

# Survey on the Awareness of Basic Drugs among Urban Residents in Jilin Province

## --Based on Binary Logistic Regression Analysis

Kaiyue Shen<sup>1,a</sup>, Yanyin Cui<sup>1</sup>, Jie Chen<sup>2</sup>, Hui Yue<sup>1</sup>, Zheng Xie<sup>1</sup>,  
Chen Ding<sup>1</sup>, Jingshuo Liu<sup>1</sup>, Biao Zhang<sup>1,b\*</sup>

<sup>a</sup>e-mail: 1134707402@qq.com, \* Corresponding author: <sup>b</sup>zhangbiao1018@126.com

School of Health Management, Changchun University of Chinese Medicine Changchun, China<sup>1</sup>  
Changchun Public Security Forensic Center Changchun, China<sup>2</sup>

**Abstract:** Objective: To evaluate the awareness of urban residents in Jilin Province of the national essential drug policy, Analyze its influencing factors, to provide a reference for increasing the accessibility and availability of essential drugs. Methods: Questionnaires were used to survey 622 residents within Jilin Province. Results: The level of urban residents' awareness of the national basic drug system in Jilin Province is don't know (13.34%), don't know much (46.78%), know (25.88%), familiar (8.36%), and very familiar (5.63%); the type of medical insurance, whether suffered from chronic diseases, satisfaction with the national basic drug system, attitude toward the free use of basic drugs at the grassroots level, and education were influential factors affecting residents' basic drug use behavior; gender, education, and attitude toward free use of basic drugs at the grassroots level were the influential factors of residents' basic drug awareness. Conclusions: The level of urban residents' awareness of the basic drug policy in Jilin Province needs to be improved. The propaganda of the basic drug system in Jilin Province should be strengthened, and the role of medical personnel in primary medical institutions and grassroots cadres should be brought into play.

**Keywords:** Urban Residents, Essential Drugs, Cognition.

## 1 INTRODUCTION

The national basic drug regime is a national drug supply guarantee system built around the basic drug catalog<sup>[1]</sup>. It is the government's effort to meet public health care needs, ensure people's medicines are safe, effective and reasonable, build out an integrated management system of essential medicines through the rational use of limited medical and health resources<sup>[2]</sup>. In the report of the 28th World Health Organization Assembly in 1975, the Director-General of the World Health Organization proposed for the first time that each member country could select and purchase essential drugs of reliable quality at a reasonable cost according to the health needs of

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\*Changchun University of Traditional Chinese Medicine "Apricot Grove  
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its population [3]. Essential drugs were clearly defined in the "Opinions on the Implementation of the Establishment of a National Essential Drug System" [4] issued in 2009 that adapt to basic health care needs, suitable dosage forms, reasonable prices, guaranteed supply, and equitable public access [5]. This study used a self-made questionnaire to understand the current situation of urban residents' perceptions of the national essential drug policy in Jilin Province and to analyze the influencing factors. It provides a scientific basis for improving residents' perceptions of the essential drug policy, improving their perceived attitudes toward the free use of essential drugs at the primary level, and increasing their willingness to choose primary care institutions for medical treatment, and further proposes relevant countermeasures or suggestions for improving the essential drug policy and increasing the use of essential drugs.

## **2 OBJECTS AND METHODS**

### **2.1 Object**

From May to October 2022, the group randomly distributed questionnaires for the whole Jilin province, and a total of 1100 questionnaires were distributed and 1018 were collected, of which 622 were valid.

### **2.2 Methods**

This study was conducted using a self-made questionnaire. After the survey was completed, it was unified by the researcher and then Epidata 3.0 was used to create a database and entered, and SPSS 25.0 software was used for statistical analysis. Binary logistic regression analysis was used for the analysis of influencing factors [6-11]. If not otherwise specified, P is the two-sided probability and the test level P was set at 0.1.

