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Research Article

Prescription audit of patients attendees in public health facilities in Maharashtra, India with special reference to rational use of antibiotics

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ABSTRACT

Background: As soon as a doctor examines the patient, he/she writes the treatment for the illness on a piece of paper and that is called as "Prescription". Prescription is a document through which doctor, patient and pharmacist are communicated to each other but many a times if these documents are not properly written or misinterpreted it can affect management of patients. World Health Organization (WHO) has established prescribing indicators to analyze the prescription and promoted rational use of drugs and better management of patients. Prescription audit captures the current practices and identifies opportunities for improvement in patient care and along with the mechanisms for realizing them. The main objective is to analyze the prescription of drugs given to the patients in OPD and IPD of the primary and secondary level public health facilities in Maharashtra.
Methods: The study was a cross-sectional and observational based on both qualitative and quantitative data. It comprises of secondary data obtained from copies of prescription collected from selected Rural Hospitals (RHs)/Sub-district Hospitals (SDHs) and District Hospitals (DHs)/ Women Hospitals (WHs) of Maharashtra comprising on prescribing practice, rational use of drugs and antibiotics, patient care and facility specific indicators. The Prescribing patterns were analyzed using WHO guidelines with regard to prescribing, patient care and health facility indicators. Qualitative) data collected on perceptions of the patients attending OPD as regard of doctor's consultation and dispensing of medicine; as well as perceptions of pharmacists regarding working environment that measures the ability to prescribe drugs rationally. The copies of the prescriptions from the patients attending OPD / IPD at the above mentioned public health institutions (PHCs, RHs, SDHs and DHs/ DWHs) were obtained. Statistical analysis of study was analyzed using the frequencies and cross tabs by using MS-Office Excel and SPSS Version 20.
Results: This exercise showed that there is a scope for improvement in prescribing patterns in areas of writing generic names of drugs, essential drugs, writing legible and complete prescriptions.
Conclusions: The present study clearly indicates that there is a great need of interventions like distribution of antibiotic guidelines and running workshops and seminars on rational drug use to prescribers to improve the prescribing behaviour in the state of Maharashtra. This can be enforced through introducing such concepts and those of rational prescribing in curriculum of medical schools. E-prescriptions can be started in E-Aushadhi software with periodic clinical meetings to learn from the evidence.

Keywords: Prescription Audit, Public Health Facilities, Maharashtra, Rational Use, Antibiotics, Painkillers, Vitamins

INTRODUCTION

Health is a state subject and it is a responsibility of the state government to provide curative, promotive & preventive health services to the people. While providing health services, drugs are an essential part of the treatment and management of the ill patients which consumes major portion of the budget. In the emergence of the universal health care, while providing the medical and health services, the regular availability of free drugs to the patients, its judicious use are of crucial importance. The use of generic drugs, rationale use of drugs more particularly of antibiotics are important issues to cut down the treatment costs, prevent the antimicrobial resistance & harm as well as adverse effects to the patients etc. which is a major concern to the public health managers. These drugs worth crores of rupees are consumed every year in the state but a major portion of these drugs are prescribed irrationally. So, in order to promote rational drug usage and prevent irrational practice, standard policies on use of drugs must be set in practice, and this can be done only after the current prescription practices have been audited.

Reference from World Medicine Situation-2004-05, indicates the misuse of antibiotics that estimates of resistance to primary drug therapy for TB from 28 countries at all income level ranged from low of 2% to a high of 40% of cases. Resistance to penicillin treatment is estimated to be between 5% and 98% for gonorrhea& between 12% and 55% for pneumonia. Antimicrobial resistance is not only a problem for the individual patient, it also reduces for effectiveness of established treatment and poses a major threat to public health by increasing the complexity, cost of treatment and reducing the probability of successful outcome.[1]

Rational use of drugs is multifaceted concept. It is a medical, social and economic aspects are well reflected in the WHO definition: "Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community".[2] World Health Organization (WHO) stated rational use of drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own individual requirement for an adequate period of time and at the lowest cost to them and their community".[1]

