Original Research
Medical Journal of Islamic Republic of Iran, Vol. 25, No. 4, Dec. 2011, pp. 222- 225

Evaluation of the drug prescription status based on the WHO indices in pharmacies of health care centers affiliated to Tehran University of Medical Sciences

Afsaneh Mosleh[1], Shiva Khoshnevis Ansari[2], Maryam Sorush[3]
Ali Eghbalpor[4], Seifolah Babaeian[5]

Department of Drug, Deputy of Health, Tehran University of Medical Science, Tehran, Iran.

Received: 16 June 2011 Revised: 25 September 2011 Accepted: 23 November 2011

Abstract

Background: As a major responsibility, health authorities must control rational prescription of drugs (RUD). A way to analyze the regional status of drug prescription is the WHO's recommended indices. The purpose of the study was to determine the status of drug prescriptions in pharmacies of healthcare centers under the authority of Tehran University of Medical Sciences based on the WHO indices.

Methods: In this study, 28 pharmacies of health care centers under the supervision of Tehran University of Medical Sciences were selected and 3420 drug prescriptions were examined.

Results: the study revealed that the average number of drug per prescription was 3.03 (SD=0.72). 56.49% of prescriptions contained at least one antibiotic. Moreover, at least one injectable drug was prescribed in 28.96% of prescriptions.

Conclusion: Health authorities must play pivotal role in improving rational use of drugs. General practitioners are the major chain in RUD cycle. Results showed that we need to design some educational programs such as holding workshops on the RUD for physicians, public education and also producing related printed materials and advertising in the Media. These programs may improve the status based on the WHO indices which for example refers to the percentage of prescription of antibiotics & injections in the region.

Keywords: WHO drug prescription indices, Antibiotic prescription, Injectable drugs, Regional prescription, Health center pharmacy.

Introduction

Nowadays, medication is known to be one of the most important parts of the health services and as a main index for the society, development and comfort.

Improvements in the medical technology are based on the industrialization and appearance of new methods for disease management and modern drugs production. The uncontrolled progressive growth of population and change of life style has increased the costs of health services and managements in a developing society such as Iran.

The WHO recommends rational prescription and use of drugs and also utilizing suitable methods to evaluate the status of drug prescription and use in various regions. It may be helpful for solving the practical problems related to drug prescription and

1. **(Corresponding author)** Deputy of Health Services, Tehran University of medical Sciences, Tehran, Iran. a_mosleh82@yahoo.com
2. Deputy of Health Services, Tehran University of medical Sciences, Tehran, Iran. khoshnevis_shiva@yahoo.com
3. Deputy of Health Services, Tehran University of medical Sciences, Tehran, Iran. soroush50@yahoo.com
4. Deputy of Health Services, Tehran University of medical Sciences, Tehran, Iran. dr.eghbalpour@yahoo.com
5. Deputy of Health Services, Tehran University of medical Sciences, Tehran, Iran. drs.babaeian@yahoo.com

use [1].

The average number of drug per prescription, the percentage of prescription of antibiotics and injectable drugs are some of the indicators to evaluate the regional status of prescription and medicine practice.

According to the reports [2] the average number of drugs per prescription in 12 developing countries is 2.2-3.8. This average is 1.3-2.2 in developed countries [2].

The purpose of the present study was to determine the drug prescription status in pharmacies of health care centers affiliated to Tehran University of Medical Sciences, based on the WHO indices.

Methods

This retrospective descriptive study was performed in 2008-2009 to determine the status of drug prescription based on the WHO indices in pharmacies of health care centers under the supervision of Tehran University of Medical Sciences.

Included criteria were determined regarding the WHO guideline, indices of Rational Use of Drug (RUD) prescription, and seasonal pattern of drugs' usage. Therefore, according to the number of pharmacies in Tehran districts (10 pharmacies in the south of Tehran Health Center, 5 in Shahr-e-Rey and 13 in Eslamshahr), 120 sample prescriptions were randomly collected during a period of 12 months (average of 10 prescription per month) to evaluate the drug prescription and use at the selected health centers.

WHO's prescription indices include average number of prescribed items, percentage of prescriptions having at least 1 antibiotic, percentage of prescriptions having at least 1 injection, percentage of prescriptions with generic names and percentage of formulary prescriptions. Of these five indices, generic drug prescriptions and prescriptions based on the formulas of the health centers affiliated to Tehran Medical University during 2004-2005 were 99.8% and 99.45% [4], respectively. Therefore, these two indices were ignored in the study because they were almost 100% in the value.

Therefore, the 3 investigated indices were as follows:

Number of prescribed items in 120 prescriptions/ 120 = average of items

Total number of prescriptions with at least 1 antibiotic / total number of analyzed prescriptions = percentage of prescriptions with at least 1 antibiotic.

Total number of prescriptions with at least 1 injection / total number of analyzed prescriptions = percentage of prescriptions with at least 1 injection.

The collected data were recorded and inserted into a spreadsheet. Percentages were calculated by Excel (Microsoft Crop, Seattle, WA). Data analysis was by SPSS 11.0 (SPSS Inc. Chicago, IL).

Results

3420 prescriptions from 28 pharmacies of health centers, including 1260 prescriptions from the South of Tehran Health Center, 600 prescription from Shahr-e-Rey Health Center and 1560 prescriptions from Islamshar Health Center were examined.

The South of Tehran Health Center with the average of 2.86 (SD=0.60**)** had the lowest and Shahr-e-Rey with 3.32 (SD=0.66**)** had the highest rate of number of drugs per prescription.

