

# Evaluating the Standards of Hospital Pharmacies in Therapeutic Centers Affiliated with Kermanshah University of Medical Sciences, Iran

Tahvilian R., Siah Shadbad MR., Hamishehkar H., Aghababa Gharehbagh V.

**Abstract**—Nowadays pharmaceutical care departments located in hospitals are amongst the important pillars of the healthcare system. The aim of this study was to evaluate quality of hospital drugstores affiliated with Kermanshah University of Medical Sciences.

In this cross-sectional study a validated questionnaire was used. The questionnaire was filled in by the one of the researchers in all seventeen hospital drugstores located in the teaching and non-teaching hospitals affiliated with Kermanshah University of Medical Sciences. The results shows that in observed hospitals, 24% of pharmacy environments, 25% of pharmacy store and storage conditions, 49% of storage procedure, 25% of ordering drugs and supplies, 73% of receiving supplies (proper procedure are followed for receiving supplies), 35% of receiving supplies (prompt action taken if deterioration of drugs received is suspected), 23.35% of drugs delivery to patients and finally 0% of stock cards are used for proper inventory control have full compliance with standards.

**Keywords**—Hospital pharmacy standards, Kermanshah, pharmacy management

## I. INTRODUCTION

IN any hospital, a drug distribution system is required to supply the medication prescribed for each inpatient. The drug distribution system includes all the processes that occur between the prescription of a drug and the administration of that drug to the patient. There are many varieties of drug distribution system in use throughout the world, but all have the same goal: to ensure that each dose of medication administered to each patient is exactly that which was intended by the prescriber.

Wonderfully, there are still some physicians in Iran who think about a big store of drugs, when they hear the words “hospital pharmacy”. Their day to day hospital care experiences had shown them before, that the only thing which is expected from a hospital pharmacy is supplying medicines. Many of the hospital managers in Iran who are basically supposed to be physicians do think the same [1, 2]. In many developing countries today, modern and advanced healthcare system is benefited from hospital drugstores and clinical pharmacists as great invaluable elements in curing process [3, 4].

Corresponding Author: Tahvilian R., Assistant professor, Department of pharmaceuticals, Kermanshah University of Medical Sciences, Kermanshah, Iran, (phone: +989183326459; fax: +988314302349; e-mail: rtahvilian@kums.ac.ir).

Siah Shadbad MR., Associate professor, Department of pharmaceuticals, Tabriz University of Medical Sciences, Tabriz, Iran

Hamishehkar H., Assistant professor, Department of clinical pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran.

Aghababa Gharehbagh V. Pharmacy student, School of pharmacy and pharmaceutical sciences, Kermanshah University of Medical Sciences, Kermanshah, Iran

Branches of a standard hospital pharmacy are recommended to be wide spread in different departments of the hospital for ensuring the high quality pharmaceutical care services [5].

There are particular standards for hospital pharmacy administration in Iran in addition to some efficient and interesting worldwide ones. These standards can be used after being modified according to our cultural and even religious desires [6].

A survey done by Malik et al showed that the most important problems in hospital pharmacies management are dearth of personal, equipments and spaces deficiency and warranty of persuading continuous drug services [7].

There are few published studies done in Iran on this case. In a study done by Vaziri on selected hospitals affiliated with Iranian Social Security Organization (ISSO), lots of deficiencies and inelegances was subjectively observed in equipments, desired spaces and dispensing processes that definitely cause a waste in human resources and the organization funds, and may consequently impose a reduction in ISSO services proficiency and safety too [8].

In another study Mortazavi et al emphasized on a huge gap between hospital pharmacy services represented in 12 surveyed hospitals affiliated with Shahid Beheshti University of Medical Sciences and the standard guidelines.<sup>1</sup>

Inadequacy of needed space for professional services, non standard equipments and instruments and low rate of (clinical) pharmacist effective attendance in clinical wards were reported to be remarkable problems for establishing a standard scientific pharmaceutical care service [1]. On the way of moving from traditional hospital pharmacies to the more scientific and modern ones, it seems crucial to have an analysis before making any decision on this important issue.

The importance of Kermanshah as an international border caused to change it to the therapeutic city center beside Iraq in west of Iran. Despite the essential role of administrative authorities of this province on the health care system of the country, to our best of knowledge, there is no previously published research on the basic needs of the above mentioned movement.

The aim of this study was to evaluate pharmacy store and storage conditions, equipments, process of ordering, receiving, storing and delivering of the in-patient pharmacies located in hospitals affiliated with Kermanshah University of medical sciences (KUMS).