In India there are numerous drug companies with thousands of products in their basket which leads to a stiff competition among themselves. These pharmaceutical companies encourage doctors to prescribe branded medicines in exchange for sponsorships, incentives and gifts. Irrational prescribing is a major concern all over the county. The rationality of prescribing pattern is of prime importance because wrong prescribing habits including misuse, overuse and underuse of medicines can lead to unsafe treatment, exacerbation of the disease, health hazards, and economic burden on the patients and wastage of resources. Examples of irrational use of medicines include: poly-pharmacy, inadequate dosage, and use of antimicrobials even for non-bacterial infections, excessive use of injections when oral forms are available and inappropriate, self-medication and non-compliance to dosing regimens.[3]

In Maharashtra, a proper reporting of medication / prescriptions errors in the public health facilities is not available. Prescription audit is considered appropriate to improve the usage of drugs by hospital doctors and is a type of vigilance activity beneficial in clinical practice in terms of reducing the burden of disease because of reduced medication errors. The information on indicators related to drug prescription like core prescribing indicators, poly pharmacy, fixed dose combinations (FDCs), rationale use of antibiotics (need , choice and appropriate regimen of antibiotics) is not available in public health setup. One such study under MHSDP (Maharashtra Health Service Development Project) on prescription audit of out-patient attendees of secondary level government hospitals in Maharashtra was conducted, but it was limited to generate a morbidity profile, and prepare essentials medicine list based on that morbidity profile.[4] Hence, a quick assessment of prescription of drugs with special reference to rational use of antibiotics at primary and secondary care public health facilities was undertaken with following objectives.

Objectives of the study : Since no such study was carried out before in the secondary level public health facilities of Maharashtra, therefore we aimed to measure these indicators in our setting to obtain data for promoting rational drug use. Hence the present study was carried out with the following objectives.

1. To analyze the prescription of drugs in OPD and IPD of the primary and secondary level public health facilities on following core prescribing indicators:
   - Average number of drugs per encounter
   - % of drugs prescribed by generic name
   - % of encounters with an antibiotics prescribed
   - % of encounter with an injection prescribed
   - % of drugs prescribed from essential drugs list (EDL) declared by Directorate of Health Services, Maharashtra
   - Availability of a copy of EDL or formulary,
   - Availability of key drugs in the stock.
2. To find out the rationale of the drugs and antibiotics used in primary and secondary level public health facilities based on three questions to rationalize the use of drugs and antibiotics (when, which and how) on following parameters:
   - Decision on antibiotics whether needed?
   - Choice of antibiotics- when to be used in which situation,
   - Appropriate regimen-how to prescribe i.e. dose/frequency/route/duration of antibiotics.

3. To find out the perceptions of the OPD patients at primary and secondary level public health facilities regarding pharmaceuticals prescribed and dispensed on following parameters:
   - Average consultation time
   - Average dispensing time
   - Percentage of drugs actually dispensed
   - Percentage of drugs actually labeled.
   - Patient's knowledge of doses.
4. To find out the adherence of standard treatment protocols in treatment of patients with special reference to antibiotics prescribed in OPD as well as IPD cases; as well as in certain health conditions of special groups of clients as follows:
   - Management of neonatal sepsis, diarrhea and pneumonia in neonates and infants.
   - Management of third stage of labour in pregnant woman.
   - Management of eclampsia of pregnant women in labour.
5. To articulate measures for improving the prescription practices.

METHODS

The study was an exploratory, cross-sectional and observational. It comprises secondary data on prescribing practice, rational use of drugs and antibiotics, patient care and facility specific indicators analyzed using WHO guidelines; primary (qualitative) data on perceptions of the patients attending OPD as regard of doctor's consultation and dispensing of medicine; as well as perceptions of pharmacists regarding working environment that measures the ability to dispense the drugs.

Sampling method:

Since the study intended as quick assessment of the situation a systematic random sampling technique was used. One district from each region of Konkan, Paschim-Maharashtra, Marathwada and Vidharbha was considered on the basis of highest performance of major surgery per 100 inpatients. From such selected districts, one PHC, RH, SDH, DH, WH and SNCU from each was considered on the basis of highest number of OPD and institutional deliveries. For representation of tribal population one tribal PHC/RH, SDH & DH from tribal district was selected.

