Audit and Quality Assessment of Prescriptions in an Urban Health Centre of Kolkata

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ABSTRACT

Introduction: Assessment of drug use pattern using the World Health Organization (WHO) drug use indicators is a vital step to promote rational drug usage. The objective of the study was to assess the prescription format and adherence to WHO core prescribing indicators in urban health centre, Chetla.

Methods: A descriptive, cross-sectional study was conducted to determine the current prescribing practices at Urban Health Centre, Chetla. Total 360 new prescriptions prescribed by doctors at outpatient department (OPD) were selected on 2 working days per week for a period of 3 weeks, i.e. total 6 working days using census method.

Result: The average number of drugs prescribed per encounter or mean was 2.14(SD 1.058) and the percentage of prescriptions with an antibiotic or injection was 39.4% and 8.6% respectively. The percentage of drugs prescribed by generic name and from an essential drug list was 69.3% and 85.5% respectively. Prescriptions prescribed with fixed dose combination were 46.5% and out of which 87% was approved by drug standard control organization, Govt. of India. Complete diagnoses in the prescriptions were written in 7.2% prescriptions only.

Conclusion: On the basis of the finding of this study, the prescribing practices for antibiotic showed deviation from the standard recommended by WHO. Drug use evaluation should be done for some of the antibiotics to check whether they were appropriately prescribed or not. On the other hand, polypharmacy, generic prescribing and prescribing from EDL were also not as per WHO standard.

Key words: Audit, OPD, Core prescribing indicators, Drugs by generic name, Essential drug, list, Fixed dose combination.

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INTRODUCTION

A prescription order is an important document between the physician and the patient. Prescription writing reflects the physician's skill in the diagnosis and attitude towards selecting the most appropriate cost effective treatment.[1,2] So it needs to be continuously assessed and refined suitably. The quality of life can be improved by enhancing the standards of the medical treatment at all levels of the health care delivery system. A medical audit oversees the observance of these standards.[3] A 'medical audit' is defined as 'the review and the evaluation of the health care procedures and documentation for the purpose of comparing the quality of care that is provided, with the accepted standards.[4] Studying the prescribing pattern is that part of the medical audit which seeks to monitor, evaluate and if necessary, suggest modifications in the prescribing practices of medical practitioners, so as to make the medical care rational and cost effective.[5]

A combination of prescription audits and feedback is known to be a successful technique which improves the quality of prescribing. Audit critically analysed the existing drug use pattern and prescribing behaviours of the physicians. It also provides useful baseline data and a basis for further investigational studies and advanced medicine policies aimed at rational medicine prescribing, improved patient compliance leading to safe and efficient medicine use.

This study was aimed to find out the frequently prescribed drugs for the patients of UHC, Chetla in relation to morbidity pattern and also generate information on the core prescribing indicators as proposed by the WHO[6] with an intention to assess the quality of prescription and to recommend accordingly the measures for improvement of prescribing practices.

MATERIALS AND METHODS

Study setting: It was a descriptive, cross-sectional facility based epidemiological study, conducted for a period of 3 months (March-May, 2015), in Urban Health Centre (UHC), Chetla, 19B, Chetla Hat Road Kolkata 700027 which is the urban field unit of All India Institute of Hygiene and Public Health, Kolkata. It serves 3.9 sq. kilometre area distributed

in Ward No. 82 (total), 74 (major portion), 81 (minor portion) under Borough IX of Kolkata Municipal Corporation.

Sample size & sampling design: The researcher was posted in that UHC for 3 weeks. In that UHC, General OPD runs twice a week, 1 day is kept for out-reach camp outside the UHC (not considered in this study) and 2 days are kept for MCH services. The UHC remains closed on Saturday and Sunday. All the prescriptions prescribed by the physicians posted at general OPD during the 3 weeks time period (complete enumeration) were included in the study. Total 360 prescriptions were thus audited.

Study Tools & Technique

One checklist was developed with the help of experts of AIIH&PH which was filled up for every prescription. The checklist had 3 domains:

Format of prescription was assessed using 7 items (documentation of - patient's identity, date of issuing prescription, mentioning superscriptions, presence of doctor's signature, documentation of chief complaints, clinical examination findings and complete diagnoses).

Content of prescription was assessed based on the following parameters: using dose formulae and route of administration of individual drugs, medicine utilization trend among various therapeutic classes, fixed dose combination prescription pattern and different types of investigation advised.

The WHO Core Prescribing Indicators[6] were assessed using 5 items (number of drugs in that prescription, number of drugs prescribed by generic name, number of antibiotic prescribed, number of injection prescribed and number of drugs prescribed from essential drug list[7])

The audit of the prescriptions was done outside the main gate of the health centre. When patients were returning from the UHC, they were explained about the purpose of the study and sample was collected by taking photograph of prescription using digital camera. The checklist was later filled up for each prescription.

Statistical analysis: Apart from describing the structure and content the prescription, core prescribing indicators were compared with WHO standard using z test for proportion.

