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HOSPITAL PHARMACY PRACTICE IN HEALTH INSTITUTION OF KATHMANDU VALLEY GENERAL SCENARIO

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ABSTRACT
Hospital pharmacy practice is still in its infancy in Nepal. Although the precise status is unknown, the hospital formulary was established following the start of the hospital pharmacy directive. Methods: This study used census data in an observational, cross-sectional research approach. Following permission by the ethical study council, data were gathered between Mangsir 2076 and Jestha 2077. The methods of gathering data are based on direct survey questionnaires, phone interviews, or emails with the chemist in charge of the relevant hospital, depending on what is practical. There was a pretest for these questionnaires. The data analysis was done with IBM SPSS version 16. Appropriate descriptive and inferential statistics were used to quantify the data, and tables and diagrams were used as needed for presentation. Findings: Of the fifty-eight government hospitals with in-house pharmacies, only fifty were involved in this study. We found that just 22 hospital pharmacy departments used computers and the internet to check for drug interactions, that more than half of the hospitals had drug and therapeutic committees (68%), that less than 50% of hospital pharmacies were concerned with prescription reviews (48%), and that very few hospitals had their own hospital formularies (12%) and that the least number of hospital pharmacies were involved in impromptu preparation (8%). The majority of hospital pharmacy departments were not able to offer round-the-clock service. It was observed that there were 1.12 chemists per 100 beds on average, which was in line with the average of 0.9. In conclusion, our findings indicate a sparse distribution of different welcoming development. Additionally, during the data collection period, this study was able to provide a basic description of the hospital pharmacy development process.
KEYWORDS: distribution of labour, hospital pharmacy, formulary, DTC, and manpower. an essential part of hospital pharmacy practice in many government hospitals, it is extremely

1. INTRODUCTION

Hospital pharmacy practice is still in infant age in Nepal. The practice of pharmacy service within the hospital under the supervision of a professional pharmacist is known as hospital pharmacy. There are very less pharmacy managed itself by hospitals.Hospitals in government sector is seen to initiate the process to develop hospital pharmacy after the commencement of hospital pharmacy guideline 2072 B.S. Guidelines focuses on development of drug and therapeutic committee as a separate committee in hospital to run hospital pharmacy. This committee oversees all the matters related to drugs

(including selection of drug or formulary development, procurement, storage, distribution, drug recall and complaint handling) in hospital, premises requirement, system of operation and services, personal requirement, continuous pharmacy education etc. Extent of hospital pharmacy development process in different government hospitals is not the same. This study aimed to find out the present status of hospital pharmacy in different government hospitals of Nepal.

2. METHODS

This was a cross-sectional descriptive study with census sampling. Study duration of research was 6 months from Mangsir 2076 to Jestha 2077. A set of pretested structured questionnaires were send to respective in-charge of pharmacy in every government hospitalsthrough email and data were collected. Prior data collection, proposal was ethically approved by institutional review committee (IRC) of Manmohan Memorial Institute of Health sciences with IRC register number MMIHS-IRC-296 and IRC letter reference number 75/42. Data analysis was done using IBM, SPSS version 16; and Microsoft excel. Descriptive statistics was used to summarize data and table and figures were generated as appropriate.

3. RESULT AND DISCUSSION

1. Background of hospital pharmacy in government hospitals Among 112 government hospitals of Nepal, only 58 (51.80%) hospitals were started to initiate hospital pharmacy service but rest of 54(48.20%) hospitals were not started till now. Private or rented pharmacy was providing pharmacy services on these hospitals. Out of 58 government hospitals that were started hospital pharmacy services 8 (13.80%) hospitals didn't participated in survey leaving 50 (86.2%) as response rate to this study.