## **3 RESULTS**

### **3.1 Basic Demographic Information**

A total of 622 residents were surveyed, including 237 males (38.7%) and 395 females (61.3%). Residents under the age of sixty accounted for 91.31%, 88.26% had education at the undergraduate level or below, and only 11.74% had a master's degree or above. Most of the respondents had a monthly income of more than 1,000 yuan, and 89.22% had medical insurance, of which the most important medical insurance methods were the new agricultural cooperative and public medical insurance, accounting for 41.00% and 33.60% respectively. Those with commercial medical insurance only accounted for 20.90%; the results showed that 13.34% of people did not know the national basic drug policy, 46.78% did not know much about it, 25.88% knew it, and 8.36% and 5.63% were familiar and very familiar with it respectively. The way to learn about the basic drug policy is mainly through the Internet accounting for 56.78%, followed by 40.96% of residents through television. 59.72% of residents prefer to obtain knowledge about the national basic drug system through short videos app (such as Tiktok and Kuaishou), followed by Baidu at 43.42%. Although most residents (69.45%) said that their communities (villages and towns) have not carried out promotional activities for the national essential drug system, the majority of those who have been promoted still believe that grassroots cadres and medical

personnel in primary care institutions are helpful in promoting the essential drug policy. 44.37% of residents are satisfied with the national essential drug system. 86.50% of residents are supportive of the free use of primary essential 86.50% of the residents are supportive of the free use of basic drugs at the primary level.

### 3.2 Single-Factor Analysis of Essential Drug Use Behavior and Awareness among Urban Residents in Jilin Province

The results of single-factor analysis showed that gender, education, average monthly income, whether or not they enjoyed the new agricultural cooperative, medical aid and public medical care, whether or not they suffered from chronic diseases, their knowledge of the national essential drug system, whether or not village grassroots cadres (community cadres) were helpful in promoting the essential drug policy, their satisfaction with the national essential drug system, and their attitude toward the free use of essential drugs at the grassroots level on the use of essential drugs by urban residents in Jilin Province the differences were statistically significant ( $P < 0.1$ ) when comparing between groups in terms of behavior. There was statistical heterogeneity in the differences between gender, age, education, whether they enjoyed public medical care, whether their communities (villages and towns) had carried out activities to promote the national essential drug system, whether village grassroots cadres (community cadres) were helpful in the promotion of the essential drug policy, and attitudes toward the free use of essential drugs at the grassroots level on the awareness of essential drugs among urban residents in Jilin Province ( $P < 0.1$ ).

**TABLE I.** UNIVARIATE ANALYSIS OF BASIC DRUG USE BEHAVIOR AND AWARENESS AMONG URBAN RESIDENTS IN JILIN PROVINCE

Features	Essential drug use behavior		$X^2$	$P$	Awareness of essential drugs		$X^2$	$P$
	Good (n=374)	poor (n=248)			Good (n=306)	Poor (n=316)		
Gender								
Male	148	79	3.83 2	0.050	125	102	4.928	0.026
Female	226	169			181	214		
Age								
25 years old and below	100	83	4.18 4	0.242	73	110	17.63 7	0.001
26-45 years old	154	85			112	127		
46-60 years old	87	59			86	60		
61 years old and above	33	21			35	19		
Education								
Middle School and below	49	62	19.6 75	$P < 0.001$	77	34	39.93 0	$P < 0.001$
High school or junior college	68	44			69	43		
College and undergraduate	184	116			126	174		
Master and above	73	26			34	65		

Average monthly income								
Less than 1000RMB	63	58	13.1 29	0.004	55	66	6.112	0.106
1000-2000RMB	49	50			59	40		
2000-3000RMB	72	45			60	57		
3000RMB and above	190	95			132	153		
Type of medical insurance								
New Agricultural Cooperative	141	114	4.21 3	0.040	135	196	2.425	0.119
Commercial insurance	73	57	1.08 3	0.298	63	67	0.035	0.851
Medical aid	36	41	6.55 8	0.010	36	41	0.210	0.647
Publicly funded health care	149	60	16.3 62	P< 0.001	91	118	4.028	0.045
No medical insurance	37	30	0.75 3	0.385	35	32	0.278	0.598
Chronic disease or not								
Yes	96	38	9.44 3	0.002	69	65	0.360	0.548
No	278	210			237	251		
Whether to understand the national essential drug system								
Very familiar	24	11	12.7 57	0.013	14	21	3.856	0.426
Familiar	32	20			27	25		
Understand	108	53			74	87		
Heard of it, don't know	173	118			144	147		
Don't know	37	46			47	36		
Whether the community (village or town) in which you are located has carried out activities to promote the national basic drug system								
Yes	123	67	2.42 3	0.120	105	85	4.029	0.045
No	251	181			201	231		