Sample size of prescriptions:

OPD prescriptions: We planned to collect total 1000 prescriptions (about 250 from each select district). At facilities where OPD case papers were preserved, to avoid the seasonal bias, the proportionate OPD prescriptions of the period of monsoon as well as post monsoon period were considered; and in case where not preserved OPD case papers were collected on the day of data collection. In actual 961 prescriptions were considered, prescriptions having illegible handwritings & incomplete data were excluded.

Table 1: Sample size of prescriptions.

Facility	Sample Drawn
DH	589
WH	10
SDH	178
RH	99
PHC	85
Grand Total	961

IPD cases papers: From each District Hospital 50 IPD case papers (Surgery-10, Medicine-10, Post-deliveryward-5, neonatal sepsis– 5, neonatal/infant pneumonia-5, infants-diahrroea-5, labour room PPH-5, eclampsia-5) and from each RH/SDH 25 general inpatients case papers were collected. . Equal representation of the male and female patients was considered for the inpatients prescription except obstetrics. In actual we decided to keep 213 prescriptions for this study as in other prescriptions, data was not readable, insufficient or not properly written.

Table 2: Sample size of prescriptions.

Facility	Sample Drawn
DH	69
WH	12
GH	25
SDH	107
Grand Total	**213**

Qualitative data: In depth interview of 5 patients each from sampling site and one Pharmacist were recorded by investigators. While selecting patients for interview to avoid the biases, the patients attending at the beginning, mid hours and towards end of OPD were selected.

Data collection and interpretation:

Primary & secondary data was collected during May, 2015. The investigators for the study were a team of Taluka Health Officers (THO) who were trained for one day at SHSRC. The qualitative data was also coded. The photo copies of prescriptions under study were collected by investigators. The OPD as well as IPD case papers which were not readable were excluded from the study. Thus the data available was cleaned and analyzed as per the indicators/parameters designed under study. The opinion required for conclusions regarding the rational use of drugs confirmatory to international professional standards/ GOI guidelines were obtained from the willing expert clinicians working in public as well as private sector.

RESULTS

The findings are presented as follows:

Demographic characteristics of the OPD attendees & IPD patients: Drug prescriptions of 961 OPD attendees were studied, of which about 55% were in age group of 15-49 years, 14.6% in 60+, 12.6% in 5-14 years and 10% in under 5 age group; female patients (51.6%) were little more than male(48.4%) as revealed in Table 3.

Table 3: Demographic characteristics of OPD / IPD attendees.

	Frequency	Percentage
OPD attendee by Age group(Year)		
0-4	96	10.0
5-14	121	12.6
15-49	528	54.9
50-59	63	6.6
60+	140	14.6
Not known	13	1.4
Total	961	100
IPD cases by Age group (Year)		
0-4	37	17.5
5-14	18	8.4
15-49	129	60.4
50-59	7	3.3
60+	22	10.4
Total	213	100
OPD attendee by sex		
Male	453	47.13
Female	482	50.15
Not mentioned	26	2.70
Total	961	100
IPD cases by sex		
Male	125	58.7
Female	88	41.3
Total	213	100

Core prescribing indicators for OPD patients: The observations on core prescribing indicators suggested by WHO is revealed in Table 4 given below. About49 % prescriptions contained 1-3 drugs followed by 41 % which contained 4-5 drugs. Average number of drugs prescribed per prescription was 3.3. Drugs prescribed, mean number was 3.33 & mode 3. About 6% of prescription contained 6 and more drugs. About 25% prescriptions contained injections of which nearly 1% had 2 injections. Similarly, about 45% of prescription contained one or more antibiotics, of which nearly 3% had two antibiotics.

All the prescriptions had drugs from the list prescribed by the Directorate of Health services and all the drugs prescribed were generic drugs. About 100 % of the drugs were prescribed by generic names and few percentages (0.2) of the prescribed drugs were in combination. About25 % percent of the prescriptions contained at least one injection, while about 44 % percent contained at least one antibiotic. In 37.25 % percent of the prescriptions a vitamin or tonic was prescribed.

Table 4: Core prescribing Indicators on OPD attendees.