Out of these 50 government hospitals who participated in survey, we found that 31 (62%) hospitals were having Drug and therapeutic committee (DTC) and 19 (38%) hospitals were still to establish DTC. We found 23 (74.19%) hospitals were established DTC after the hospital pharmacy guidelines 2072 B.S and 8 (25.8%) hospitals were already established DTC before hospital pharmacy guideline 2072. Hospitals based on bed size and various departments were also studied. Out of 50 hospitals surveyed, we found 18(36%) hospitals were (15-25) bedded, 18(36%) hospitals were (26-50) bedded, 4(8%) hospitals were (51-100) bedded and 10(20%) hospitals were (101- above than that) respectively. We found various departments in different 50 hospitals such as (40) emergency, (27) surgery, (24) others, (24) gynaecology, (16) paediatrics, (14) orthopaedics, (12) obstetrics, (12) gastroenterology, (8) psychiatry, (8) cardiology, (6) neurology, (4) ophthalmology, (4) nephrology, (3) oncology and (2) endocrinology.

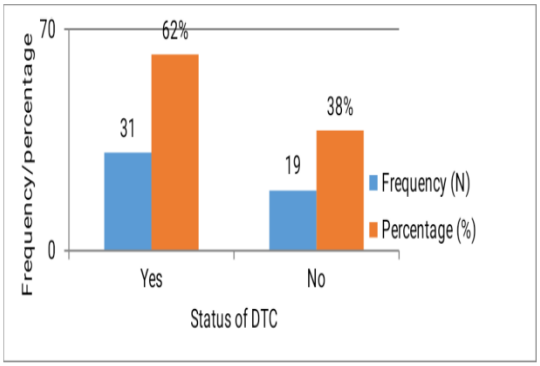

Figure 1: Status of Drug and therapeutic committee in hospital pharmacy.

Premises Out of total surveyed hospitals, we found 24(48%) hospital had planned for further exploring of premises because of inadequate space whereas 26(52%) they didn't had any plan for exploring premises for now. We found 13 (44.83%) hospitals pharmacy had planned for enlargement of storage

space and other areas based on standard pharmacy layout design, 11 (37.93%) had planned for separate counselling area, 3 (10.35%) hospitals pharmacy had planned for meeting and seminar hall and 2 (6.90%) establishment of drug information centre.

Current status of pharmacy system and services in government hospitals 3.1. Drug procurement through Formulary system Among 50 hospitals, only 6 (12%) hospitals have own hospital formulary that was used for drug procurement and rest of the 44 (88%) hospitals didn't have hospital formulary. 3.2. Drug distribution system Out of total surveyed hospital, we found the use of various drug distribution system across these hospitals which was as shown in table1 Table 1: Drug distribution system.

Drug distribution systems	Frequency (N)	Percent (%)
Individual prescription order drug distribution system	32	64%
Individual prescription and complete ward floor stock distribution system	10	20%
Complete ward floor stock and unit dose distribution system	3	6%
Complete ward floor stock distribution system	2	4%
Others	3	6%

System of storage of medicine Out of 50 hospitals surveyed, system of storage of medicine were; (44, 88%) proper racks and spaces, (41, 82%) refrigerator, (36, 72%) ventilations and storage space, (34, 68%) lockers for narcotic drugs and (18, 36%) temperature humidity scales respectively.

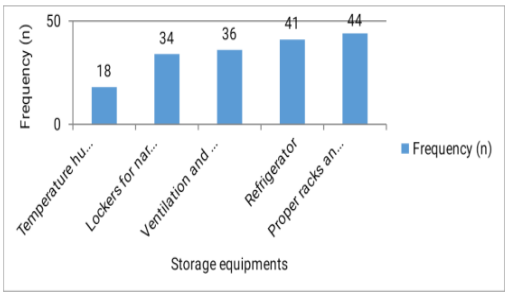

Figure 2: system of storage of medicine System of pharmacy inventory management through software.

Out of 50 hospitals surveyed, we found that different types of inventory management system software's were used in hospital pharmacy such as: (33, 66%) medi- pro, (6, 12%) midas, (2, 4%) mass- pro, (2, 4%) hand written (No any software's used),etc which is as shown in following table 2.

Table 2: System of pharmacy inventory management through different software.