Are village grassroots cadres (community cadres) helpful to you in the promotion of the basic drug policy								
Yes	150	79	6.617	0.037	123	106	5.665	0.059
No	71	42			60	53		
Not promoted	153	127			123	157		
Is the promotion of the basic drug policy helpful to you by the medical staff of primary medical institutions								
Yes	197	93	14.149	0.001	144	146	1.658	0.436
No	46	36			45	37		
Not promoted	131	119			117	133		
Satisfaction with the national basic drug system								
Satisfied	193	83	31.777	P<0.001	127	149	4.797	0.187
General	111	73			101	83		
Dissatisfied	7	15			13	9		
No idea	63	77			65	75		
Attitude toward the free use of basic drugs at the grassroots level								
Support	347	191	32.140	P<0.001	248	290	16.900	P<0.001
Oppose	8	13			17	4		
Don't care	19	44			41	22		

### 3.3 Binary Logistic Regression Analysis of Essential Drug Use Behavior of Urban Residents in Jilin Province

The basic drug use behavior of urban residents in Jilin Province was converted into a dichotomous variable: good= 0, poor= 1. Binary logistic analysis was conducted with basic drug use behavior of urban residents in Jilin Province as the dependent variable and 11 statistically significant variables in the univariate analysis as the independent variables, and the results

showed that the type of medical insurance enjoyed was medical assistance, the absence of chronic diseases, satisfaction with the national basic drug system degree of general, dissatisfaction, and ignorance, and the attitude of indifference to the free use of basic drugs at the grassroots level were the risk factors leading to the poor basic drug use behavior of urban residents in Jilin Province. High school or secondary school, college and bachelor's degree, master's degree and above are protective factors for good medication use behavior.

**TABLE II.** BINARY LOGISTIC REGRESSION ANALYSIS OF ESSENTIAL DRUG USE BEHAVIOR OF URBAN RESIDENTS IN JILIN PROVINCE

Features	$\beta$	S.E.	Wald	P	OR	95%CI	
						Up	Low
Gender (reference=male)							
Female	0.158	0.196	0.643	0.422	1.171	0.797	1.721
Education (reference = Middle School and below)			9.673	0.022			
High school or secondary school	-0.638	0.306	4.332	0.037	0.529	0.29	0.963
College and undergraduate	-0.682	0.266	6.556	0.01	0.506	0.3	0.852
Master's degree and above	-1.102	0.375	8.64	0.003	0.332	0.159	0.693
Average monthly income (reference = less than 1000 yuan)			4.09	0.252			
1000-2000 RMB	0.161	0.302	0.283	0.595	1.174	0.65	2.122
2000-3000RMB	-0.387	0.298	1.677	0.195	0.679	0.379	1.219
3000RMB and above	-0.257	0.263	0.949	0.33	0.774	0.462	1.297
Type of medical insurance enjoyed							
New Agricultural Cooperative	0.042	0.227	0.034	0.853	1.043	0.668	1.629
Medical aid	0.689	0.28	6.069	0.014	1.992	1.151	3.448

Publicly funded medical care	-0.371	0.247	2.244	0.134	0.69	0.425	1.121
Whether suffering from chronic diseases (reference = yes)							
No	0.783	0.242	10.505	0.001	2.188	1.363	3.512
Whether to understand the national essential drug system(reference=very familiar)			1.746	0.782			
Familiar	0.508	0.523	0.943	0.331	1.662	0.596	4.633
Understood	0.352	0.454	0.601	0.438	1.422	0.584	3.465
Heard of it, don't know	0.282	0.444	0.403	0.526	1.326	0.555	3.167
Don't know	0.532	0.501	1.125	0.289	1.702	0.637	4.545
Are village level grassroots cadres (community cadres) helpful to you in the promotion of the basic drug policy (reference=yes)			0.655	0.721			
No	-0.248	0.314	0.623	0.43	0.78	0.422	1.444
Not promoted	-0.173	0.313	0.308	0.579	0.841	0.456	1.551
Are the medical staff of primary medical institutions helpful to you in promoting the basic drug policy (reference=yes)			2.121	0.346			
No	0.38	0.337	1.27	0.26	1.462	0.755	2.828
Not promoted	0.403	0.306	1.74	0.187	1.497	0.822	2.724
Satisfaction with the national essential drug system			11.638	0.009			

