offline statistics were analyzed and counted. 309 questionnaires were distributed (176 online questionnaires and 133 paper questionnaires), and the effective recovery rate was 75.4%. According to investigation and survey, conditions of resident's rational drug use were optimistic. Only 8.15% of residents who participated in the survey (or research subjects) took paracetamol tablets and Vitamin C Yinqiao tablets (also known as VC Honeysuckle Pills) at the same time when they had a cold or fever. Among 8.15% of residents, 5.15% frequently took paracetamol, caffeine, and aspirin powder (also known as headache powder), 80.26% checked expiration date of drugs before taking medicine, and >50% knew that drinking after taking medicines such as cephalosporin is prohibited. Common irrational problems caused by drug use were as follows: 40% of research subjects took dietary supplements as drugs and 28% of them failed to know the correct usage and dosage of drugs. Proportion of drugs that were taken with irrational usage and dosage was antibiotics (64%), antibacterial (52%), drugs for patients with diabetes mellitus (36%),

drugs for patients with hyperlipidemia, hypertension, and hyperglycemia (32%), vitamins (24%), drugs for the treatment of common cold and cough (20%), and others. Publicity of rational drug use should not be restricted to specific population, and knowledge of safe drug use is supposed to be actively popularized. Contents of rational drug use are as follows: Guide the public to correctly understand the functions of vitamins and dietary supplements strengthen publicity of rational use of drugs such as antibiotics, antibacterial drugs, drugs for chronic diseases, cold, and cough. Focus should be given on usage and dosage of drugs, use of antibacterial drugs, and repeated and excessive use of drugs caused by joint use of drugs with same ingredients of OTC drugs for the treatment of common cold and cough.

**Keywords:** Chongqing; Changzhou district; residents; rational drug use; investigation and analysis

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## 0 Introduction

With the rapid development of China's economy and the increase of over-the-counter drugs on the market, people's concept of drug use is also changing. Many people purchase drugs to treat common diseases by their own judgments, which have certain potential hazards on people's health.<sup>[1]</sup> According to statistics of the National Center for Adverse Drug Reaction Monitoring, >2.5 million patients in China are hospitalized due to drug-induced diseases annually, and >190,000 people have

died from irrational drug use.<sup>[2]</sup> Adverse consequences caused by irrational use of drugs are exceedingly serious.<sup>[3]</sup> To acquire information about residents of Changzhou District's knowledge levels and behaviors of drug use, formulate implementation strategies of rational drug use accordingly for promotion and to spread health education of rational drug use, members of this group were organized and conducted a survey from October to November in 2017. Then the results were analyzed..

## 1 Materials and methods

### 1.1 Investigation subjects

Residents in Changshou District of Chongqing were chosen for investigation and survey.

### 1.2 Methods of investigation and survey

Residents of Changzhou District were investigated and surveyed with random sampling method by online and offline questionnaires. Contents of questionnaires included resident's basic information and choices of drugs, usages of drugs, matters needing attention, and others. Wenjuanxing, a professional platform used for surveys, was used to send online questionnaires to Changshou District's residents. Offline questionnaires were mainly distributed to residents of communities in Changshou District. 309 questionnaires were distributed (176 online questionnaires and 133 paper questionnaires), and the effective recovery rate was 75.4%.

### 1.3 Statistical analysis

EXCEL was used for collection and processing of data, as well as statistical analysis. Statistical methods were

mainly descriptive statistics and Chi-square test, and differences were statistically significant when  $P < 0.05$ .

## 2 Results

### 2.1 Analysis of basic knowledge of drug use

Chinese people value friendship and etiquette, alcohol plays an important role in enhancing friendship and making atmosphere active and harmonious. However, people should not be allowed to drink alcohol after taking some kinds of drugs because ingredients in those drugs may react with alcohol, reduce efficacy, and produce some substances harmful for bodies. Some common antibacterial and anti-inflammatory drugs were listed in questionnaires, and residents were subjected to choose drugs that they thought alcohol was not advisable after taking them. Those drugs were metronidazole, cephalosporin, chloramphenicol, and penicillin. A total of 44.64% of research subjects considered drinking are not permitted after using metronidazole; 45.92%, chloramphenicol; 57.94%, penicillin; and 63.52%, cephalosporin [Table 1].