Management software's	Frequency (N)	Percent (%)
Medi-pro	33	66%
Midas	6	12%
Mass- pro	2	4%
Hand written (No any software used)	2	4%
Bone fire	1	2%
M supply	1	2%
Pharmacy management software	1	2%
SISH	1	2%
Supra (FIFO/FEFO)	1	2%
Local software made by IT group	1	2%
Smart pharmacy	1	2%

System of complaint handling Out of 50 hospital surveyed, 48(96%) hospitals were taken system of suitable action for complaints/recall handling and only 2(4%) hospitals didn't have system for this.

. System of documenting dispensing error Out of 50 hospitals surveyed, we found 20(40%) hospital pharmacy had documentation system for dispensing error and 30(60%) hospital pharmacy they don't had documentation system for dispensing error.

. Availability of regulatory documents Out of surveyed hospitals, availability of regulatory document on hospital pharmacy were found as hospital pharmacy guidelines 2072 43(86%), essential drug list of Nepal 40(80%), Drug act 2035 27(54%) and good pharmacy practice (GPP) 18(36%) respectively.

Average number of dispensing per week Out of 50 hospitals surveyed, only 39 hospitals had responded for average number of dispensing per week which was as shown in following table 3.

Table 3: Average number of dispensing per week.

Average No. of dispensing per week	No. of hospital responded	Min	Max
No. of inpatient prescriptions	39	15	1500
No. of drugs dispensed to inpatients	39	50	4500
No. of outpatient prescriptions	39	15	1500
No. of drugs dispensed to outpatients	39	45	6125

Other System and Services Out of 50 hospital surveyed, 42(84%) hospital pharmacy were followed standard procedures for waste management system, 24(48%) hospital pharmacy department reviewing prescription,10(20%) pharmacists were involved in extra activities such as trainings, seminars, drug related awareness programme to health care staffs,4(8%) hospitals Pharmacy department were involved in extemporaneous preparation respectively.

Table 4: Other system and services in hospital pharmacy.

System and Services	Frequency (n)	Percent (%)
Hospital pharmacy followed standard procedures for waste management system	42	84%
Hospital pharmacy department reviewing prescription	24	48%
Pharmacist involved in extra activities [Trainings, seminars, drug related awareness programme to health care staffs]	10	20%
Pharmacy department involved in extemporaneous preparation	4	8%

4. Inter- professional relationship of pharmacist with patient in hospital pharmacyfrom pharmacist perspective The results of inter- professional relationship of pharmacist with patient in hospital pharmacyfrom pharmacist perspective was mostly positive which is as shown in following table 5.

Table 5: Inter professional relationship of pharmacist with patients from pharmacist perspective (N=50).

Inter professional relationship of pharmacist with patients	Frequency (n)	Percent (%)
listen to patients	36	73.50%
Patients are at ease to speak to his/her	35	71.40%
Patients wants to speak to his/her of their problems	34	69.40%
Sometime irritated when patients speak to his/her	3	6.10%
Speak rudely to the patients	1	2%

Personnel 5.1. Number of personnel working in hospital pharmacy according to bedded size of hospital. The academic background of personnel working in hospital pharmacy is as shown in table 6 based on bedded size.

Table 6: Number of personnel working in hospital pharmacy according to bedded size.

Academic degree of working staffs	Distribution of bedded hospitals (N=50)				Total	
	15-25 bedded hospitals (n=18)	26-50 bedded hospitals (n=18)	51-100 bedded hospitals (n=4)	101 bedded hospitals or above than that (n=10)	(out of 50 hospitals) (N)	Percent (%)
Pharm D	-	1	-	-	1	0.41
M. pharm	-	-	1	4	5	2.07
B. pharm	5	15	7	34	61	25.31
D. pharm	21	32	12	56	121	50.20
OCP DDA	8	15	-	4	27	11.20
Helper	12	12	1	-	25	10.37
Other field	-	-	-	1	1	0.41
Total						100

2 Personnel recruitment process in hospital pharmacy Out of 50 hospitals surveyed, we found the staff recruitment process in hospital pharmacy was found 30(48.40%) from advertisement basis, 16(25.80%) from public service commission basis, 11(17.70%) from local contact basis, and 5(8.10%) other process respectively which is as shown in table 7.

