

ASSESSMENT OF PATIENT-CARE, FACILITY CARE, AND COMPLEMENTARY DRUG USE INDICATORS AMONG ELDERLY PATIENTS IN A TERTIARY CARE HOSPITAL OF WESTERN NEPAL

SAGARANANDA GIRI*, PARBATI DULAL, GULAM MUHAMMAD KHAN

Pharmaceutical Sciences Program, School of Health and Allied Sciences, Pokhara University, Kaski, Nepal. Email: girisagarananda@gmail.com

Received: 16 April 2020, Revised and Accepted: 27 May 2020

ABSTRACT

Objective: The current study aims to determine the pattern of drug usage in terms of patient-care, facility care, and complementary drug use indicators among elderly people.

Methods: The study was a prospective cross-sectional study that was conducted in the outpatient department. Patient-care, facility care, and complementary drug use indicators were assessed as per the WHO/INRUD indicators. Patient/patient party knowledge of correct dose was analyzed by the information; time of administration (when) and quantity of drugs to be taken (how much).

Results: The duration of consultation in the ophthalmology department was comparatively longer (30.33 min) than in other departments. The dispensing time of the medicine department was 126.60 s which was higher than other departments. Among the total medicines, 88.58% were dispensed, 21 (1.06%) of the total drugs had the patient's name labeled on the envelope while 1430 (81.53%) of the drugs had drug name and 1617 (92.19%) only had the administration time labeled on the envelope. On interviewing patients/patient parties, 240 (59.55%) knew both the time of administration and the number of drugs to be taken. The average medicine cost encountered per patient was found to be Nepalese rupees (NRs.) 1353±1079 NRs. (US\$ 11.57±9.23).

Conclusion: It is concluded that systematic changes need to be applied to improve the patient knowledge, to deliver quality advice to the patients, and to maintain the process of adequate labeling in medications.

Keywords: Patient care, Facility care, Complementary drug use indicators, Elderly.

© 2020 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2020.v13i8.37928>

INTRODUCTION

Maintenance of quality in health-care services is vital; the absence of which is unprofessional and potentially deadly [1]. To evaluate potential problems in drug use and to prioritize and focus efforts to correct these problems, the WHO indicators can be quickly and efficiently be used [2].

Drug dispensing is a systematic process that terminates with a client being provided with a defined quantity of medication(s) and guidance on how to use those drugs. The amount of drugs being given depends on their availability and the dosage, the patient requires for a given case. Therefore, dispensers must be able to provide the following information: Drug(s) being prescribed, dose(s), mean of the total number of items mentioned in the prescription, the percentage of the items supplied which were actually prescribed, the total percentage of drugs properly labeled, the total amount of medications, and the price of each item on the prescription [3].

Measuring the duration of patient consultation and medicine dispensing is required for assessing the time that the responsible personnel spends with patients in the process of consulting, prescribing, and dispensing the medications. This step is necessary since it suggests the tentative quality of the diagnosis as well as that of the treatment. How much percentage of drugs in the prescription is supplied to the patient is used to analyze the degree of ability of the health faculty to provide the prescribed drugs, it is also mandatory to measure the inclusion of essential information about the medications when it is supplied to the patients. Assessing the knowledge of the patients regarding the dose and type of the drug helps to evaluate the effectiveness of the information given to patients during drug dispensing [2].

Evaluation of a health facility can be performed using a set of criteria described by the World Health Organization. The criteria contain analyzing the availability of essential drugs and key drugs, complementary drug use indicators, average medicine cost, and percentage of prescriptions according to clinical guidelines [2-4]. Elderly populations with the age of over 65 years have more tendency to be on multiple medications in comparison to the younger population because they have a higher prevalence of serious illness, physical disability, and dependency [5,6]. According to the recent census, there are 5.28% of elderly people aged more than 65 years in Nepal [7].

Since the older populations are the frequent consumers of multiple medications, this study is therefore aimed to determine the pattern of drugs usage in terms of the World Health Organization (WHO)/International Network for Rational Use of Drugs (INRUD) patient-care, facility care, and complementary drug use indicators.

METHODS

Study design

It was a prospective cross-sectional study conducted in the outpatient department of Manipal Teaching Hospital, Pokhara, Nepal. The data were collected from August to November 2018.

Inclusion criteria

All the patients of either gender aged 65 years and above, who attended the various outpatient departments and hospital pharmacy for purchasing medicines.

Exclusion criteria

Those prescriptions bought to the pharmacy by the caregiver and not willing to provide written consent.

Ethical clearance

The study was approved by the Institutional Review Committee (IRC), Pokhara University Research Centre (PURC), Kaski, Nepal.