Ethical Issue: The study was conducted after obtaining clearance from Institutional ethical committee and informed consent from Director, AIIH & PH. Confidentiality and anonymity was assured for the patients. Prescriptions were reviewed without the knowledge of the prescribing doctors to prevent a modification in their Prescribing behaviour because of the study.

RESULTS

Drug prescribing pattern described in Table 1 revealed that total number of medicines prescribed in the 360 prescriptions was 771. The most frequently prescribed dose formulae are solids (81.7%) (Tablets preceded capsules). A total of 188 (46.5%) prescriptions with fixed dose combinations (FDC) were prescribed, and 13.83% of them were not approved by Central Drug Standard Control Organization, Govt. of India[8] In all the prescriptions patients' identities, date and doctor's signature were clearly documented. Superscriptions (Rx), chief complaints and clinical examination findings were mentioned in 16%, 43% and 27% of prescriptions respectively. Diagnostic tests were ordered in 24.7% of the prescriptions, and 6.9% of the patients were referred to higher centre for further treatment. It was observed that the test that prescribed most was blood for Malaria parasite (8.6%) followed by blood sugar (fasting and post-prandial) (6%) & haemoglobin (5%) (Table 2).

The mean number of medicines per prescription was 2.14 (SD 1.058) Drugs prescribed by generic name were 69.26%. Among the total prescribed drugs, 85.47% were included in essential drug list of Govt. of India[8] Antibiotics and Injections were prescribed in 39.4% and 8.6% of

prescriptions. The result of this study was found to be significantly worse off than WHO standards in context of 5 WHO Core Prescribing Indicators [z test was done for each indicators and statistically significant difference ($p<0.05$) was observed for all the indicators] (Table 3).

Complete diagnosis was written in only 7.4% prescriptions. The categories of diagnosis available showed that diseases of respiratory system were maximum (29.7%) followed by infectious and parasitic diseases (18.9 %) and diseases of musculoskeletal system (9.4%), injury and poisoning (9.2%) and of disease of digestive system (7.2%). But it is not the proper representation of the study population, as diagnosis was missing in majority of cases. Medicine utilization trend among various therapeutic classes, (Table 4) revealed that most frequently prescribed classes of medicines were analgesics (21.8% of total drugs) followed by antimicrobials (19.5% of total drugs) and multivitamins (12.5%).

DISCUSSION

The key findings in this study revealed that format of the prescriptions were satisfactory in few domains, i.e. name, age, and address were written in all the prescription, but superscription, chief complaints and clinical examination findings and complete diagnosis was lacking in majority of prescriptions. Moreover WHO core prescribing indicators were worse than the recommended levels.

Patients personal details were absent in studies of different settings. A study conducted by Pavani V *et al.* at St. Peters Institute of Pharmaceutical Sciences, Vidya nagar, Andhra Pradesh, India, shows that only 15% of the prescriptions depicted the age of the patient and none of the prescriptions contained patient's address.[9] While in a study carried out by A Wali *et al.* in a Dental Teaching Hospital Karachi, Pakistan, 42% of the prescriptions reflected the age of the patient.[10]

Mentioning superscription is considered important while writing the prescription. It was clearly written in only 16.2% of the prescriptions in this study. Results in this regard are better in some other studies e.g. 35% of the prescriptions as analysed in Warangal, India.[9] A study in a private teaching hospital Jaipur, S Jain *et al.* observed that all the all the prescriptions contained superscription.[11]

The average number of drugs per prescription at UHC, Chetla (2.14) was higher compared to the standard (1.6-1.8) derived as ideal by WHO, This study revealed better results than that of the studies conducted in Warangal, Jaipur, and Lucknow in India, in which average number of drugs prescribed per encounter were 3.41,[9] 3.7[11] and 3.1[12] respectively. So there is a need to decrease the total number of the drugs prescribed, to the extent possible, so as to avoid the poly pharmacy that may lead to increased number of medication errors, increased number of side effects and an increased burden on the patient and the Government as a result of increased cost of therapy.

The percentage of drugs prescribed by generic name at UHC, Chetla (69.26%), was low compared to the standard derived to serve as ideal according to WHO (100%).[6] Different studies by S Jain *et al.* in Jaipur revealed only 8.33% prescriptions were by generic names.[11] and R Kumari *et al.* in the public health facilities of Lucknow found about 27.1% of the drugs were mentioned by the generic name.[12]

The percentage of encounters in which antibiotics were prescribed at UHC Chetla was 39.4%, which is high compared to the standard (20.0%-26.8%) derived to be ideal by WHO.[6] In India, in different cities, different percentages of antibiotics encounters were seen; in Jaipur, it was as high as 63.33%,[11] whereas in Lucknow, it was 20.6.[12] These findings suggest that antibiotic prescribing needs to be regulated in this study. The percentage of encounters in which an injection was prescribed at UHC, Chetla was 8.6% which is lower than the standard (13.4%-24.1%)[6] and the cause may be due to less supply of injectable items in primary health