	Frequency	Percentage	Mean	Mode
No. of drugs prescribed				
Not Prescribed	47	4.9		
1-3	469	48.8		
4-5	394	41.0		
6+	51	5.3		
Total	961	100	3.33	3
Injections prescribed				
Not prescribed	723	75.2		
1	192	20.0		
2	36	3.8		
3 or more	10	1.0		
Total	961	100		
Antibiotics prescribed				
Not prescribed	535	55.7		
1	398	41.4		
2	28	2.9		
Total	961	100		
Drugs from EDL				
From EDL list	961	100		
Outside EDL list	0	0		
Total	961	100		
Generic drugs prescribed				
Generic drug	961	100		
Branded drug	0	0		
Total	961	100		
Availability of EDL at facility				
Available	17	100		
Not available	0	0		
Total	17	100		
Vitamins/tonic prescribed				
Prescribed	358	37.25		
Not prescribed	603	62.75		
Total	961	100		

Core prescribing indicators for IPD patients: The observations on core prescribing indicators for IPD patients suggested by WHO is revealed in Table 5 given below. Average number of drugs prescribed per prescription was 5 (mode 4). About 42.3% of prescription contained 6 and more drugs which is more than the expected number of drugs (3 drugs per patient) given to a patient. About 88 % of the prescriptions had injections of which nearly 53 % had 1-2 injections and nearly 8 % of the prescriptions had more than 6 injections. Similarly about 45% of prescription contained one or more antibiotics, of which nearly 3% had two antibiotics. All the prescriptions had drugs from the list prescribed by the Directorate of Health services and 100% of the drugs prescribed were generic drugs. All of the drugs were

prescribed by generic names and few percentages (0.2 %) of the prescribed drugs were in combination.

Table 5: Core prescribing indicators on IPD attendees.

	Frequency	Percentage	Mean	Mode
No. of drugs prescribed				
Not Prescribed	11	5.2		
1-3	52	24.4		
4-5	60	28.2		
6+	90	42.3		
Total	213	100	5.0	4
Injections prescribed				
Not prescribed	26	12.2		
1-3	113	53.0		
4-5	57	26.8		
6+	17	80		
Total	213	100	2.8	3
Antibiotics prescribed				
Not prescribed	52	24.1		
1	73	34.3		
2	67	31.5		
3	18	8.5		
4	3	1.4		
Total	213	100		
Drugs from EDL				
From EDL list	193	90.6		
Outside EDL list	20	9.3		
Total	213	100		
Generic drugs prescribed				
Generic drug	213	100		
Branded drug	0	0		
Total	213	100		

Table 6: Other core prescribing indicators in OPD.

	Frequency	Percentage	Mean	Mode
Follow up advice (Days drugs prescribed)				
1-2 days	13	1.4		
3 days	700	72.8		
4+ days	248	25.8		
Total	961	100		
Laboratory test advised				
1-3	136	14.2		
4+	18	1.8		
No test advised	807	84.0		
Total	961	100		
Diagnosis on prescription				
Yes	399	41.5		
No	562	58.5		
Total	961	100		
Symptoms & signs on prescription				
Yes	511	53.2		
No	450	46.8		
Total	961	100		

Other core prescription indicators like follow up advice and others for OPD:

Maximum patients were prescribed the drugs for 3days or more; however 25.8% were prescribed for more than 4 days. Surprisingly 59% prescription did not mentioned about the number of day's drugs to be issued; with the pharmacist it was taken for grant as 3 days, as revealed in Table 6.

About 16 % of the prescriptions mentioned about laboratory tests of which 14% had 1- 3 tests and 2% had more than 4, as revealed in Table 6. More than half (60%) prescriptions were not having diagnosis and nearly half of prescriptions were devoid of any signs symptoms. When interrogated the doctors, the principal reason mentioned for above found to be large number of patients to examine in limited time and less number of doctors. Availability of EDL was found at all facilities.

Other core prescription indicators like follow up advice and others for IPD:

Maximum patients (62.9%) were prescribed the drugs up to 5 days; however 21.1% were prescribed for 6 to 10 days as shown in Table 7.

Table 7: Other core prescribing indicators like follow up advice and other: IPD.