Data collection

Data were collected in a structured pro forma. Patient-care, facility care, and complementary drug use indicators were assessed as per the WHO/INRUD indicators. Patients/patient party knowledge of correct dose was analyzed by the information in the time of administration (when) and the number of drugs to be taken (how much) [4,8].

Statistical analysis

All the data were entered into Microsoft Excel version 2013 and analyzed using Statistical Package for the Social Sciences (SPSS) version 20.

Calculation of indicators

Average consultation time: It was calculated by dividing the total time for a series of consultations of the particular department, by the number of consultations in that department.

Average dispensing time: It was calculated by dividing the total time for dispensing drugs to a series of patients of a particular department, by the number of encounters in that department.

Percentage of medicine actually dispensed: It was calculated by dividing the number of drugs actually dispensed at the health facility by the total number of drugs prescribed, multiplied by 100.

Percentage of medicine adequately labeled: It was calculated by dividing the number of drug packages containing patient name, drug name, and when the drug should be taken, by the total number of drug packages dispensed, multiplied by 100.

Percentage of patients with knowledge of correct dose: It was calculated by dividing the number of patients/patient party who can adequately report the dosage schedule for all drugs, by the total number of patients/patient party interviewed, multiplied by 100.

Availability of essential medicines list or formulary and clinical guidelines to practitioners: It was calculated by yes or no, per facility.

Percentage of key medicine available: It was calculated by dividing the number of specified products actually in stock by the total number of medicines on the checklist, multiplied by 100.

Average medicine cost per encounter: It was calculated by dividing the total cost of all drugs prescribed by the number of encounters surveyed.

Percentage of prescriptions in accordance with clinical guidelines: It can be calculated by dividing the number of cases receiving the chosen treatment divided by the total number reviewed. It was not calculated due to the lack of clinical guidelines.

RESULTS

A total of 403 patients were enrolled in this study. The overall mean±SD of age was 73.47±6.43 years. On the regard of patient-care indicator, the average consultation time of ophthalmology department (30.33 min) was higher followed by medicine department (14.11 min) and the least was of the ENT department (4.56 min). The average dispensing time of medicine department was 126.60 s, orthopedics 91.50 s, and ophthalmology department 55.90 s. Out of the total prescription of 1980 medicine, 88.58% of medicine was dispensed. Percentage of drug adequately labeled, 21 (1.06%) of the drug had the patient name labeled on the envelope while 1430 (81.53%) of the drugs had drug name and 1617 (92.19%) had the administration time only labeled on the envelope, the percentage of patients with knowledge of correct dose, 240 (59.55%) as shown in Table 1.

The facility indicator is given in Table 2, in which there was the availability of essential medicines list or formulary to practitioners but no availability of clinical guidelines and the percentage of medicine available was 66.67%.

In this study, the average medicine cost per encounter was NRs. 1353±1079 NRs. (US\$ 11.57±9.23). The complementary drug use indicator is given in Table 3.

DISCUSSION

The drug dispensing system needs to be evaluated in a health facility to improve the efficiency of the dispensing practice which is essential for patient care [9]. The average consultation time of ophthalmology department (30.33 min) was higher followed by medicine department

Table 1: Patients care indicator of patients

Patient-care indicators	Findings
Average consultation time (minutes)	The average consultation time of different department are as follows: Ophthalmology: 30.33 min Medicine: 14.11 min Dermatology with venereology and cosmetology: 11.52 min Psychiatry: 10.2 min Surgery: 8.16 min Orthopedics: 7.04 min ENT: 4.56 min
Average dispensing time (seconds)	The average dispensing time of different department are as follows: Medicine: 126.6 s Orthopedics: 91.5 s Surgery: 89.1 s Dermatology with venereology and cosmetology: 78.50 s Psychiatry: 77.6 s ENT: 72.1 s Ophthalmology: 55.90 s
Percentage of medicine actually dispensed	1754 (88.58%)
Percentage of medicine adequately labeled	In this study, it was found that only 21 (1.06%) of the drug had the patient name labeled on the envelope while 1430 (81.53%) of the drugs had drug name and 1617 (92.19%) had the administration time only labeled on the envelope.
Percentage of patients with knowledge of correct dose	240 (59.55%)

Table 2: Facility indicators present in the hospital

Facility indicator	Findings
Availability of essential medicines list or formulary to practitioners	Yes
Availability of clinical guidelines	No
Percentage of key medicine available	8 (66.67%)

Table 3: Complementary drug use indicator of patients

Complementary drug use indicator	Findings
Average medicine cost per encounter	NRs. 1353±1079 (US\$ 11.57±9.23)
Percentage of prescriptions in accordance with clinical guideline	Not available due to lack of clinical guidelines.