Table 1: Drug usage pattern and Format of prescription of UHC Chetla-

Dose formulae (n=771)		Number (%)
Solid Capsule	Tablet	492 (63.8)
	122 (15.8)	
Liquid Injection	Syrup	80 (10.4)
	31 (4.02)	
Semisolid		46 (5.97)
Route of administration (n=771)		
Oral		711 (92.2)
Parenteral		31 (4.02)
Topical		29 (3.76)
Number of drug per prescription- (n=360)		
Combination therapy	(>2 drug per prescription)	114 (31.7)
	2 drug per prescription	147 (40.8)
Monotherapy (one drug in a prescription)		87 (24.2)
No drug prescribed		12 (3.3)
Fixed dose combination(FDC) (n=188)		
FDCs approved by DCG (I)		162 (86.17)
FDCs not approved by DCG (I)		26 (13.83)
Format of prescription- (n=360)		
No of prescriptions with Patient's identity documented		360 (100)
No of prescriptions with Date of issuing prescription written		360 (100)
No of prescriptions with superscriptions mentioned		58 (16.1)
No of prescriptions with doctor's signature		360 (100)
Chief complaints written in the prescription		155 (43)
Clinical examination findings written in the prescription		97 (27)
Complete diagnoses in the prescriptions		26 (7.2)

Table 2: Distribution of different diagnostic tests prescribed (n=360)

Diagnostic tests	Number (%)
Liver Function Test	9 (2.5)
Routine blood	16 (4.4)
Haemoglobin percentage	17(4.7)
Stool for OPC	4 (1.1)
Urine for routine examination	14 (3.9)
Fasting and post-prandial blood sugar	20 (5.5)
Sputum for Acid-fast bacilli	15 (4.2)
Blood for Malaria parasite	31 (8.6)

Table 3: Comparison of WHO Core Prescribing Indicators between the study result and WHO standards:(n=360)

WHO Indicators	Findings	WHO Standard
Average no. of drugs per encounter	2.14 (±1.058)*	1.6-1.8
Percentage of drugs prescribed by generic name	69.26%*	100%
Percentage of encounters with an antibiotic prescribed	39.4%*	20.0%-26.8%
Percentage of encounters with an injection prescribed	8.6%*	13.4%-24.1%
Percentage of drugs prescribed from essential drug list	85.47%*	100%

*The result of this study was significantly worse off than WHO standards in context of 5 WHO Core Prescribing Indicators (using Z test for each indicators $p<0.05$).

Table 4: Medicine utilization trend among various therapeutic classes:

Drug class	Percentage (n=771)	Most frequently prescribed drugs	Remarks
Antimicrobials	19.5	Doxycycline, Amoxicillin And Cotrimoxazole	53.9% of all the Acute respiratory illness cases were treated by antibiotic
Analgesics	21.8	Paracetamol ,Ibuprofen.	
Multivitamin	12.5	Vitamin B-Complex	
Gastrointestinal medicines	8.8	Antacid, Domperidone, Isafgol, Albendazole, ORS.	
Anti-allergic	11.5	Cetrizine, Levocetrizine	
Anti-diabetic	4.8	Glibenclamide And Metformin	Majority (60%)of diabetic patients were treated with a combination of oral hypoglycaemic agents
Anti-hypertensive	3.5	Amlodipine, atenolol, diuretic, Benz-thiazide+Triamterene combination)	80% of hypertensive patients were given Monotherapy
Sedative- hypnotic	2.2	Alprazolam	
Others	15.4	Minerals (Iron-Folic acid, calcium etc.), expectorants & bronchodilators etc	

care setting like UHC, Chetla. The percentage of drugs prescribed from the essential drug list at UHC, Chetla, was 85.47% which is lower than the standard (100%) derived to serve as ideal.[6] In Ethiopia, 96.6% of the drugs were prescribed from EML as per the study of Desalegn.[13] and in Nigeria, where this percentage was found to be 94% by Tamuno I *et al.*[14] In Nepal, 75% of the of the drugs were prescribed from EML as illustrated by Sapkota S. *et al*,[15] while in Lucknow India, this proportion was as high as 89%.[12]

In this study, it was observed that some specific codes were used for different diseases. These codes were being recorded for every patient in a separate register maintaining the record for official use only. These codes were adopted from ICD coding system. Very few (7.2%) of the prescriptions contained any diagnosis; only advice regarding drugs and investigations were documented in the rest (92.8%). As a result the patient faces difficulty while using this prescription when they consult some other health care service.

CONCLUSION

Despite working for many years, apparently the quality of prescribing by the medical officers is not up to the mark. Therefore all efforts should be made to disseminate the ideal prescription writing methods among all doctors who encounter patients at any point of time. Essential drug list, with generic name of all drugs should be displayed in all the chambers for easy access for the doctors.

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CONFLICT OF INTEREST

NIL.

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