(reference=satisfaction)							
Fair	0.412	0.233	3.114	0.078	1.509	0.955	2.384
Dissatisfied	1.475	0.537	7.55	0.006	4.372	1.527	12.524
Don't know	0.768	0.305	6.318	0.012	2.155	1.184	3.922
Attitude toward free use of essential drugs at the grassroots level (reference=support)			9.871	0.007			
Against	0.516	0.525	0.966	0.326	1.675	0.599	4.688
Doesn't matter	0.967	0.317	9.298	0.002	2.631	1.413	4.9
Constants	-1.263	0.579	4.759	0.029	0.283		

### 3.4 Binary Logistic Regression Analysis of Basic Drug Awareness among Urban Residents in Jilin Province

The basic drug awareness of urban residents in Jilin Province was converted into a dichotomous variable: good=1, poor=0. A binary logistic analysis was conducted with the awareness of essential drugs among urban residents in Jilin Province as the dependent variable and the seven statistically significant variables in the univariate analysis as the independent variables, the results showed that women, college and bachelor's degree, master's degree and above, were protective factors for residents' basic drug awareness. 46-60 years old, and attitudes of opposition and indifference to the free use of basic drugs at the grassroots level were risk factors for poor basic drug awareness among urban residents in Jilin Province.

**TABLE III.** BINARY LOGISTIC REGRESSION ANALYSIS OF URBAN RESIDENTS' AWARENESS OF ESSENTIAL DRUGS IN JILIN PROVINCE

Features	$\beta$	S.E.	Wald	P	OR	95%CI	
						Up	Low
Gender (reference=male)							
Female	0.473	0.18	6.886	0.009	1.604	1.127	2.284
Age (reference = 25 years old and below)			3.034	0.386			
26-45 years old	-0.26	0.235	1.228	0.268	0.771	0.486	1.222



46-60 years old	-0.492	0.285	2.978	0.084	0.611	0.35	1.069
61 years old and above	-0.405	0.387	1.096	0.295	0.667	0.313	1.423
Education (reference = Middle School and below)			13.789	0.003			
High school or secondary school	0.325	0.298	1.186	0.276	1.384	0.771	2.485
College and undergraduate	0.867	0.287	9.148	0.002	2.379	1.357	4.173
Master's degree and above	1.192	0.358	11.055	0.001	3.293	1.631	6.647
Type of medical insurance enjoyed							
Publicly funded medical care	0.203	0.214	0.894	0.344	1.225	0.805	1.864
Has the community (village or town) in which you are located carried out activities to promote the national basic drug system (reference = yes)							
No	0.192	0.238	0.646	0.422	1.211	0.759	1.932
Have village grassroots cadres (community cadres) been helpful to you in promoting the basic drug policy (cf. = yes)			2.121	0.346			
No	-0.021	0.278	0.006	0.94	0.979	0.568	1.688
Not promoted	0.283	0.245	1.332	0.248	1.327	0.821	2.144
Attitude toward the free use of essential drugs at the grassroots level (reference= support)			12.063	0.002			
Oppose	-1.417	0.585	5.856	0.016	0.243	0.077	0.764
Don't care	-0.764	0.297	6.612	0.01	0.466	0.26	0.834
Constant	-0.893	0.356	6.285	0.012	0.41		