	Frequency	Percentage	Mean	Mode
Follow up advice (Days of Patients stayed)				
1-5	134	62.9		
6-10	45	21.1		
11-15	6	2.8		
16-20	3	1.4		
20+	1	0.5		
Not mentioned	24	11.3		
Total	213	100	4.6	1
Laboratory test advised				
1-3	59	27.7		
4+	75	35.2		
No test advised	79	37.1		
Total	213	100	3.0	0
Diagnosis on prescription				
Yes	200	94		
No	13	6		
Total	213	100		
Symptoms & signs on prescription				
Yes	163	77		
No	50	23		
Total	213	213		

About 63 % of the prescriptions mentioned about laboratory tests of which 27.7% had 1- 3 tests and 35.2% had more than 4, as revealed in Table 7. Nearly in 6% of prescriptions diagnosis of the patients was not mentioned and nearly 23% of prescriptions were devoid of any signs symptoms. When interrogated the doctors, the principle

reason mentioned for above found to be large number of patients to examine and less number of doctors.

Rationale of the drugs / antibiotics / pain killers / vitamins used in primary and secondary level public health facilities:

***Rationality of drugs according to diagnosis*:** In 41.5 % of OPD & 94 % of IPD cases diagnosis was mentioned precisely on the prescription. About 70 % IPD and 40 % of OPD patient's prescriptions of treatment was found rational according to diagnosis. Almost 20 % of IPD and 11 % of the OPD patients received irrational treatment according to diagnosis. Most prescriptions OPD (50 %) and IPD (10 %) were not legible, or diagnosis / symptoms were not written properly.

There were cases where antibiotics, painkillers, vitamins, antacids etc. were needed but the doctors from the health institutions did not prescribed it, so the patient could not get the proper treatment. In some cases, important laboratory needs were not advised. Higher dose of antibiotic was needed in few cases, when doctors prescribed a low dose antibiotic which is not rational. MVBC, folic acid and calcium supplements, iron chelating drugs were not given in some anaemia cases.The details of this irrationality are discussed as follows.

Management of neonatal sepsis, diarrhea and pneumonia in neonates and infants:

1. *Neonatal sepsis (6 cases):* Management of neonatal sepsis in most of the cases seems proper, however, in some of the cases antibiotic Amikacin should have been added especially in patients having convulsions; in some of the cases use of dexamethasone was not justified. The investigations to screen sepsis like X-ay chest, CRP & blood culture should have done, besides suckling test. In some cases, duration of drugs were not mentioned; depending on clinical condition & other laboratory tests findings, CSF study could have done.
2. *Diarrhea (3 cases):* Some of irrational observations were like antibiotic "amikacin" could have avoided in neonatal diarrhoea since "taxim" covers all organisms causing diarrhoea. Drugs like Trimethoprim & Cotrimoxazole and metronidazole should been prescribed in diarrhoea cases, which were not given. Amikacin & gentamycin should have been avoided as they belong to same group. Investigation for CRP should have done.
3. *Pneumonia:* managementt of pneumonia cases found satisfactory and confirmatory to SOPs.
4. *Post-partal haemorrhage:* In 13 out of 57 cases oxytocin was not used; rest of the management was confirmatory to the SOPs.
5. *Management of eclampsia of pregnant women in labour:* Out of 6 pre-eclampsia and eclampsia cases, in one case Injection of magnesium sulphate & painkiller was not mentioned, which are the important drugs in the management of eclampsia/pre-eclampsia in pregnancy.

Comments from specialists on general medicine prescriptions:

Out of 100 IPD prescriptions about 18 (%) were found irrational. Some of the irrationality observed was like non-use of antimicrobials like ciprofloxacin & metronidazole in acute gastroenteritis cases; azithromycin in Bronchitis, use of inj. Dexamethasone & antibiotic in cases of hypertension. In district hospitals PUO cases were treated with ciprofloxacin, ofloxacin. In some cases of PUO, three antibiotics were given and no investigations were done to rule out the TB, enteric fever etc. Viral fever cases were found treated with antibiotics like Gentamycin. None of the fever cases received presumptive treatment of malaria and peripheral smear for malaria parasite was not done. In unknown bite with signs and symptoms of shock anti-snake venom was not prescribed which should have been given.