The words “hospital pharmacy” and “drugstore” are used interchangeably within this article and “pharmacy management” is the ideal scientific gold standard terminology for them.

## II. METHODS

This study was done on all 17 teaching and non-teaching hospitals affiliated with KUMS in 2010-2011.

The full names of hospitals are not mentioned here for the sake of privacy but they were one psychiatric teaching hospital (PSY), a woman general teaching hospital (WMN), a cardiology specialized teaching hospital (CRD), a burn and trauma specialized teaching hospital (BRT), a pediatric teaching hospital (PED), two general teaching medical centers (GMC1 and GMC2) and finally ten other general hospitals (GNH1, GNH2, to GNH10).

The design of study was cross-sectional and descriptive data was collected using a questionnaire validated by world health organization (WHO) <sup>9</sup>. The questionnaire was divided into 8 separated fields: 1) questions about pharmacy environment, 2) questions about pharmacy store and storage conditions, 3) questions about storage procedure, 4) questions about ordering of drugs and supplies, 5) questions about proper procedure are followed for receiving supplies, 6) prompt and proper action taken if deterioration of drugs received in suspected, 7) stock cards are used for proper inventory control, and 8) drugs are dispensed properly to patients. The total number of questions in this questionnaire was 79.

According to available standard reference, [9] scientifically accepted allocations and evaluation criteria for a hospital pharmacy were summarized and relevant subjects of the evaluated hospital pharmacies were compared to it, whether it was full, partial or non-compliance. Descriptive analysis of the data was done using SPSS (version 17).

### III. RESULTS

According to the present findings, just 23% of hospitals have adequate and proper storage area for pharmacy but the rest room and counseling office were not enough in all of hospital pharmacies. In 30% of observed hospitals the areas were clean and well organized and have full compliance with standards.

There was enough store space in 47% of pharmacies; used refrigerators 18% of studied hospitals were less than standard, 76% of drug stores had a thermometer built-in refrigerator, 30% had no sanitary sink outfitted with hot and cold water, in 47% found non-medical items in refrigerator, 35% had thermometer in pharmacy area, safe places for opiates were observed in 100% of pharmacies, the structural engineering parameters like air conditioning system and brightness controls in 29% of hospitals were full compliance.

In 41% of pharmacies the stores used the standard First In-First Out (FIFO) system, 90% didn't have fire and smoke alarming or firefighting systems (of course, one or two fire fighting capsules existed in most of drug stores), 100% don't have "no smoking" signs, 100% of stock containers have adequate and correct labeling but their clearance is partial, 47% of hospital aren't free of pests, just in 24% of hospitals shelves and boxes are raised off the floor on pallets or on boards, in 59% of hospitals drugs are arranged on shelves by therapeutic class, 100% of tablets and dry medicines stored in airtight containers, 12% of liquids and ointments stored on middle shelves. 12% of supplies such as surgical items and bandages stored in bottom shelves.

In all of studied hospitals there are no expired drugs in the stores, there is no alphabetic order and groups based on amount for arranging the shelves and facilitated counting, there were no damaged containers and overstocked items in almost all pharmacies, 100% have appropriate frequency in distributing drug orders and their consumption based and to expected needs of patients.

Unfortunately there is no calculation to determine average monthly consumption, order threshold and maximum stock. All of observed hospitals have partial compliance on writing orders clearly on prescribed forms, 30% have deliveries by a health worker overseeing the delivery. Checking condition of boxes at time of delivery, writing deliveries date and knowledge on standard forms, signing forms before leaving the facility or warehouse by delivery person, matching items listed on delivery form with supplies received and checking expiry date of all items before final acceptance of delivery in all of hospital pharmacies that are studied have full compliance with standards. 94% have non-compliance with standards in the case of regular inspections to determine deterioration of drugs, 100% of discrepancies are documented and reported, in 100% of studied cases there is no stock card which is being used to control inventory. In 94% of hospitals patients are greeted and treated with respect, 67% have pharmacy staff dressed with clean appearance while on duty. 41% have second check of all medicines dispensed by a staff member before issuing the prescription to the patient. 58% have prescription crossed check for accuracy in listing of patients name at point of receipt. In 12% of cases we have very dirty dispensing containers. Unfortunately unsatisfied demands of patients don't record and pharmacists don't explain the dosage, side effects and possible adverse reactions in use of patient's medication. Pharmacists don't confirm patient's information about time and way of taking drug and don't check their ability to repeat and remember the instruction for taking their medicine. The results are summarized and categorized in fig. 1 to 6.