(14.11 min) and the least was of the ENT department (4.56 min) which is higher than found in similar studies from Ethiopia where the average consultation was 4.2 ± 1.6 to 4.9 ± 5.0 min [10] and 276.5 s [11]. Similarly, the study in Mathew *et al.* in India reported the average consultation time, 12 min 49 s [12]. Variation in average consultation time among different departments could be associated with characteristics of the patients and physician, physician workload, consultation method, and type of visit which is similar to other studies [13,14].

In the present study, the dispensing time of the medicine department was 126.60 s, orthopedics 91.50 s, and ophthalmology department 55.90 s. This study resembled the study in East Ethiopia and Southwest Ethiopia where the average dispensing time was 61.12 s [11] and 73.8 s–75 s [15]. However, in India, Mathew *et al.* found that the average dispensing time was 4 min 4 s [12]. The variation in dispensing time among various departments might have been resulted due to variation in the number of drugs prescribed, the workload in pharmacy, and the quality of counseling offered [9].

In this study, out of the total prescription of 1980 medicine, 88.58% of medicine was dispensed which is similar to the findings 81% [9], higher than 75.77% [11], but lower than 95.54% [12]. The reason for not dispensing all the prescribed medicine could be because of the unavailability of medicine in the pharmacy, the patient already had the prescribed drug or cost factor [10].

In our study, 21 (1.06%) of the drug had the patient name labeled on the envelope while 1430 (81.53%) of the drugs had drug name and 1617 (92.19%) had the administration time only labeled on the envelope similar to the findings of Alam *et al.* in the same hospital [8]. Among the medicines dispensed, Bilal *et al.* reported 64.0% [16] and Sisay *et al.* reported only 3.3% [11] were adequately labeled. The inadequate labeling might be due to either a high number of patient flow, work pressure, or negligence by the pharmacist. Inadequate labeling may not only result in poor information on drug use but also in poor compliance with the dose regimen [10].

On interviewing the patients, it was found that 240 (59.55%) of the patients/patient party knew both the time of administration and quantity of drugs to be taken which is lower than 69% [9] and 75.7% [10] and higher than 31% [12]. Inadequate labeling, ambiguous information, short dispensing time, and extensive patient flow acting as a communication barrier could have affected patient/patient party knowledge of the dosage regimen [10].

The hard copy of the hospital's own drug list was available in each department of Manipal Teaching Hospital; however, clinical guideline was not available in any of the departments. In the study done by Angamo *et al.* in Ethiopia, two of the health facilities had a copy of Ethiopian essential drug list (EDL), 2 (50%) had a copy of the standard treatment guideline for health centers, and only 1 (25%) of the health facility had a copy of the drug formulary [15].

The WHO has given a shortlist of 12 medicine, out of which 8 (66.67%) are available at the hospital pharmacy which is similar to 65.7% [10] and lower than 91.67% [12]. In this study, the average medicine cost per encounter was NRs. 1353 ± 1079 (US\$ 11.57 ± 9.23) which is expensive than NRs. 241.11 (US\$ 3.26) [8] and NRs. 285.99 (US\$ 3.73) [17]. The possible reason for increment in cost might be due to chronic disorders so they have to take medication on a daily basis and, on the other hand, polypharmacy and multiple prescriptions also play an important role. Cost is a very important factor in developing countries like Nepal as it can be a major cause of non-adherence. Polypharmacy, longer duration of therapy, and less generic prescribing might be a possible reason for rising prescription costs [10,18,19].

CONCLUSION

Duration of consultation plays an important role in assessing the appropriateness in prescription and the usage of drugs. Some of

the departments exhibited a comparatively shorter consultation period which has the possibility of negatively impacting the outcome. The duration of drug dispensing in this study is still shorter and shortcomings such as lack of care in labeling the medications need to be taken care of. It is recommended that systematic changes need to be applied to improve the knowledge in patients about their medications, to deliver quality advice to the patients, and to maintain the process of adequate labeling in medications.

ACKNOWLEDGMENTS

The author expresses sincere gratitude to the Dean, Director, Program Coordinator, and Faculty of Pharmaceutical Sciences, Pokhara University, for their encouragement and support during this research work. Heartfelt thanks to the team of Pharmacy Department of Manipal Teaching Hospital for their kind cooperation during this research work.