Rationality of drugs in Dental patients: Out of 19 cases of Dental patients, 13 (69%) were found with irrational prescriptions, the reasons mentioned in Table 8 below.

Table 8: Rationality of drugs in Dental patients.

Rationality of drugs in Dental patients	No. of prescriptions	Reasons for irrationality
Dental caries (7), Dental pain (4) Dental pain with discoloration (2)	13	Antibiotics and analgesics needs to be taken thrice a day for 5 days which were missing. Strength, formulation, frequency and duration were missing for antibiotics.

Rationality of drugs in orthopedic cases: In one orthopedic case the dose of antibiotic was not mentioned correctly. Injection Gentamycin 80 mg was needed in the case, but the resident doctor has prescribed 40 mg of dose. As the sample size was less, we could not get sufficient sample per specialty but detailed study on prescriptions of drugs specialty wise is needed.

Rationality of drugs in surgery cases: In nearly 30% of the surgery cases, the treatment was not rational based on

indicators like appropriateness of antibiotic, dose, route etc. In few cases proper drugs were not given even when needed e.g. Inj. magnesium sulphate, Diclofenac Sodium in burn patients were needed. The route of administration of drug was not correct while giving Injections like Diclofenac Sodium, TT. The irrational use of investigations was also observed from the prescriptions which include CBC, ECG, Solubility test, VDRL.

Rationality of antibiotics according to diagnosis: In terms of rationality of antibiotics according to diagnosis, 4 % of the IPD prescriptions and nearly 2 % of the OPD prescriptions were found with irrational choice of drug, dose of the drug and route. Misuse of antibiotics in form of excess use and under prescription was also observed. In a case of Road Traffic Accident, antibiotic was needed but was not given. In case of head injury patients, higher doses of antibiotics were observed, which might affect patient's health or may cause drug resistance. In cases of minor superficial infections antibiotics were prescribed, in such cases local antiseptic should have used; in abscess, the pus should have surgically drained to remove the pus with appropriate antibiotic cover.

Rational use of the drug and doses in OPD cases

Out of 961 OPD prescriptions, 483 (50%) could not be reviewed because diagnosis, signs & symptoms were not mentioned. Out of 478 known diagnosis cases, 14 (2.9%) prescriptions were irrational for the reasons mentioned below in Table 9.

Table 9: Rational use of the drug and doses in OPD cases.

	Frequency	Percentage
Rational drug prescriptions (n=478)		
Yes	464	97.1
No	14	2.9
Total	478	100
Rational dose, duration & frequency (n=478)		
Yes	445	93.1
No	33	6.9
Total	478	100

Rationality of prescription of vitamins: Almost all prescriptions where in vitamins prescribed according to diagnosis, found rational both in OPD as well as IPD.

Rationality of pain killers: In terms of rationality of pain killers according to diagnosis, nearly 6 % IPD prescriptions and very few OPD prescriptions were found irrational. There were few encounters where unnecessary painkillers were prescribed. It has been observed that painkillers were used in most cases, to reduce the pain or to make the patient feel comfortable or most of the times just to show that the medicines are working, but this is not an ethical practice and which need to be stopped.

Perceptions of the pharmacists: regarding drugs, storage, stocks, branded – generic drugs, drug combinations, dispensing and counseling was recorded and presented as follows.

All the pharmacists reported that they do counseling of patients regarding how to consume drugs while dispensing. Only few 2 out of 13 (15 %) responded that they counsel only when antibiotics or anti-tubercular drugs are written in the prescription. Average time paid per patient for dispensing medicine in OPD found varied, about80% of pharmacists as 2-3 minutes, 2 pharmacists counseled the patient less than a minute; whereas two respondents reported as 5 minutes.

Nearly 10 percent of the pharmacists reported the use of branded medicines in public health facilities which were mostly supplied under NCD. All pharmacists reported the use of fixed combinations of drugs (FCD) such as antibiotics, analgesics, anti-diarrheal and others in facilities. About 90%pharmacists reported regular supply of drugs and supplies; however about 10% reported irregular and inadequate quantity or no supply of few drugs which includes intra venous fluids, antibiotic injections, syrups for paediatric use, painkillers, and drugs used during pregnancy, vitamins, and drugs for management of NCDs. In such situation the branded drugs are locally purchased from the funds under RKS (Rugna Kalyan Samiti). On the contrary, few drugs which do not have demand but are supplied in large quantity consequently most of them are unused and expired or issued to other facility as shown in Table 10.