Personnel recruitment process in hospital pharmacy (N=50).

Personnel recruitment process	Frequency (n)	Percent (%)
Advertisement basis	30	48.40%
Public service commission basis	16	25.80%
Local contact basis	11	17.70%
Others	5	8.10%

Continuous pharmacy education Out of 50 surveyed hospitals, 22(44%) hospital pharmacy were followed continuous pharmacy education whereas28 (56%) hospital pharmacy were unable to followed continuous pharmacy education

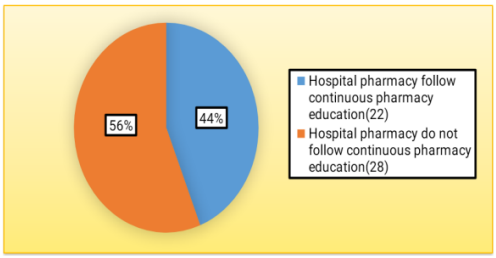

Figure 3: Practice of continuous pharmacy education.

4. DISCUSSION

Among 112 Government hospitals, half of the hospitals have own hospital pharmacy service, 62% of hospitals were having Drug and therapeutic committee and 12% of hospitals have own hospital formulary whereas on Belgium, Canada, China and United

State reported satisfactory implementation of DTC and hospital formulary by hospital pharmacy departments.[14,16,17,19] The government hospitals pharmacy can be owned by the hospital itself and contracted with commercial private pharmacy should be strictly prohibited. Counselling area and availability of regulatory documents shows a positive improvement comparison to last study.[23] But on comparison to hospital pharmacy departments of Australian, U.S, Canada, Saudi Arabia and U.K. hospital pharmacy of Nepal in Government sector fall under the least developed. Hospital pharmacy guidelines 2072 defined premises on proper space for dispensing, storage area, and separate patient counselling area storage of expiry and returned drugs and pharmacy should be centrally located.

Very few Government hospitals planned for premises exploring which shows negligible improvement with comparison to hospital pharmacy of Australia, U.S, Canada, Saudi Arabia and U.K

Availability of all necessary departments on Government hospital is very least which can be counted on finger whereas on Saudi Arabia reported with good pharmaceutical care of services with TDM, ADRs monitoring and medication error Most of the hospital pharmacy of Government sector unable to provide 24 hours per day services to patient whereas 24 hours per day services were provided on hospital pharmacy of Australia, Saudi Arabia and United State. Maximum numbers of medicines were used during the time of treatments which leads to increase poly-pharmacy and various ADRs which leads to patient's death also. No any software was used for drug interaction and poly-pharmacy reviewing. Computer facility was just for billing and inventory management purpose in hospital pharmacy of Government sector whereas on Aus, Canada, Saudi Arabia and United State computers and internet mainly used for drug interaction, manage inventory, reducing poly- pharmacy and for better pharmaceutical care of services Only few numbers of pharmacists involves in extra activities such as trainings, seminars, drug related awareness programme to health care staffs on comparison to Aus, Canada, Saudi Arabia and United State Hospital pharmacy of Government sector is in initial phase for extemporaneous preparation but Australia, U.S. was involved on extemporaneous preparation since from many years Pharmacist has major responsibility on compounding, storage and proper labelling. The storage of drugs should be proper. For some drugs, there should be provision of refrigeration for the storage of drugs to maintain their stability. Most of the hospitals had good provision storage of drugs which meets the criteria of national GPP and Hospital pharmacy guidelines 2072 Inter-professional relationship is very important for pharmacist during the time of patient counselling. It is the main thing to increase patient compliance. The finding of result shows that inter professional relationship of pharmacist with patients was better on comparison to Aus, Canada, Saudi Arabia and United State.

Hospital pharmacy guideline 2072 have criteria on manpower distribution such as at least presence of 1 pharmacist in hospital with (26-50) bed, at least 1 clinical pharmacist and 2 pharmacist in hospital with (51-100) bed and 1clinical pharmacist and 3 pharmacist in hospital with (101-above) bed criteria.