AUTHORS' CONTRIBUTIONS

Sagaranda Giri, conception, data collection, data analysis, interpretation, and drafting of the article. Parbati Dulal, writing the manuscript. Gulam Muhammad Khan, supervised, revised, and edited the final version of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHORS' FUNDING

Nil.

REFERENCES

- Adindu A. Assessing and assuring quality of health care in Africa. *Afr J Med Sci* 2010;3:31-6.
- World Health Organization. How to Investigate Drug Use in Health Facilities: Selected Drug Use Indicators. Geneva: World Health Organization; 1993. Available from: https://www.apps.who.int/iris/bitstream/handle/10665/60519/WHO_DAP_93.1.pdf. [Last accessed on 2018 Nov 20].
- World Health Organization. WHO: Introduction to Drug Utilization Research/WHO International Working Group for Drug Statistics Methodology, WHO Collaborating Centre for Drug Statistics Methodology, WHO Collaborating Centre for Drug Utilization Research and Clinical Pharmacological Services. Geneva: World Health Organization; 2003. Available from: <https://www.apps.who.int/medicinedocs/pdf/s4876e/s4876e.pdf>. [Last accessed on 2018 Nov 21].
- World Health Organization. Promoting Rational Use of Medicines: Core Components. Geneva: World Health Organization; 2002. Available from: <https://www.apps.who.int/medicinedocs/pdf/h3011e/h3011e.pdf>. [Last accessed on 2018 Nov 22].
- World Health Organization. Definition of an Older or Elderly Person; 2013. Available from: <https://www.who.int/healthinfo/survey/ageingdefnolder/en>. [Last accessed on 2018 Nov 22].
- Gallagher P, Barry P, O'Mahony D. Inappropriate prescribing in the elderly. *J Clin Pharm Ther* 2007;32:113-21.
- Central Bureau of Statistics. National Population and Housing Census 2011. Vol 1. Kathmandu, Nepal: Central Bureau of Statistics; 2012. Available from: <https://www.unstats.un.org/unsd/demographic-social/census/documents/Nepal/Nepal-Census-2011-Vol1.pdf>. [Last accessed on 2018 Nov 21].
- Alam K, Mishra P, Prabhu M, Shankar PR, Palaian S, Bhandari RB, *et al.* A study on rational drug prescribing and dispensing in outpatients in a tertiary care teaching hospital of Western Nepal. *Kathmandu Univ Med J* 2006;4:436-43.
- Etefa W, Teshale C, Hawaze S. Assessment of dispensing practice in South West Ethiopia: The case of Jimma university specialized Hospital. *Int J Pharm* 2013;3:668-74.
- Gidebo KD, Summoro TS, Kanche ZZ, Woticha EW. Assessment of drug use patterns in terms of the WHO patient-care and facility indicators at four hospitals in Southern Ethiopia: A cross-sectional study. *BMC Health Serv Res* 2016;16:643.
- Sisay M, Mengistu G, Molla B, Amare F, Gabriel T. Evaluation of rational drug use based on World Health Organization core drug use

- indicators in selected public hospitals of Eastern Ethiopia: A cross sectional study. BMC Health Serv Res 2017;17:161.
12. Mathew BI, Gadde RA, Nutakki PR, Dodayya HI. Assessment of drug dispensing practices using who patient care and health facility indicators in a private tertiary care teaching hospital. Int J Pharm Pharm Sci 2013;5:368-71.
 13. Aslam SA, Colapinto P, Sheth HG, Jain R. Patient consultation survey in an ophthalmic outpatient department. J Med Ethics 2007;33:134-5.
 14. Šter MP, Švab I, Kalan GZ. Factors related to consultation time: Experience in Slovenia. Scand J Prim Health Care 2008;26:29-34.
 15. Angamo MT, Wabe NT, Raju NJ. Assessment of patterns of drug use by using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in Southwest Ethiopia. J Appl Pharm Sci 2011;1:62-6.
 16. Bilal AI, Osman ED, Mulugeta A. Assessment of medicines use pattern using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in Eastern Ethiopia. BMC Health Serv Res 2016;16:144.
 17. Ghimire S, Nepal S, Bhandari S, Nepal P, Palaian S. A prospective surveillance of drug prescribing and dispensing in a teaching hospital in Western Nepal. J Pak Med Assoc 2009;59:726-31.
 18. Maher RL, Hanlon J, Hajjar ER. Clinical consequences of polypharmacy in elderly. Expert Opin Drug Saf 2014;13:57-65.
 19. Swathi B, Bhavika D. Pattern of medication use among elderly patients attending medicine department in a tertiary care hospital in India. Asian J Pharm Clin Res 2016;9:266-9.