

Pattern of prescribing practices in the Madhya Pradesh, India

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Abstract

Objectives: To find out the current status of the 'prescribing practices' in the Primary Health Care facilities of Madhya Pradesh.

Material and Methods: The cross-sectional survey was conducted in 26 Primary Health Care facilities of the Madhya Pradesh. Consecutive random sampling method was applied for collection of prescriptions from the health facilities.

Observation: Overall the average number of drugs prescribed per prescription was 2.8; most commonly prescribed drugs were NSAIDs, antibiotics, multivitamins and antihistaminics. Drugs prescribed by generic name were 48.5% (1409/2906), prescription with antibiotics and injections were 60.9% (641/1052) and 13.6% (143/1052) respectively. Drugs prescribed from Essential Drug List were 66.9% (1944/2906).

Conclusion: The prescribing practices of the Madhya Pradesh is more of an irrational types like polypharmacy, overuse of antibiotics and injection, less number in generic names and prescribed from Essential Drug List. There is an urgent need for some interventions to improve the situation.

Key words: rational use of drug, essential drugs, generic name, polypharmacy

Rational use of drugs is defined by World Health Organization (WHO) as "patients receive medicines 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"¹. Unfortunately, in the real world, prescribing patterns do not always conform to these criteria and can be classified as "Pathological Prescribing". Polypharmacy is the most common irrational practice. A case of malaria was prescribed with six drugs, which included Chloroquine, Ibuprofen, Ciprofloxacin, B-complex vitamin, Chlorpheniramine and Dextrose saline infusion. Most drugs were prescribed by brand name and by abbreviations. Unnecessary antibiotics, Non Steroidal Anti Inflammatory Drugs (NSAIDs), injections, vitamins and expensive third generation antibiotics prescribed to most patients². The impact of this irrational use of drugs can be seen in many ways like reduction in the quality of drug therapy, wastage of resources, increased costs of treatment, increased risk of adverse drug reactions, emergence of drug resistance, and ultimately the psychosocial impacts on patients such as when they come to believe that there is "a pill for every ill"².

The introduction of the Core drug use indicators (CDUIs) following the collaborative work by the members of the International Network for Rational Use of Drugs (INRUD) and the Drug Action

Programme -WHO (DAP-WHO) regarded as one of the most notable achievements in the orchestrated effort at promoting rational use of drugs. These indicators are highly standardized, do not need national adaptation and provide a simple tool for quickly and reliably assessing a few critical aspect of drug use in primary health care setup³. There are three types of CDUIs; these are prescribing indicators, patient care indicators and facility indicators. We have taken only prescribing indicators for this study, these are as follows:

1. Average number of drugs per prescription
2. Percentage of drugs prescribed by generic name
3. Percentage of prescription with an antibiotic prescribed
4. Percentage of prescription with an injection prescribed
5. Percentage of drugs prescribed from an Essential Drugs List (EDL)

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Material and methods

A cross-sectional descriptive study was conducted in primary health care facilities of district Bhopal of Madhya Pradesh, central state of India. All primary health care facilities were included in the study except those where Medical Officer were not available during the study period. There were total 26 health centre surveyed in which 9 were Primary Health Centres (PHC) and 17 were Civil Dispensaries (CD). Consecutive random sampling method⁴ was applied for selection of the patients from the individual health care facility. Total 1052 prescription were collected during the study period i.e. November 2004 to December 2005. For the purpose of data collection we attached the plain white paper with the original prescription form at registration counter and we took the carbon copy of that prescription form, from the patient before leaving the health centre. Proportion and average (\pm standard deviation) was used to describe the observations. Z test was applied to compare the result between Primary Health Centres and Civil Dispensaries.

Limitation of the study

The main limitation of this study is the risk of observer bias. Observer bias was minimized by the visits of the team being unannounced, and during the consultations and dispensing there was no interference by the survey team workers. Some of the health facilities may have heard rumours about the ongoing survey, anticipating a possible visit by the research team. This may have resulted in a more favourable outcome than otherwise would have been

the case. We also cannot exclude the possibility that the research process in itself may have contributed to improving the quality of health care provided.

Result

Overall (PHC and CD) 1052 prescription were collected and analyzed in which 305 prescriptions (29%) were taken from PHC and 747 prescriptions (71%) from CD. The average number of drugs per prescription was 2.8 in overall situation. In PHC it was significantly higher as compare to CD (Table 1). In PHC about half of the patient (48.5%) received 3 drugs in their prescription and 32.7% patients in CD (Table 2). Analgesic was the most commonly prescribed drug followed by antibiotics, multivitamins, antihistaminics and drugs used for gastrointestinal symptom (Diarrhoea/vomiting etc) in overall situation (Table 3).