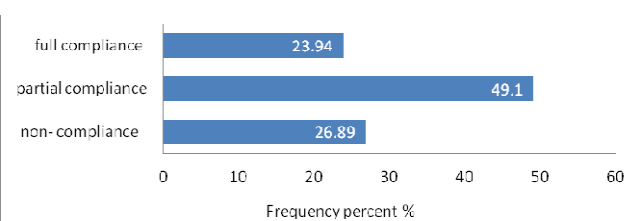


Fig. 1 Frequency of pharmacy environment compliance with standards in hospital pharmacies affiliated with KUMS

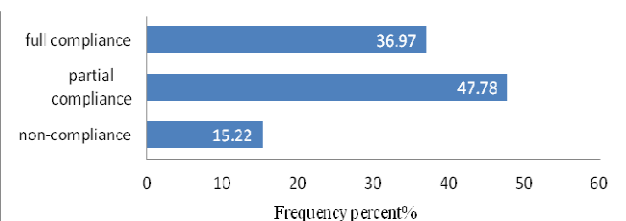


Fig. 2 Frequency of pharmacy store, storage condition and storage procedure compliance with standards in hospitals affiliated by KUMS

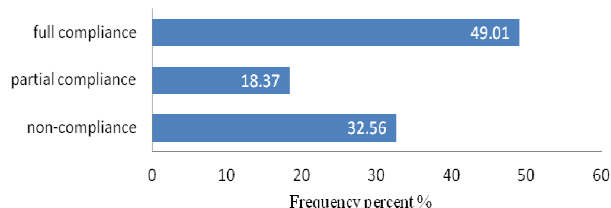


Fig. 3 Frequency of ordering and receiving drugs and supplies compliance with standards in hospital pharmacies affiliated by KUMS

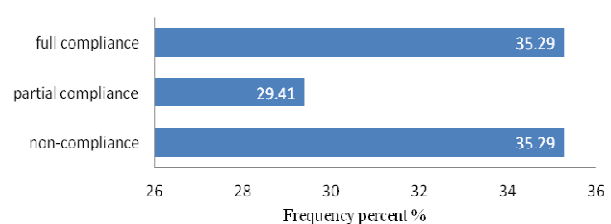


Fig. 4 Frequency of proper actions in suspected drugs compliance with standards in hospital pharmacies affiliated by KUMS

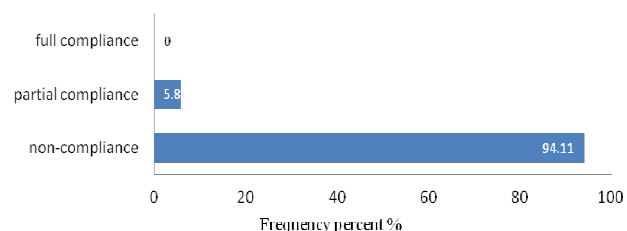


Fig. 5 Frequency of stick cards are used for proper inventory control compliance with standards in hospital pharmacies affiliated with KUMS

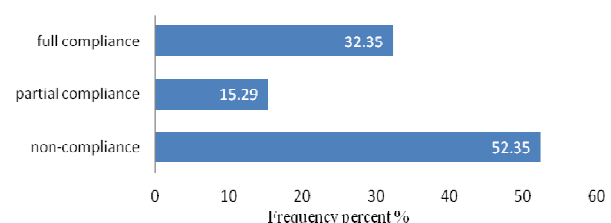


Fig. 6 Frequency of drug delivery to patient's compliance with standards in hospital pharmacies affiliated by KUMS

#### IV. DISCUSSION

Hospital pharmacy (pharmaceutical care department) is defined as a dynamic and scientific unit which prepares, reserves, compounds, packs and disperses drugs for both in-patients and out-patients in a hospital [10]. Furthermore, drug control and information services are offered there. The hospital drugstore unit must be easy to access for the department it offer services. The best place for this unit is the first-floor which is accessible for in-patient emergency and out-patient departments. Moreover it gives a better drug receiving availability for purchased drug products [11]. Unfortunately the present findings showed that in the studied hospitals this important department is almost located in an unsuitable and nearly worthless area of the hospital mostly in the underground floor or near the central stores of the institution. This may be considered to be the major cause of trouble in providing pharmaceutical care services.

Most of our hospital pharmacies are suffering from shortage of primary and necessary equipments. Unquestionably this fact influences the quality of pharmaceutical care which is expected from the mentioned department. According to the present findings, there were no drugstores in which more than one pharmacist working on the same working period.

