Prescription and Dispensing Practices in Public Sector Health Facilities in Pakistan: Survey Report

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Abstract

Objectives: To gather information on existing prescription practices, dispensing practices and patient satisfaction in government health services of the NWFP, Baluchistan and Punjab province.

Methods: A cross sectional study design was used for this purpose. Ten health care facilities were selected from each province keeping appropriate representation from first level health facilities, district health facilities and tertiary care hospital. Analysis of selected indicators was carried out on the basis of provinces, health facilities, gender and different age groups.

Results: Documentation of 914 responses was completed from three provinces. Almost equal distribution of encounters was maintained representing different health facilities. Forty seven percent of encounters involved children under 15 years of age. Female patients comprised of 56% and the mean age of the entire sample was 26 years. The mean dispensing time was only 38 seconds, the mean consultation time was 1.79 minutes and the average number of drugs per prescription turned out to be 2.7 out of which only 1.6 drugs were being dispensed from the facility. More than half of the prescriptions contained antibiotics and 15% of patients were prescribed with injectables. Only half of the patients expressed satisfaction with their visit to health facility.

Conclusions: Like many other developing countries, prescription and dispensing practices are not satisfactory in public sector health facilities of Pakistan. Appropriate and workable solutions need to be developed and implemented in the country to improve systems. Regular audits and qualitative studies should become part of the effort (JPMA 54:187;2004)

Introduction

Drugs are the essential tool for preventive, curative and rehabilitative health care. The number and type of drugs is constantly increasing, while the financial resources for health care services in general, remain limited. In India alone there are more than 100000 registered drugs available in the market[1]where as in Pakistan we have more than 28000 registered drugs. The amount spent on buying medicine is very large and up to 40 to 60% of entire public sector health budget of any country goes into buying medicine.[2] The money spent on this head can be estimated by the fact that in year 2002 United States alone spent US$160 billion on purchase of drugs and in the same year it was US$ 7.3 billion in Indo Pak subcontinent.[3] Despite these heavy spendings, one third of world population lacks access to essential medicine[4] which actually goes up to one half in Asia and Africa. A major reason for this adverse situation is the mismanagement of available resources and according to one estimate up to 70% of resources go waste in any country due to poor drug management systems.[5] To fill up this gap judicious management of drug systems is mandatory. Therefore rational drug management has become an increasingly important topic in order to make optimal use of the drug budget to offer health services of the highest possible standard.

Pakistan spent around 27 million US dollars on drugs procurement in the year 1996-7.[6] A significant portion of this precious commodity is wasted either due to wrong procurements and poor storage or incorrect dispensing practices.[5] Another important contributor towards this wastage is irrational use of drugs by prescribers from primary to tertiary level health care facilities. A number of studies have been carried out on prescription practices and a few on dispensing practices in Pakistan but no comprehensive survey on provincial level in public facilities is available till date.[7-11] Rational and scientific interventions to improve the drug management systems can only be carried out in the presence of appropriate and up to date information on the existing practices. We carried out a `baseline survey to identify the problems and quantify the existing issues in drug management systems in Pakistan. The objective of the survey was to gather data on existing drug prescription and dispensing practices and to measure the patient satisfaction related to the drug management and use. Selected government sector health facilities in the North West Frontier Province (NWFP), Baluchistan and Punjab (3 out of 4 provinces in Pakistan) were contacted for carrying out this study survey.

Materials and Methods

A cross sectional design was used this quantitative study and data was collected over a period of 2 months. Each of the 3 provinces (Punjab, NWFP and Baluchistan) were divided into three hypothetical divisions of upper,

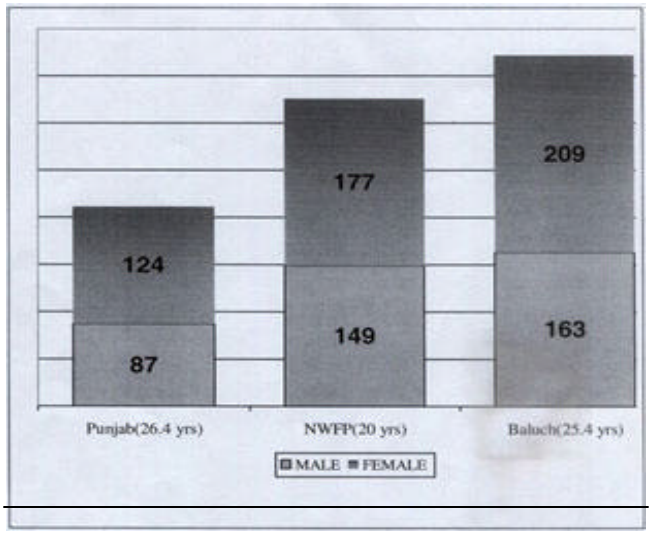
middle and lower regions: One district per region was selected for conducting the survey. The selection of districts was carried out after consultation by the local health department keeping in mind accessibility and other logistic factors. Three public health facilities, one from each tier of primary, secondary and tertiary care were then randomly selected from each of these selected districts. These usually included one Basic Health Unit (BHU), one Rural Health Center (RHC) and one District Headquarter hospital (DHQ). A teaching hospital from each of the two provinces (NWFP & Baluchistan) was also included in the survey sample. The BHU and RHC were considered as small facilities and DHQ/teaching hospitals were considered as large facilities in our survey. The guidance for this kind of sampling was taken from World Health Organization (WHO) guidelines published in "How to investigate drug use in health facilities."[12]

