

Effect and economic outcomes of the polypharmacy management system platform for common diseases in the elderly in China

Poster Code: EE382
Poster Session: Poster Session 4
Date: Tuesday, May 7
Poster session time: 3:30PM-6:30PM

Xian Tang 1, Jiajia Liu 1, Linke Zou 1,2, Xingwei Wu 2, Ming Hu 1*

1. West China School of Pharmacy, Sichuan University, Chengdu, China; 2. Department of pharmacy, Sichuan Provincial People's Hospital, School of Medicine, University of Electronic Science and Technology of China, Chengdu, China

Background:

The problem of aging in China is becoming increasingly serious. With the increase of age, the risk of the elderly suffering from multimorbidity increases, and can cause multiple therapeutic drugs use. Polypharmacy may lead increasing burden of disease, the risk of adverse reactions, and poor medication compliance. Therefore, the management of polypharmacy in elderly patients is necessary for both individual benefits and social benefits.

Sichuan Provincial People's Hospital constructed a pharmaceutical service information service platform of monitoring and early warning for polypharmacy risk of common diseases in elderly patients in China. Through the input of patients' basic information, disease diagnosis, medication list and other information into the platform, it can realize the analysis and early warning of patients' medication problems, find potential drug treatment problems, and facilitate clinicians and pharmacists to manage patients, and complex drug treatment.

Objectives:

To evaluate the effect and economic outcomes of the constructed platform and provide evidence for optimizing the management mode of polypharmacy in elderly patients.

Methods:

Retrospective data of elderly patients from 64 sample hospitals were imported into the platform system, to identify the potential medication problems and risk warning. Intervention suggestions were given to sample patients according to the platform recommendations. Medication information about multiple drug use, medication compliance and quality of life of the enrolled patients were collected through follow-up survey. The statistic analysis was conducted to compare the differences before and after the platform assisted interventions. Combining the literature data of epidemiology, medication and treatment costs related to polypharmacy in the elderly were calculated, and the possible avoided economic losses and benefits of the constructed platform were evaluated.

Results:

A total of 2439 elderly patients with comorbidities were included in this study, aged 65 to 99 years. For medication, the median number of drugs used was 7, and the incidence of polypharmacy was 88.19%. Using the platform to analyze the medication of all the patients, it was found that 2208 patients had medication related problems (MRP), and 6696 MRPs were found, with an average of 3.03 MRPs per patient. The proportions of MRP shows in **Figure 1**.

For the 283 sample patients (follow-up time interval ≥ 7 days) (**Table 1**), the results showed that the median number of drug-related problems was reduced from 2 to 0 ($P < 0.0001$), the median EQ-5D-5L utility index was improved from 0.84 to 0.89 ($P < 0.0001$), and the median medication compliance score according to the Morisky scale was improved from 5.00 to 6.75 ($P < 0.0001$).

Combined with literature data, including monthly drug cost at home, average drug cost per hospitalization, average hospitalization cost, hospitalization rate, and hospitalization days, the changes of drug and treatment costs before and after the intervention of the sample population were calculated (**Table 2**). The calculated annual expenses showed that the home medicine expenses will be reduced by ¥ 2369.16, and the hospital expenses will be reduced by ¥ 2602.11 per capita per year.