Storage of the medicines could not be kept properly in alphabetical order at few public health facilities. Cold storage facility was not available at some places. To avoid the errors of dispensing drugs, very few senior pharmacists carried checks.

Suggestions for improvement of processes/ protocols to improve medication compliance and thereby patient recovery as told by pharmacists: The routine and most frequently used medicines must be supplied in large quantity which includes cough syrups, IVF RL, eye drops, anti-diabetic drugs, anti-hypertensive drugs, anti-epileptic drugs etc. Spacious store rooms should be built. Medicines for managing NCD should be supplied regularly to achieve patient compliance to the treatment. Look-Alike Sound-Alike (LASA) Medication Names not currently practiced so to avoid confusion, store products with LASA names in different locations in pharmacy, nursing units and other patient care units.

Observations of the monitoring teams during their visits to the PHC, CHC, RH, SHD, WH, DH

During a visit to PHC Karanjgaon, it was reported that the average time given to the patients for dispensing of drugs is nearly 5 minutes. It was also reported that antibiotics like amoxicillin, ampicillin, and ciprofloxacin and syrup antibiotics were out of stock in the PHC. Tab Scandazol was supplied in excess which was not needed.

Table 10: Issues reported by Pharmacists.

Sr. No.	Particulars	Medicines / stock (Critical points)
1.	**Inadequate supply of medicines**	IVF RL& NS, disposable syringes, sterile surgical gloves, needles Antibiotics: injections and tablets of Gentamycin, ampicillin, amoxicillin, Tablet Amlokind / Amlopress / Telmisartan / Syrup Cital Antacids: Rantac / Painkillers: Paracetamol / Diclofenac Sodium / topical analgesics / Brufen Antihistaminic: CPM/ Cetirizine Cough Syrups Injections: Pitocin, Tablet Misoprostol Anti-emetics Anti-spasmodic Steroids Vitamins: Cap B Complex,
2.	**Drugs supplied by higher authority in extra quantity than needed**	Tab Sitagliptin, Glycerin bottles, Liquid Paraffin, Tab Secnidazole, Anticonvulsant and Cardiac Drugs, Injections: Benzathine Penicillin, Eptoin, Fortwin, Phenergan, Atropine, Cefoperazone Sulbactam, Amoxicillin, Xylocaine, Capsules: Tetracycline, Doxycycline Scalp vein set, Bandage gauze, Disposable mask, IV Canula
3.	**Branded medicines supplied**	Tablets: DCM, diclofenac sodium, Dafocal-E, Parasoot 500 mg, Glocid 150mg, Cetirizine 200 mg, Folic acid, Paracost (paracetamol) (ondogosic- Acid 100), Fluvir 75 mg, Ceftrazone, Antihypertensives: Tablet Aten 50, Amlodipine, Tablet Amlokind / Amlopress / Telmisartan / Syrup Cital IV Metrogyl Candid ear drop & mouth paint, Soframycin ointment Syrups: Koffika, Chochofter, Drop - Alex (Chlorpheniramine maleate) Injections: Cefoperazone Sulbactam, Cefotaxim, Rantac
4.	**Combination medicines**	Formulations of amoxicillin and clavulanic acid, norflox, paracetamol and ibuprofen, theophylline combinations, ciprofloxacine + tinidazole, norflox + tinidazole,

Perceptions of the OPD patients regarding drugs prescribed and dispensed

Average consultation time: Majority of the patients expressed that hardly 1 to less than 2 minutes. Consultation time was provided by the doctors. About 70% of the patients were not satisfied about the process of consultation, checkups like pulse & BP measurement etc.

Average dispensing time: Majority of the patients told that 1 to 2 minutes for dispensing of drugs however very few told 3-4 minutes. All the drugs dispensed were labeled was the response from all patients who were interviewed. Patient's knowledge of doses of recently dispensed drugs was assessed and found that about 90% of patients could recall the correct doses; however 10% of the patients could not recall the doses of one or medicines correctly.