The drug prescribed by generic name was 48.5% in overall situation, more drugs prescribed by generic name in PHCs as compare to CDs i.e. 60.8% and 42.70% respectively. The Percentage of drugs prescribed from EDL of Madhya Pradesh (India) was 66.9%. In PHCs it was 74.7%, which is statistically significantly better as compare to CDs i.e. 63.3%. The percentage of prescription contain antibiotics was 60.9% in overall situation, in PHCs 67.5% prescription contained one or more antibiotics as compare to CDs where it was 58.3%. The overall percentage of prescription with Injection was 13.6%, in PHCs it was 10.8% and in CDs it was 14.7% (Table 4).

Table 1: Average number of drugs per prescription

Prescribing Indicator	Overall	PHC	CD
Average number of drugs per prescription	2.8 \pm 1.1	3.0 \pm 0.9	2.7 \pm 1.2

[p<0.001, between PHC and CD]

Table 2: Number of drug prescribed per prescription

No. of Drug Prescribed	Overall		PHC		CD	
	Number of prescription	%	Number Of prescription	%	Number of prescription	%
No drug (0) prescribed	16	1.5	2	0.6	14	1.9
1	14	10.8	12	3.9	102	13.6
2	286	27.8	58	19	228	30.5
3	392	37.3	148	48.5	244	32.7
4	191	18.2	76	24.9	115	15.4
5	41	3.9	6	1.9	35	4.7
6	11	0.05	2	0.6	9	1.2
7	1	0.09	1	0.3	0	0
Total	1052	100%	305	100%	747	100%

Table 3: Commonly prescribed drugs

Types of Drugs	Overall		PHC		CD	
	Number of drugs	%	Number of drugs	%	Number of drugs	%
NSAIDs (Analgesic / Antipyretic)	727	25	211	22.8	517	26.1
Antibiotics	654	22.5	207	22.4	448	22.6
Multivitamins	386	13.3	181	19.5	206	10.4
Antihistaminics	331	11.4	73	7.9	260	13.1
Drugs for GIT	232	8.0	84	9.1	149	7.5
Anti Malarial	123	4.2	56	6.1	67	3.4
Cough syrup / Bronchodilators	122	4.2	29	3.1	94	4.7
Dermatological Prep	78	2.7	17	1.8	61	3.1
Anti Helminthic	33	1.1	12	1.3	22	1.1
Iron Folic Acid	45	1.5	17	1.8	28	1.4
Tetanus Toxoid	45	1.5	8	0.9	38	1.9
Diazepam/Alprazolam	29	0.9	8	0.9	22	1.1
Other drugs e.g. antihypertensive, antidiabetic, etc.	101	3.5	22	2.4	69	3.5
Total	2906	100%	925	100%	1981	100%

Table 4: Prescribing Indicators

Prescribing Indicators	Overall		PHC		CD	
	Number	%	Number	%	Number	%
Drugs prescribed by generic name. [p<0.001]	1409 (N=2906)	48.5	563 (N=925)	60.9	846 (N=1981)	42.7
Drugs prescribed from EDL [p<0.001]	1944 (N=2906)	66.9	691 (N=925)	74.7	1253 (N=1981)	63.3
Prescription with antibiotic [p<0.001]	641 (N=1052)	60.9	206 (N=305)	67.5	435 (N=747)	58.2
Prescription with injection [p>0.05]	143 (N=1052)	13.6	33 (N=305)	10.8	110 (N=747)	14.7

(*p* value between PHC and CD)

Discussion

In the present study the average number of drugs per prescription was 2.8 ± 1.1 in overall situation. The number of drugs per prescription is significantly high in PHCs as compare to CDs (Table 1). Study conducted in Kenya⁵ and Sharjah⁶ reported the same number of drugs prescribed per prescription. Same situation is also reported from Manipal⁷, India. Average number of drugs per prescription was very less in Bangladesh⁸ i.e. 1.44. In our study the condition reflects towards polypharmacy (as per WHO the average number of the drug per prescription should be 1.6 to 1.8)³, this is because the

treatment is based on symptom instead of diagnosis and unavailability of copy of the Standard Treatment Guidelines in health facilities.

Overall the most commonly used drugs in this study were NSAIDs 25%, antibiotics 22.55%, Multivitamins 13.3%, antihistaminics 11.4%, drugs used for gastrointestinal symptom (diarrhoea, vomiting, abdominal pain etc) 8.0%, and other drugs such as Chloroquine, Cough syrup, dermatological preparation, Iron Folic Acid tablets, Tetanus Toxoid and diazepam were used from 1 to 4% (Table 3). In

Uzbekistan⁹ the most commonly prescribed drugs were vitamins i.e. 11% of all prescribed drugs. In Nigeria¹⁰ the Antimalarials, antihypertensive, antidiarrheals, and analgesics were the mostly prescribed drugs. The main reason for overuse of analgesics, antibiotics and multivitamins is that physicians tend to overestimate the severity of illness to justify the analgesic, antibiotic and multivitamins prescribing^{9,18}. They are also under pressure of patients those seeking a rapid symptomatic relief of symptoms. The patient may be disappointed if the doctor is unwilling to prescribe a drug, regardless of its likely efficacy. Adding to this pressure is the competition between physicians, which exacerbates the irrational prescribing pattern^{2,9,18}.