Pre-testing of data collection instruments was done before their finalization. Interviewers were equipped with 2 days structured training including field trips and hands on training. Schedule of one month for data collection was finalized with interviewers.

The Patient's visit to the health facility and his/her encounter with the health workers (prescriber and dispenser) was taken as one unit for the purpose of analysis. The indicators selected were quite comprehensive and covered all the three aspects of the survey objectives (Table 1). The total sample size was targeted to be at least 900 encounters i.e., 30 at each facility. The guidance for this sample size selection and survey methodology was again taken from World Health Organization (WHO) developed guidelines used in more than a dozen developing countries.[13] The visit involved objective observations made by the investigators and exit interviews of the patients, attending the health facility. The prescribers and dispensers being observed were not aware of the indicators being recorded and first 15 observations were discarded to cater for "Hawthorne's effect". These measures reduced the observer bias in the study and have been used by other investigators in similar studies.[7,14] Various in-built checks were introduced at different steps of the study to ensure the quality of data. SPSS (Statistical Program for Social Sciences, version 10.0), was used for data entry and analysis purpose by trained staff. Descriptive analysis, and univariate analysis for each variable was performed. Chi-square test for categorical and "t" test for continuous variables was executed, where applicable. Survey findings were compiled in the form of descriptive report for sharing purpose.

Results

Nine hundreds and fourteen samples were recorded from the three provinces. Fifty-six percent patients were females and the mean age of the entire sampled population was 24.1 years (95% CI 22.8 TO 25.5 yrs). The distribution of age and sex in the three provinces is shown in the Figure. The large and small health facilities were equally represented in our sample. The types of prescribers in all the surveyed facilities included doctors (94%), Lady Health Workers (2%) and Dispensers/Medical Technicians (4%). The value of various indicators is shown in Table 2. Each indicator was calculated with respect to provinces, sex, age group and type of facilities (Table 3). It was observed that none of the dispensers used any devices for dispensing the drugs and none of them wore gloves for preventing contamination of the dispensed drugs. Only 11% drugs dispensed were adequately labeled and this percentage was significantly higher in the teaching institutions. Only 12% of the encounters showed duplicate chit system in which one chit would be kept at the facility for record keeping and the other given to the patient along with the medicines. Dispensers described the dose to 82% patient (correctness of the dose and information was not assessed) but only in 18% encounters it was checked back.



Discussion

The study is meant to serve as a baseline survey for the policy makers, managers, researchers and other stakeholders. It was intended to quantify the problems and not answer the "whys" which could be taken up by some other follow up study. The drug management system has been evaluated in the study although we have not published the storage component of the survey in this script. The larger picture of our drug management system, emerging from the survey is not encouraging.

The mean consultation time of about one and a half minute for each patient as per our findings is much below the required standards. Contact time of doctor per patient is less than 2 minutes which is indefensible compared to the

Table 1.

Prescribing indicators

a. Average number of drugs per prescription: The purpose is to measure polypharmacy. The average was calculated by dividing the total number of different drugs prescribed by the number of encounters surveyed.

b. Percentage of encounters with an antibiotic prescribed: To measure the overall use of this important and costly drug. A list of drugs classified as antibiotics is supplied. Calculated by number of prescriptions with antibiotics divided by total number of encounters.

c. Percentage of encounters with an injection prescribed: To measure the overall use of this modality of treatment. All immunizations have to be excluded from this list of injections. Calculated by number of prescriptions with injections divided by total number of encounters.

d. Percentage of encounters with a diagnosis on prescription: The diagnosis is often neglected and could be categorized as poor practice, forming basis for irrational drug use. We had taken any symptom, category of disease, provisional or specific diagnosis as "yes" without actually verifying the correctness. Calculated by number of prescriptions with diagnosis written divided by total number of encounters.

e. Percentage of encounters with drug dosage written: To measure the encounters in which dosage is mentioned with the drug prescribed. We have taken any form of dosage written with at least one drug in the whole prescription as "yes" without actually verifying the correctness. Calculated by number of prescriptions with dosages written divided by total number of encounters.