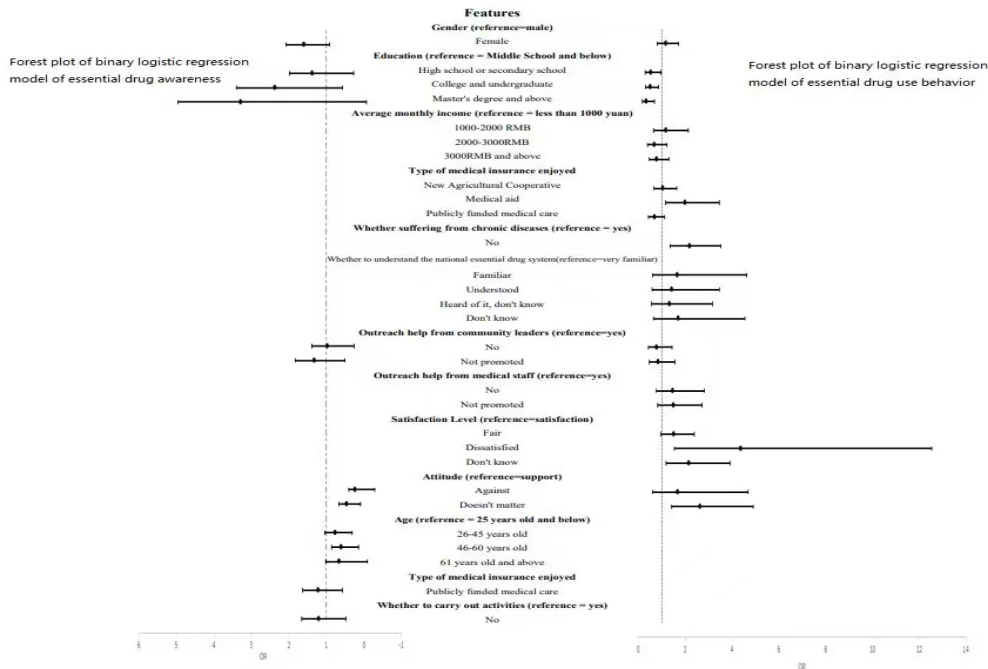


Figure 1. Binary logistic regression model forest plots

## 4 CONCLUSIONS

### 4.1 Awareness of National Basic Drug Policy among Urban Residents in Jilin Province

The results of the study found that the percentage of residents who were very familiar, familiar and aware of the basic drug system was 43.44% among the 622 respondents, which is lower than the knowledge rate of 50.7% surveyed by Hu Jinwei et al [12]. among residents aged 18 and above, but it also reflects that the promotion of the basic drug system in Jilin Province is not yet in place, especially the low knowledge rate of residents. The main channels for residents to know about the basic drug system are the Internet (56.78%), television (40.96%) and doctors (32.61%). It indicates that internet, television and doctors are still the main channels for residents to learn about the basic drug system. Therefore it can be done by community doctors directly to the residents, or by using the internet and television, especially the internet.

### 4.2 Strengthen Publicity to Improve Residents' Basic Drug Use Behavior and Awareness of Essential Drugs

Binary logistic regression analysis showed that satisfaction with the national essential drug system and attitude toward free use of essential drugs at the grassroots level were the influencing factors on residents' essential drug use behavior and attitude toward free use of essential drugs at the grassroots level was an influencing factor on residents' awareness of essential drugs. Residents whose satisfaction level with the national essential drug system is average, dissatisfied, and do not understand, as well as those whose attitude toward the free use of essential drugs at

the grassroots level is indifferent, have poor essential drug use behavior and poor awareness of essential drugs, indicating that this group of residents still lacks a full understanding of the national essential drug system and needs effective state propaganda for disease prevention and treatment, especially the role of the essential drug system in disease treatment should be strengthened so that residents can understand and make use of the policy and reap the benefits. Residents who do not suffer from chronic diseases may not be very concerned about medication application because they are relatively healthy. The poor behavior of residents in the use of essential drugs may also be due to a lack of understanding of the policy, which again needs to be promoted.

#### **4.3 Residents with Low Education Level are the Key Population to Enhance the Awareness and Drug Use Behavior of Essential Drugs**

The regression results showed that education and health insurance type were the influencing factors of residents' essential drug use behavior. Residents who have received education above high school have good basic drug use behavior, and the higher the education, the better, which is closely related to the overall knowledge literacy of residents, educated residents can read the drug use instructions by themselves and understand the knowledge related to drug use to guide the rational and safe use of drugs; such residents who enjoy the type of medical insurance for medical assistance will be poorer compared to those who do not have the financial ability to receive a good education. Education level, age, and attitude toward the free use of essential drugs at the grassroots level are the influencing factors for the awareness of essential drugs among urban residents in Jilin Province, where women and residents with college and bachelor's degree and master's degree and above have good awareness of essential drugs, indicating that women and well-educated residents are more concerned about the national essential drug system and that such people are more concerned about their health. The poor awareness of essential drugs among residents aged 46-60 years may be due to the relatively low proportion of this group of residents who have received a good education.

## **5 RECOMMENDATIONS**

In order to effectively implement and improve the awareness of essential drugs among the resident groups, the following suggestions are made:

Pay attention to the promotion of essential drugs among the resident groups and improve the awareness level of essential drugs among the residents. Strengthen the publicity and promotion of the basic drug system on the Internet, television and other types of media to increase residents' access to information on basic drugs and raise their awareness of the basic drug policy.

Strengthen the village grassroots cadres (community cadres) to promote basic drugs and visit the residents, if they have a deeper understanding of the basic situation of the residents, they can disseminate the information related to basic drugs to the residents in a targeted and timely and accurate manner according to the situation of different groups of people.