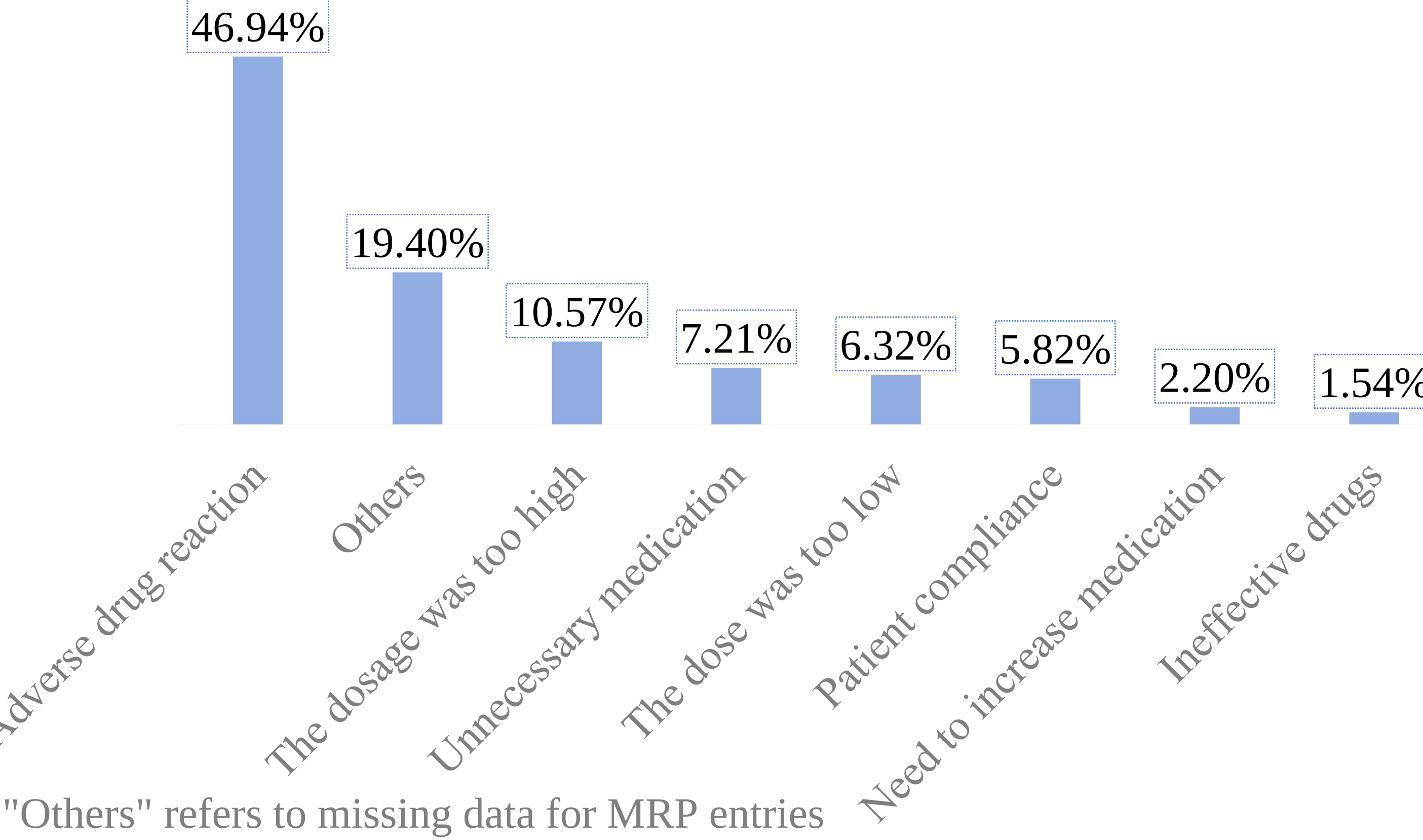


Figure 1 The type and proportions of MRP found by the platform

Table 1 Changes of patients with follow-up interval ≥ 7 days

	Before intervention	After intervention	P
Number of medications used (IQR)	7.0 (4.0)	7.0 (4.0)	0.0159
drug-related problems (IQR)	2.0 (2.0)	0 (2.0)	<.0001
EQ-5D-5L utility (IQR)	0.8444 (0.2169)	0.8928 (0.1733)	<.0001
medication compliance score (IQR)	5.00 (3.00)	6.75 (2.00)	<.0001

Table 2 Changes in the cost of medication interventions for elderly patients with comorbidities in the sample population

	Before intervention	After intervention	Difference
Monthly drug costs at home (¥)	253,967.03	198,094.34	-55,872.69
Number of inpatients	103	72	-31
Drug cost for one hospitalization (¥)	920,117.78	570,917.56	-349,200.22
Treatment cost for one hospitalization (¥)	3,394,864.49	2,066,197.85	-1,328,666.64
Hospitalization drug cost /capita /month (¥)	1,083.77	672.46	-411.31
Hospitalization treatment cost /capita /month (¥)	3,998.66	2,433.68	-1,564.98
Home medicine cost /capita /year (¥)	10768.92	8399.76	-2369.16
Total hospital expenses/capita /year (¥)	6691.86	4089.75	-2602.11
Total cost home and hospitalization /capita /year (¥)	17460.78	12489.51	-4971.27

Conclusion:

Using the polypharmacy management system platform to assist intervention can improve patients' medication compliance and quality of life, and the economic evaluation shows that the platform is economical in the short term.

Contact information:

Xian Tang, Email: tangx062400@163.com
Prof. Ming Hu* (corresponding author), Email: huming@scu.edu.cn