Dispensing indicators

f. Average Dispensing time: This measure the average dispensing time that dispensing personnel spends with patients. It is measured in seconds and starts when the patient presents his prescription to dispenser and ends when he leaves the dispensing counter.

g. Average Number of drugs per prescription actually dispensed: Measures the adequacy and ability of the facility to provide prescribed drugs. Measured at exit by counting the number of drugs carried by the patient. The quantity of the dispensed drug was not taken into account for the purpose of the survey. The average was be calculated by dividing the total number of different drugs dispensed by the number of encounters surveyed.

h. Percentage of drugs actually labeled: To measure the extent to which dispensers record essential information on the drugs, including at least the name of patient, name of drug, dosage with route and duration. Calculated by number of encounters with labeling divided by total number of encounters

i. Patient's knowledge about correct drug dosage: Measures the effectiveness of the information given to patients, on drug dosage schedule of his/her drug. Any one of the drugs was picked at random and patient was asked to narrate the dosage and duration. Calculated by number of patients knowing their dosage by total number of encounters

j. Validation of prescription: Evaluates the validation carried out by the dispenser, regarding the identity of the patient. Directly observed while watching the dispensing process and calculated by dividing the encounters with validation with total number of encounters.

k. Communication of dosage to patient: To evaluate the communication between the patient and dispenser, regarding drug usage. Direct observation was carried out to note down this indicator.

l. Checking the dosage instructions: To evaluate the effectiveness of the interaction between the patient and the dispenser. It was directly observed whether the dispenser checks back and asks the patients about his/her understanding of the dosage.

m. Preparation of prescription: Preparation of prescription by use of bare hands or by a tablet counter etc is important for any dispensing evaluation and possible intervention/training. It was directly observed.

n. Record Keeping: This is either in the form of prescription chit, maintaining a register, or entering record on computer. The system of record keeping was inquired in each health facility before start of the whole observations, confirmed during the process and recorded accordingly.

Patient care indicators

o. Average consultation time: It measures the time; medical personal spends with the patient for consultation, examination and prescription writing. It starts with the patient entering the doctor's room and ends when he leaves the room. The observer measures the time in seconds while standing outside the consultation room and average of all the encounters is calculated.

p. Overall satisfaction with visit to health facility: This is a complex indicator but finds out the satisfaction as a whole and not necessarily means complaints. The question was asked in the language well understood by the patient at exit from health facility by a local associate of the team. The answer was recorded as yes or no and calculated as percentage of total encounters.

Table 2. Values of selected indicators.

	Total
Total facilities surveyed	30
Total encounters	914
Drugs/prescription (Ave)	2.77
Drugs dispensed/ prescription (Ave)	1.69
Prescriptions with Diagnosis (%)	70.0
Prescriptions with dose written (%)	87.0
Antibiotics on prescription (%)	52.0
Injections on prescription (%)	14.7
Dispensing with dose description (%)	82.0
Dispensing time/patient (Ave)	38.9 sec
Patients knowing dose (%)	58.5
Dispensing with validation (%)	80.9
Satisfaction of patients(%)	59.0
Consultation time (Ave)	1.79 min

statistically significant however the time was slightly more in teaching hospitals as compared to other facilities. It was interesting to note that the patient satisfaction was directly associated with the length of time spent with the prescriber.

In UK the average dispensing time is about 15 minutes (personal communication), whereas our study depicts this figures to be as less as only half a minute. The dispensing time in other regional studies vary from 23 seconds in Bangladesh to 86 seconds in Nepal.[13] The dispensing time in our study was significantly more in smaller facilities as compared to larger facilities. There was no statistically significant difference observed between various age groups, gender and provinces. The dispensing practices are the most improvement desiring section of entire drug system. The communication of the dispensers with patients is poor. Although almost 80% is communicating the dose but only one fifth of them are checking back, which is an essential component of dispensing procedure. Data depicted that only 57% of the patients know about the dosage of their drugs at exit

Table 3. Indicators for provinces, gender, age and level of facility.