For the percentage of prescriptions containing at least one antibiotic, The South of Tehran Health Center with 51.88% had the

Table1. The WHO indices for Shahr-e-Rey, Islamshahr and South of Tehran Health Center during 2008-2009.

Center name	Average number of prescription drugs	Percentage of prescription containing antibiotic	Percentage of prescription containing Injections
Islamshahr	2.92 (SD=0.54)	60.76	38.77
Shahr-e-Rey	3.32 (SD=0.66)	56.82	31.98
South of Tehran Health Center	2.86 (SD=0.60)	51.88	36.48
Deputy of Health	3.03 (SD=0.72)	56.49	35.74

lowest and Islamshahr with 60.76% had the highest rate.

For the percentage of prescription containing at least one injectable drug, Shahr-e-Rey with 31.98% had the lowest and Islamshahr with 38.77% had the highest rate.

The WHO indices in the cities which are under supervision of Tehran University of Medical Science are shown in Table 1.

Discussion

The Rational Use of Medicine Committee (RUMC) reported the average number of 3.4 drugs per prescription in Tehran in 2007-2008 [5]. In a study performed in 2003 in Kerman for evaluation of the general practitioners' prescription status, the average of 3.43 was reported which is close to RUMC report for 2007-2008 [2].

In our current study, the average number of drugs per prescription was 3.03 which is lower than the RUMC 2007-2008 report, and corresponds to various reports from some developing countries such as Lebanon, Yemen, Sudan, Nigeria and Jordan [6-8].

56.49% of prescriptions had at least one antibiotic which is much higher than the similar reports for Tehran during 2006-2007 [5], Kerman in 2003 (33.95%) [2], Lebanon (17.5%) and Zimbabwe (29%) and close to Sudan (63%) and Jordan (60.9%) reports [6].

There are also several reports indicating inappropriate prescription of antibiotics in teaching hospitals in some developed countries such as the USA, Canada and Australia [9].

Inappropriate and uncontrolled prescription of antibiotics may lead to increase of the resistance of microorganisms and it is more critical than unexpected and adverse effects of using drugs. According to the WHO reports, in the USA there are 40,000 deaths annually reported due to the hospital infections caused by microorganisms resistant to routine antibiotics [10-12].

Since in Iran antibiotics have the highest percentage of sale and inappropriate use, proper education for health groups and medical students seems essential.

In this study, the percentage of prescriptions containing at least one injectable drug was 35.74%, compared to the other reports for example for Tehran in 2007 as 14% [5], for Kerman during 2003-2004 42.4%, and for some other developing countries 36% - 48% [6,7].

There is an inappropriate and uncontrolled prescription of injectable form of drugs in most parts of the world [12,13]. Since injectable drugs are always more expensive than the other forms and most of patients prefer non-injectable forms, and also for more possibility of side and bad effects of injectable drugs, designing educational programs revising the tendency of physicians in prescribing injectable form of drugs seems inevitable.

Conclusion

Inappropriate drug usage depends on several factors including: insufficient drug information; irrational demand by patients; socio-cultural factors; lack of effective and regular controlling mechanism for physicians; and lack of practicable policy to move towards the promotion of rational prescription and use of drugs.

Application of therapeutic protocols, physician training, group discussion and notification, and supervision over the drugs prescription are recommended for improving the status of RUD.

References

1. Sunarto G, Surya Wati S. Impact evaluation of self monitoring of drug use Indicators in health facilities. Thailand ICIUM 2004. (Poster).

2. The survey of Indices of practitioner of General prescription in Kerman province. Babol University of Medical Journal 2005-2006. 7(4) 76-78.

3. How to investigate use in health facilities. World Health Organization Report, Jeneva 1993.

4. Mosleh A, Darbooy SH, Khoshnevis Ansari SH. Drug Prescription Based on WHO Indicators: Tehran University of Medical Science facilities with pharmacy. Tehran University Medical Journal 2007; 65 supp2: 12-15

5. Nurai M, Soleimani F, Tehrani Banihashmi A, et al. The survey of prescription of drug Indices in free and Insurance prescription in Tehran. Razi Journal 2007 19(2).

6. Moghadamina AA, Mirbolooki MR, Aghili MB

General practitioner prescribing patterns in Babol city, Islamic Republic of Iran. EMH 2002; 8(4&5): 550-5.

7. Otoom S, Baticha A, Hadidi H, Hasan M, Al Saudi K. Evaluation of drug use in Jordan using WHO prescribing indicators. EMHI 2002 8(4&5): 537-43.

8. Babalola CP, Awoleye SA, Akinyemi JO. Evaluation of prescription pattern in Osun State (Southwest) Nigeria Journal of Public Health and Epidemiology 2011; 3(3), pp. 94-98,

9. Hogerzeil HV. Promoting rational prescribing: an international perspective. Br J Clin Pharmacol 1995:39:16.

10. Anandkumar H, Kapur H, Daynand A. Increasing prevalence of antibiotic resistance and multi drug resistance among uropathogens. J Commun Dis 2003; 35(2):102-8.

11. Pavani V, Mihir YP, Shravani K, Prabhakar R V. Study of Prescribing Pattern for Evaluation of Rational Drug Therapy in Warangal **,** Indian Journal of Pharmacy Practice, 2011Oct - Dec 4 (4).

12. Williams R. Antimicrobial resistance the facts Essential Drugs Monitor, 2000 28829:7-8.

13. Logez S, Hutin Y, Holloay K, Gray R, Hogerzeil HV. Could the WHO model list of essential medicines do more for the safe and appropriate use of injections. J Clin Pharmacol 2004; 44:1106-13.