The percentage of drugs prescribed by generic name in overall situation was very low i.e. only 48.5% in our study; in PHCs it was better than CDs (Table IV). The under use of drugs by generic name were also reported from Jordan¹¹ where it was only 5.1%, in Uzbekistan⁹ and Pakistan¹² it was 38%. New Delhi¹³, and Manipal⁷ India also reported the under use of drugs by generic name i.e. 8% and 16% respectively. In Sharjah the ideal condition of drug prescribing by generic name was reported i.e. 100% i.e. because of availability of the copy of the EDL at each PHC⁶. The frequent visit of the MR at health facilities is probable cause of the under use of the drugs by generic name in our study.

The percentage of prescription with an antibiotics prescribed was 60.9% in overall situation. In PHC it was statistically higher as compare to CD. (Table IV). In Bangladesh⁸ and Burkina Faso¹⁴ it was 25%. According to WHO; 15% to 25% prescription with antibiotics is expectable in most of the countries where infectious disease is more prevalent.³ In some developing countries antibiotics prescribed was rather irrational but it was better than our situation, for example in Ethiopia¹⁵ it was 34.4%, in Tanzania¹⁶ it was 35.4% and in Sharjah⁶ it was 45%. In India other researchers reported comparatively better situation, Bapna JS et al¹³ and Karande Sunil et al¹⁷ reported 29.9% and 39.6% prescriptions containing one or more antibiotics respectively. In Nigeria¹⁰ and Pakistan¹² the use of antibiotics was very high i.e. 75% and 78% respectively. The main reason for overuse of antibiotics is the overestimation of the severity of illness to justify antibiotic prescribing by physicians. They are also under pressure from patients, who are seeking a rapid symptomatic relief of disease^{2,10,12,18}.

The percentage of prescription with an injection was 13.5% in overall findings and statistically there was

no difference ($p>0.05$) between both types of health centres (Table IV). Studies conducted in other parts of India reported that the injection practices comparatively lower i.e. 5.2% by Bapna JS et al¹³ and 0.2% by Karande Sunil et al.¹⁷ Some other developing countries also reported the irrational use of injections. In Sharjah⁶ it was 16%, in Tanzania¹⁶ and Ethiopia¹⁵ it was 19%, in Burkina Faso¹⁴ it was 24.6. In Pakistan¹² the percentage of prescription with injection was very high i.e. 73%. There are two main factors that lead to overuse of injections firstly some drugs are supplied more in injection form especially paediatric use of antibiotics and antipyretic / analgesic^{2,17} and secondly some prescribers came under influence of the patients who thought an injection could treat their illness faster as compare to oral medicine^{2,15,16,18}.

The overall Percentage of drugs prescribed from an EDL was 66.9%. In PHCs it was significantly better than CDs but it was far from the rational limit (Table IV). Ideally it should be 100%. In Pakistan¹² 70% of the prescribed drugs were from the EDL. In Bangladesh⁸ and Burkina Faso¹⁴ it was 85% & 88% respectively. In Sharjah⁸ and Nigeria¹⁰ all prescribed drugs were from EDL of their countries. The availability of the copy of the EDL is the main reason for the drugs prescribed from the EDL^{8,9}. The reasons for such wrong practices in our study were inadequate supply of drugs at health centres and unavailability of copy of EDL^{2,8}.

Conclusion

This present study shows the irrational prescribing practices in the primary health care facilities of Madhya Pradesh, India. The basic recommendations to correct these irrational prescribing practices are: Ministry of Health should promote the conduction of Continuing in- Service Medical Education (CME), introductory and promotional workshops for the medical officers of primary health care facilities regarding rational use of drugs; the distribution of manuals of Standard Treatment Guideline and copy of EDL in all PHCs and CDs. The curriculum of MBBS should include the rational use of drugs to inculcate for correct prescribing habits should be conducted. The neglect of social perspective in undergraduate training in developing countries occurs because the basic pattern of medical care is premised on a market economy as in advanced industrialized countries where medical therapy become a commodity sold by an individual doctor to an individual patient. If doctor accept the logic of the market in medical care, they can never conduct their practice on the basis of an understanding of the fundamentally social character of many disease in the

third world. The medical education should focus special emphasis on social and preventive medicine based on real need of the community.

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