S.No.	Indicator	Province			Gender		Age group		Facility	
		NW	BU	PU	M	F	<15yr	>15yr	Large	Small
1	Average no. of drugs per prescription	2.85	2.74	2.72	2.70	2.74	2.74	2.78	2.79	2.75
2	% of encounters with antibiotics	49.7	50.0	60.7	58.8	46.4	65.8	44.8	60.4	45.7
3	Average no. of drugs dispensed per prescription	1.46	1.5	2.3	1.74	1.72	1.63	1.83	1.75	1.65
4	% of encounters with injections	17.2	8.6	21.3	18.4	11.9	11.2	16.8	8.5	19.5
5	% of encounters with diagnosis written	77.1	79.0	43.3	74.2	69.3	73.0	70.4	73.3	67.7
6	% of encounters with drug dosage written	88.4	96.8	67.8	85.9	86.2	85.9	86.2	89.8	84.1
7	Mean dispensing time in seconds	50.3	24.8	51.9	37.9	39.6	37.1	40.6	33.8	42.5
8	% of drugs labeled	11.6	19.7	1.0	12.0	9.0	11.7	8.2	17.9	6.5
9	% of patients with knowledge about correct dose	73.9	46.0	62.8	62.0	54.5	56.8	59.3	54.0	61.0
10	% of dispensing encounters with validation	93.0	92.0	46.0	78.7	82.3	77.0	82.0	80.9	80.9
11	Mean consultation time in seconds	117.7	102.2	103.3	104.5	113.1	104.9	107.6	107.0	107.0
12	% of patients satisfied with the visit	78.0	46.0	48.0	63.0	59.0	54.0	59.0	60.0	59.0

time, effort and expenses consumed in reaching the health facility. Other studies in Pakistan also concluded the mean time of 2 to 2.3 minutes of interaction between doctor and patient.[7,8] The study by Siddique et al compared consultations between private and public sector, both were inadequate but private sector was a little better in this respect. The regional studies in Bangladesh and Nepal show the average consultation time to be between 1 to 3 minutes.[13] The variation in various provinces is not

interviews. Rest of them have absolutely no information about the use of medicines, which in other words implies that half of the drugs dispensed go waste because of poor communication. The labeling and preparation of the medicine by dispensers is almost non-existent. The minimum requirement for labeling was taken as name of patient, drug dosage and duration. Only one fifth of encounters met these criteria mostly observed in teaching hospitals. There was absolutely no concept of hygiene,

cleanliness and quality during the entire dispensing procedure. Dispensing with validation was carried out in a major percentage but again this was not very satisfactory.

A total of 914 prescriptions were analyzed. The average number of drugs prescribed was 2.77 (range: 0-7) that was higher than the suggested WHO criteria of less than two drugs per prescriptions. This was almost the same in all the provinces, in genders, age groups and types of facilities. In one study carried out with private practitioners in Sind the average number was 4.5, much higher than ours.[9] In district Attock the average was the 2.7[8] whereas in a teaching hospital in Rawalpindi the average was 2.9.[10] In Bangladesh the mean number is 1.4 and in Nepal it is 2.1 where as in Nigeria it is 3.8.[13] These figures do suggest that the number of drugs per prescription is much higher in Pakistan as compared to other regional countries that do have the same spectrum of diseases and socio-economic pattern of population. The number of drugs actually dispensed was also investigated and 1.69 per prescription was the estimate amount. . The mean difference between the prescribed and dispensed drugs came out to be 1.07 (95% CI: 0.98 - 1.15; p=0.0). This shows the inability of the health system to provide prescribed drugs to patients. Non availability of essential drugs, prescriptions outside the essential drug list or non adherence to standard treatment protocols could be among many other reasons.

The percentage of prescriptions containing one or more antibiotics was 52%. This percentage among males, larger facilities and younger age group was much higher when compared with the average. Qualitative investigation of prescription was beyond the scope of this study, therefore it is difficult to give a valid reason for this difference, but the overuse of this potentially dangerous medicine is very apparent. Other regional and national studies have shown a range of 25 to 58 percent.[8-10,13] Similarly injection use is also quite high (15%) considering that we only considered outpatient prescriptions in our survey. It was significantly higher in Punjab, smaller facilities and males to the extent that every 4th person visiting an RHC would have an injection. Private practitioners are more frequent users of injection compare to other health care providers.[9] However the use of injections in Pakistan is very high when compared with the region as in Nepal it is only 5%.[13] The percentage of prescriptions having any diagnosis (major symptoms or provisional or specific diagnosis) was 70%, however accuracy of the diagnosis was not inquired. Similarly, some form of dosage instruction was written on 87% of prescriptions but its correctness was not confirmed.

Medicines are critical in health care services not only for their medicinal value but also for the patient satisfaction associated with them. Inadequate availability of medicines at health facilities and poor healthcare, even though high proportion of health budgets is allocated to medicines, is a real problem for the health care manager and the patient alike.

Conclusions and Recommendations

The prescribing and dispensing practices in public sector health facilities in the three provinces leave much to be desired. Short interaction time with patients by health workers, overuse of antibiotics, polypharmacy, poor communications between patient and dispensing personal, inadequate and faulty dispensing techniques are some of the factors which plague our health systems according to this report.

Based on our observations we recommend larger and more comprehensive surveys at regular intervals, dissemination of these ground realties to policy makers and development of workable interventions targeting the identified areas to improve drug management systems in public sector.

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