DISCUSSION

Prescribing and providing the right medicine to the right people at the right time is a central priority of health care. The way to ensure this is through the effective implementation of use of rational drugs. Rational drug use is a function of prescription practices having medical, social and economic implications. Prescription auditing is important for the quality assurance in hospitals. They should address problems that have serious consequences

for patients if proper treatment is not given which can minimize the misuse of drugs, plan essential drug selection and estimate the drug needs of the community. The audit data will be of great value to health administrators, manufacturers, distributors and health professionals groups for their decision making and drafting policies.

Appropriate use of antibiotics is absolutely necessary to prevent emergence of drug resistance and should be mostly used after culture sensitivity testing. Most of the acute respiratory and acute gastroenteritis cases are viral in nature and may not need antibiotics. An antibiotic policy or SOP for the common diseases encountered should be formulated so that the clinicians can use them judiciously according to patients need.

Completeness in terms of dose, route, strength, and frequency and dosage forms was seen only in half of the (51%) of prescriptions. This information is very necessary for the patient, nurse and for proper treatment of the patient and should be complete in all respects.

Illegible prescriptions: About half (46%) were not legible. Enforcement for writing legible prescriptions shall be done at public health facilities along with taking measures to improve the doctor patient ratio enabling spending of more time per patient.

Incomplete prescriptions: More than 90% of the IPD/OPD prescriptions had various anomalies. Diagnosis was not written in 54.73% (OPD) and 5.16% (IPD) of cases. Age and sex were not mentioned in 2.7% of OPD cases, but in IPD cases both these indicators were mentioned correctly. More than half of (59%) OPD and 11% IPD papers did not mention any follow up advice which is having implication on continuity of care.

Under use of diagnostics (16% OPD and 65% IPD only) is also an important observation in light of the theme of free diagnostics being propagated under NHM in the current year.

All these anomalies encountered in the collected data indicate that there is a huge scope for improvements in the prescriptions patterns in our hospital.

CONCLUSION

Auditing of the prescriptions gives a current picture of the prescribing practices in the public health facility settings. This exercise showed that there is huge need of improvement in prescribing patterns in areas of legible hand writing, complete prescriptions with sign, symptoms, needed diagnostic test and follow up advice along with rational choice of drugs with dose and duration., Establishment and implementation of appropriate clinical guidelines/ SOP for common ailments , use of essential medicines list and regular update to the clinicians in form of CMEs will help in implementing the principles of rational use of drugs. Medicines in wards should be regularly checked; LASA to be practiced, inadequate supply of drugs like paracetamol, NCD medicines, disposable syringes, sterile gloves etc., shall be addressed.

Recommendation:

1. The present study clearly indicates that there is a great need of interventions. The interventions are given below:
2. Preparation and Circulation of SOPs / diagnosis and treatment protocol for the common ailments encountered in day to day practice
3. Circulation of guidelines for rational use of drugs / antibiotics / pain killers / vitamins to public health facilities.
4. Educational circulars and programs on prescribing generic drugs are much needed. This can be enforced through introducing such concepts and those of rational prescribing in curriculum of medical schools.
5. The process of taking rounds of wards by the pharmacists to check for medications with regards correctness, quantity, meeting dispensing schedule etc. should be introduced and monitored.
6. The guidelines for writing legible prescriptions should be disseminated to all the public health facilities and orders should be issued to abide by these guidelines strictly. Random check of samples of prescription, exit interview of patients shall be done for monitoring and supervision.
7. Organizing workshops and seminars on rational drug use to improve the prescribing behavior among the clinicians of Maharashtra.
8. Regular CME (continuous medical education) on rational use of investigations, drugs and treatment should be organized for the doctors working in public health institutions.
9. Starting of e-prescriptions in E-Aushadhi with periodic clinical meetings to learn from the evidence.
10. Improving Doctor patient ratio by appointing more doctors to cater the patient health care need. It will enable the medical practitioner to devote more quality time to patient
11. Pilot project regarding e-prescription in public health facility shall be implemented to check the appropriateness of the measure

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