Obviously, the lower number of pharmacists causes the lower level and lower quality of pharmaceutical care giving. As a comparable example there are 25 pharmacists working in an American hospital with 1100 beds and the number of employed staff pharmacists in a 350 Beds Christian hospital was reported to be 12 people in 3 shifts [12]. So, expecting standard and appropriate services in general teaching hospitals like GMC1, GMC2 and just even PSY with 515, 220 and 250 permanent beds (552, 181 and 202 active beds) while employing and one pharmacist looks unwise and needs serious reviews. Other important point is lack of space in 76% of studied hospitals. This is in contrast with similar hospital pharmacies even in neighborhood countries e.g. Indian Christian hospitals with 90% standard spaces [12].

Deficiencies in surveyed hospitals suitable space and tools have important effects on pharmacy proficiency, leading to disability of keeping, tenet classifying and preparing adequate drugs causing personnel dissatisfaction. Existence of manager office and counseling room for patients, nurses or physicians is one of the most important needs which are not planned in lots of cases.

#### V. CONCLUSION

This study denotes lots of deficiencies and inelegances in spaces, equipments, services, ordering, receiving, storing and drug counseling which are supposed to be offered by the pharmaceutical care departments in the studied hospitals. This may cause a waste of money and human resources, leading to limitations in offering safe and scientific pharmaceutical care services.

This matter manifests great differences between our situation and accepted global standards. It looks necessary to have systematic programs to eliminate this kind of problems. It is believed that a very a very important recommendation for prevention and solving of this kind of concerns is to employ enough number of clinical hospital/pharmacy specialist as the administrator or manager of pharmacies located in hospitals.

They are supposed to follow-up the professional standards of hospital pharmacy practice including the correct and scientific method of space and resource allocation.

This approach has been started in Iran from 1995 by training the needed specialized personnel (clinical pharmacists) and entrusting the whole management of hospital pharmacies to them. Obviously, a fully word by word translated curriculum of clinical/hospital pharmacy training courses is not expected to fulfill the local need and will not help to eradicate the above mentioned problems in hospital pharmacy management. The same story may be expected for the hospital pharmacies located in other middle-east countries.

#### ACKNOWLEDGEMENT

This research was supported by the accountants of all teaching hospitals and staff of deputy of food and drug organization in Kermanshah University of medical Sciences. Especially it should be pleased of Ms Soleymani and Dr Rahimi in the deputy of food and drug organization.

#### REFERENCES

- [1] Sabzghabae AM, Badri S, Ashari HE, Hosseini SM: The design and equipments of hospital pharmacies in Isfahan, Iran JRMS 2010;15(3):219-224
- [2] Mortazavi SA, Hajebi G: Administrative issues for pharmaceutical services in hospital pharmacies affiliated with Shahid Beheshti University of Medical Sciences. Research in Medicine 2001; 26(3):205-15.(Persian).
- [3] Makowsky MJ, Schindel TJ, Rosenthal M, Campbell K, Tsuyuki RT, and Madill HM: Collaboration between pharmacists, physicians and nurse practitioners: a qualitative investigation of working relationship in the inpatient medical setting. J Interprof Care 2009; 23(2):169-84.
- [4] Chan A, Shih V, Chew L. Evolving roles of oncology pharmacists in Singapore: a survey on prescribing patterns of antiemetics for chemotherapy induced nausea and vomiting (CINV) at a cancer centre. J Oncol Pharm Pract 2008; 14(1):23-9.
- [5] Basic guide to standards. Scottsdale: National Council for Prescription Drug Programs; 2009. P.13.
- [6] Dargahi H: Standards for hospital pharmacies. Drug and Therapy 2004; 37:50-5. (Persian).
- [7] Malik MM, Seoka SN, Reutzel TJ: The management concerns of hospital pharmacy director. Top Hosp Pharm Manage 1992; 12(1):44-62.
- [8] Vaziri M. Drug delivery systems in selected hospital pharmacies affiliated with social security organization in Tehran [PHD thesis]. Tehran (Iran): Pharmacy school, Shahid Beheshti University of Medical Sciences; 1996. (Persian).
- [9] Available from:  
[http://www.WHO.int/entity/management/facility/hospital\\_standards\\_bloodbank.pdf](http://www.WHO.int/entity/management/facility/hospital_standards_bloodbank.pdf)
- [10] Shargel L, Mutnick AH, Souney PF, Swanson LN: Comprehensive pharmacy review. 7th ed. Philadelphia: Lippincott Williams and Wilkins; 2009.
- [11] Cranmer A. Practical hospital pharmacy management: management strategies and methods. Trop Doct 2000; 30(1):3-5.