In addition to problems arising from alcohol after taking drugs, hypertension, hyperglycemia, and hyperlipidemia were common diseases of people. There were many causes of these three diseases including obesity, family history of the three diseases, unhealthy lifestyle, long-term smoking and drinking, insufficient exercise, and unreasonable diet. People easily suffered from these three diseases, so questions about drug use of these diseases were set in questionnaires.

According to the survey, more than 50% of research subjects were clear that alcohol is not permitted after taking drugs such as cephalosporin, but conditions about the use of drugs for chronic diseases such as hypertension, hyperglycemia, and hyperlipidemia were not optimistic [Table 2]. Blood pressure of patients with hypertension rose in the morning after getting up, and it reached the highest peak between 8:00 am and 9:00 am. Next, it declined at noon and reached the second highest peak between 17:00 pm and 18:00 pm. Then, it declined slowly and achieved the lowest peak in early morning between 2:00 and 3:00. Short-acting antihypertensive

**Table 1. Knowledge of alcohol consumption after taking certain drugs**

	Knowledge of alcohol consumption after taking certain drugs	Incidence of drug use (%)
Metronidazole	104	44.64
Cephalosporins	148	63.52
Chloramphenicol	107	45.92
Penicillin	135	57.94

**Table 2. Basic knowledge of drug use of patients with diabetes mellitus**

	Take missed dose together with next time's dose	Incidence of drug use (%)	Eat more food while increasing doses to offset it	Incidence of drug use (%)
Yes	18	7.73	31	13.3
No	214	91.85	202	86.7

drugs should be taken 1–2 h before the peak of blood pressure, and long-acting antihypertensive drugs should be taken at 7:00 am daily for their efficacy can past 24 h. However, up to 54.08% of research subjects believed that antihypertensive drugs should be taken at night-time [Table 3]. If patients with diabetes mellitus forgot to take antidiabetic drugs, whether the missed dose can be taken together with next time's dose should depend on blood glucose level, types of antidiabetic drugs, and others. Diet and exercise therapies of patients with hypertension, hyperglycemia, and hyperlipidemia were bases of disease management. 45.49% of research subjects considered that patients with hyperlipidemia needed to avoid taking beans and soy products, and 32.63% of them believed that patients with these three diseases were able to do exercises after taking medicine [Tables 4 and 5].

## 2.2 Analysis of drug use behaviors

Considering prevalence and high incidence of common diseases, researchers collected data of some diseases such as cold, fever, and headache and set some relevant matters needing attention for drug use of residents on their own, including dosage, expiration date of drugs, and others. Results of the survey and numbers of research subjects were shown in Tables 6-9.

According to the survey and investigation of residents, only 8.15% of research subjects of the survey took paracetamol tablets and Vitamin C Yinqiao tablets (also known as VC Honeysuckle Pills) at the same time when they had a cold or fever. Among that 5.15% of research subjects frequently took paracetamol, caffeine, and aspirin powder (also known as headache powder) and 80.26% of residents checked expiration date of drugs before taking medicine.

**Table 3. Time of taking antihypertensive drugs**

	Time of taking antihypertensive drugs	Incidence of drug use (%)
Daytime	107	45.92
Night-time	126	54.08

**Table 4. Conditions those patients with hyperlipidemia should avoid**

	Conditions those patients with hyperlipidemia should avoid	Incidence of conditions (%)
Excessive salt intake	128	54.94
Take beans and soy products	106	45.49
Excessive intake of saturated fatty acid	150	64.38
Smoking and excessive drinking	171	73.4

## 3 Discussion

According to the survey of residents, conditions of resident's rational drug use were optimistic. However, research subjects of questionnaires were under the age of 40 (accounting 94.3% of all the research subjects). Therefore, results of the survey could not completely represent drug use conditions of the elderly due to deviation of statistics of this survey, and drug use conditions of the elderly needed further investigation and analysis. In addition, through interviews with doctors, authors found that 76% of doctors have received patients who were uncomfortable after irrational drug use and most of them were the elderly (60%). Common irrational problems about drug use were as follows: 40% of research subjects took dietary supplements as drugs, and 28% of them failed to know the correct usage and dosage of drugs. Proportion of drugs that were taken with irrational usage and dosage was antibiotics (64%), antibacterial (52%), drugs for patients with diabetes mellitus (36%), drugs for patients with hyperlipidemia, hypertension, and hyperglycemia (32%), vitamins (24%), drugs for the treatment of common cold and cough (20%), and others.