Out of hospitals surveyed, very least Pharm D and M. Pharm staffs were

found working in hospitals. D. Pharm staffs were found maximum in all hospitals. B. Pharm staffs were less on comparison to D. Pharm staffs. Staffing criteria doesn't meet the standard criteria as per hospital pharmacy guidelines 2072. Not satisfactory finding obtained as on comparison to hospital pharmacy of Belgium, Canada, Chain and United State.

The average number of pharmacist per 100 beds was 1.12 which accepted the value of 0.9 of average in hospitals pharmacy whereas in Germany, Spain, France, Denmark, U.K., Ireland, Norway were found 0.31, 0.7, 0.87, 0.97,1.42, 1.67 and 1.75 respectively.[20] The number does not meet the requirement of Hospital pharmacy guidelines as per 2072.

Lots of hospital pharmacy includes huge number of assistant pharmacist. During the time of staff recruitment of assistant pharmacist hospital pharmacy department must provide trainings to assistant pharmacist for better pharmaceutical care of services.

The guideline has not been well implemented due to the weak monitoring of the regulatory bodies. Government itself is far behind in its own system in the establishment of hospital pharmacy under hospital management and there is no Drug and Therapeutic Committee and hospital formulary. This result show very least improvement on manpower distribution of pharmacy with respect to other developed nations.

More than half of hospital pharmacy department don't focused on CPE and documentation for dispensing error which shows negligible improvement on comparison to hospital pharmacy departments of Belgium, Canada, U.S., U.K.[14,16,19] Moreover all hospitals take positive action on solving complaint addressed by patients

5. CONCLUSION

The research was done in Government hospitals of Nepal where hospital pharmacy were established. Out of 58 hospitals it covers 50 hospitals. Certain Parameters were studied on basic of Hospital pharmacy guidelines 2072. Only 68% of hospitals have formed Drug and therapeutic Committee. Very few hospitals update DTC every two years. Very few hospitals have own hospital formulary. More than half hospitals pharmacy they don't had documentation system for dispensing error and unable to focused on continuous pharmacy education till now. Hospital pharmacy department unable to manage separate counselling area for patient counselling till yet but patient counselling was done by pharmacist with lack of proper space difficulty. Many hospitals had planned for premises exploring. Availability of all necessary departments on hospitals is very less with lack of specialized care of services. Various health care department teams believes that hospital pharmacist are the one who fills the prescription orders issued by the physician and maintain stocks while pharmacist make use of the knowledge to treat minor diseases. Most of the hospital pharmacist's were found as working on dispensing section whereas very less hospital pharmacist manpower involved on compounding, ward round participation, extemporaneous preparation, ADRs reporting, prescription review. At the time of staff recruitment of assistant pharmacist's hospital pharmacy department must provide trainings to assistant pharmacists for better pharmaceutical care of services. Inter-professional

relationship of pharmacist with patients was shown as more positive. The average number of pharmacist per 100 beds was 1.12 which accepted the average value of 0.9 in hospitals pharmacy. Staffing criteria doesn't meet the standard criteria as per hospital pharmacy guidelines 2072. Most of the hospital pharmacist's were found as working on dispensing section whereas very less hospital pharmacist manpower involved on compounding, ward round participation, extemporaneous preparation, ADRs reporting, prescription review.

RECOMMENDATIONS On the basis of the findings, the following recommendations are suggested Adequate space allocation is suggested for all hospital pharmacies Organization of Drug and therapeutic committee (DTC) in all hospital is suggested. Preparation and proper implementation of hospital formulary in all government hospital is suggested. CPE and seminars should be taken as priority in government sectors of hospital pharmacy. Pharmacy manpower recruitment should be done according to hospital pharmacy guideline 2072. Adherence to GPP guidelines and proper documentation should be implemented covering all aspects of pharmaceutical service in the hospitals Round the clock pharmacy service management is suggested Generic prescribing and extemporaneous preparations to be encouraged for cost effective service Improvement of purchase modality and computerized inventory management systems advisable

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