Strengthen the training of medical personnel in medical institutions on basic drug policies and improve the service quality and treatment level of primary medical personnel so that they can provide correct and reasonable guidance to residents in the use of basic drugs.

Strengthen training related to basic drug policies for village grassroots cadres (community cadres) and instruct village grassroots cadres on how to accurately disseminate basic drug policies to residents.

Improve the basic drug system. Strictly regulate the prescribing behavior of basic drugs by medical personnel in primary care institutions, improve the environment and service quality of primary care institutions, and increase the credibility and satisfaction of residents with primary care institutions, thus improving the accessibility of basic drugs.

Improve the essential drug catalog and further improve the selection mechanism of essential drugs. Increase the coverage rate of essential drugs in primary medical institutions, rationalize the layout of primary medical institutions, improve the convenience of medical treatment for residents, and meet the needs of more residents for medical treatment and basic drug use.

Revise the procurement standards for essential drugs, establish a financial subsidy system, reasonably approve the prices of essential drugs, and strengthen the monitoring of the use of essential drugs. Ensure the rational use of essential drugs so that more residents benefit from the essential drug policy.

Promote the free use of basic drugs at the primary level. The free use of basic drugs at the primary level is accepted by most residents, and the free use of basic drugs at the primary level can promote the decentralized treatment of common diseases in primary care institutions and alleviate the problem of difficult and expensive treatment of diseases.

Strengthen the construction of primary medical institutions, strengthen rural government health subsidies, and narrow the gap between urban and rural primary medical institutions.

## REFERENCES

- [1] Chen, G.R., Li, J.F., Wang, S.C. (2010) The main challenges of the implementation of the essential drug system in the use chain. *J. China Health Economy*, 29(11): 2.
- [2] Ministry of Health, National Development and Reform Commission, Ministry of Industry and Information Technology, Ministry of Supervision, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Commerce, State Drug Administration. (2010) Opinions on the implementation of the establishment of a national essential drug system. *J. China Pharmacy*, (4): 2.
- [3] Quick, J. D., Hogerzeil, H. V., Velásquez, G., Rágo, L. (2002) Twenty-five years of essential medicines. *Bulletin of the World Health Organization*, 80: 913-914.
- [4] General Office of the State Council. (2011) Opinions on the implementation of the establishment of a national essential medicines system. EB/OL. [http://www.gov.cn/ztl/ygzt/content\\_1661112.htm](http://www.gov.cn/ztl/ygzt/content_1661112.htm)
- [5] Chen, M., Yan, J.F., Tong, R.S., Chen, M. (2013) Progress of research on the basic drug system. *J. China Pharmacy*, 24(20): 5.
- [6] Nie, P., Liang, Q., Tian, Y. (2022) Logistic regression analysis of the occurrence of malignant arrhythmias in elderly NSTEMI patients after PCI treatment. *J. Chinese Journal of Gerontology*, 42(18):4397-4400.
- [7] Li, S.H., Wang, S.S., Chen,C., Yang, J., Tang, X.L. (2022) The influence of family cultural capital on students' reading literacy: an empirical study based on multilayer logistic model. *J. Journal of East China Normal University (Education Science Edition)*, 40(08): 57-66.

- [8] Cui, S.L., Li, P., Fan, Y.B., Guo, X.L., Gu, W.F., Wu, C.Y., Zhang, P. (2022) A binary logistic regression analysis of the common symptoms of perimenopausal syndrome. *J. Chinese Journal of Traditional Chinese Medicine*, 37(07): 4121-4124.
- [9] Zheng, M., Zhang, Y.Z., Lu, H.Y., Jia, Z.F., Jiang, J. (2022) Stata implementation of a logistic regression-based clinical prediction model for dichotomous outcomes. *J. China Health Statistics*, 39(03): 461-464.
- [10] Xiao, Q.Y. (2018) Rural teachers' career mobility intention and its influencing factors-an empirical study based on binary logistic regression model. *J. Basic Education*, 15(05): 36-45.
- [11] Liu, Q., Li, L.T. (2011) A study on the willingness of rural laborers to transfer training demand based on binary logistic model. *J. Statistics and Information Forum*, 26(11): 85-89.
- [12] Hu, J.W., Yin, W.Q., Zhao, Y.K., Guo, H.W., Hu, S.L., Sun, K. (2017) Analysis of the current situation of drug use behavior and its satisfaction among college students in Shandong. *J. China School Health*, 38(07): 991-993.