Publicity of rational drug use should not be restricted to specific population, and knowledge of safe drug use is supposed to be actively popularized. For that, the following methods can be used. Courses on safe drug use at all levels of schools (including college for senior citizens) should be set up, and knowledge of drug use should be included in education system. Health-related departments can improve the public's awareness of importance of safe drug use and drug instructions through lectures, non-commercial advertisements, brochures, posters, etc., and use easy to understand texts or charts to improve the public's reading interests of drug instructions. Hospitals should regularly organize relevant medical experts to conduct medical knowledge lectures in communities and rural areas. Pharmacists can carry out transmission of safe drug use by the internet routes such as "WeChat" and "microblog" (two popular APPs that are used to share information in China)

**Table 5. Patients with hypertension, hyperglycemia, and hyperlipidemia were suitable for taking a walk after taking drugs**

	Patients were suitable for taking a walk after taking drugs	Incidence of conditions (%)
Yes	76	32.62
No	156	66.95

**Table 6. Usage of common drugs for cold and fever**

	Took paracetamol tablets and Vitamin C Yinqiao tablets at the same time for cold and fever	Incidence of drug use (%)
Yes	19	8.15
No	214	91.85

when develop drugs, especially for the elderly, drug manufacturers should also prepare drug instructions that have easy to understand and concise texts, large fonts, and appropriate illustrations. In addition, drug instructions should be convenient for the elderly and people who do not receive sufficient education to read.

Contents of rational drug use are as follows: Guide the public to correctly understand the functions of vitamins and dietary supplements. Strengthen publicity of rational use of drugs such as antibiotics, antibacterial drugs, drugs for chronic diseases, cold, and cough, focus on usage and dose of drugs, use of antibacterial drugs, and repeated and excessive use of drugs caused by joint use of drugs with same ingredients of OTC drugs for common cold and cough.

After the survey and investigation of residents, authors found that conditions of the use of drugs for chronic diseases such as hypertension, hyperglycemia, and hyperlipidemia were not optimistic. Therefore, chronic diseases management and publicity of rational drug use seemed to be particularly important. Relevant departments can establish an information network for safe drug use of patients with chronic diseases, and doctors can create electronic medical records for patients with chronic diseases to realize sharing of examination information and patients' diagnosis in hospitals and communities. Patients should be able to conduct self-management through the information network and record intake of drugs, self-test results of biochemical indicators such as blood glucose, blood lipids and blood pressure, dietary conditions, and exercise diaries to improve compliance of drug use. Creation of medication records by pharmacists using this platform provides patients with all-around and multidimensional pharmaceutical services

**Table 7. Usage of paracetamol for headache**

	Times of use of paracetamol	Incidence of drug use (%)
Never	160	68.67
Rarely	44	18.88
Occasionally	17	7.30
Frequently	12	5.15

**Table 8. Basis of dosing (tablet, grams, and others)**

	Basis of dosing (tablet, grams, and others)	Incidence of drug use (%)
Guidance of pharmacists	42	18.03
Guidance of doctors	151	64.81
Instructions	40	17.17

**Table 9. Check expiration date before taking drugs**

	Check expiration date before taking drugs	Incidence of drug use (%)
Yes	187	80.26
No	46	19.74

including active, time-sensitive drug use intervention, individualized pharmacy services, humanistic care to patients, and publicity of drug use without restrictions of time and space.

## 4 Conclusion

This study was conducted mainly by online questionnaires. People who were investigated and surveyed were comparatively young, which had a certain impact on statistics and results of the survey. Therefore, results of the survey could not completely represent drug use conditions of the elderly. Some conditions and problems encountered in survey of drug use were helpful for further development and promotion of rational drug use activities and laid a foundation for the following research work.

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