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RESEARCH ARTICLE

PHARMACOEPIDEMOLOGY OF PRESCRIBING DRUGS IN TERTAIRY CARE HOSPITAL IN CENTRAL INDIA: REWA, MADHYA PRADESH IN YEARS 2013-14.

PRABHAKAR SINGH[1]; YASMEEN SIDDIQUI[2]; SK MISHRA[3]; KESHAV SINGH[4]; AMBIKA ABHISHEK[1]; ROSHANI SHRIVASTAVA[5]

1.Department of Pharmacology, S.S. Medical College, Rewa, (MP) – 486001.
2.Department of Physiology, S.S. Medical College, Rewa, (MP) – 486001.
3.Department Of Pathology, S.S. Medical College, Rewa, (MP) – 486001.
4.Department Of Medicine, S.S. Medical College, Rewa, (MP) – 486001.
5.Integral Institute Of Medical Science & Research, Lucknow, (UP) – 226026.

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Abstract:
Irrational prescription of drugs is a common occurrence in clinical practice. The aim of study is to assessing the prescription pattern of drugs at the Outpatient Department of tertiary care SGM hospital, central India, Madhya Pradesh. 3587 Prescriptions were randomly collected from OPDs departments and were analyzed according to the WHO/INRUD indicators. Result of this study show that the maximum 43.57% patients attending OPD were belonging to 33-42 age groups, maximum 34.54% prescriptions were belong to department of medicine. Nutritional supplements' (25.83%), NSAIDs (25.43%), Antibiotics (22.19%) and GIT drugs (18.75%) were most common prescribed groups. Maximum (96.88%) drugs were prescribed by generic names. The average no of drugs per prescriptions was 3.11, most (36.71 %) of prescriptions had 4 drugs, injectables used only 8.83%, while fixed dose combinations were used in 33.43% prescriptions. Prescription rationality in this study is poor in terms of polypharmacy, and excessive use of nutritional supplements.

Keywords: Rational/ Irrational Prescriptions, WHO, Polypharmacy

Introduction

The Indian health care delivery system operates at different levels with primary health centers serving mainly the rural population as the first level of contact and the tertiary level offering referral services. Appropriate drugs utilizations are an important skill which needs to be continuously assessed and refined accordingly. It not only reflects physician's knowledge of pharmacology and pathophysiology but also his or her skills in diagnosis and attitude towards selecting the most appropriate cost effective treatment.[1] Irrational prescribing is a global problem. The rationality of prescribing pattern is of utmost importance because bad 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 regimes[2]. A large segment of population needs essential drugs for its health care management.

Recently, health authorities in India have published an exhaustive national essential drug list of 279 items, consisting of 162 universal drugs (24 complimentary agents) and 117 items for secondary health care.[3] The quality of health care particularly the rational use of drugs depends on many activities, such as making the correct diagnosis, prescribing the appropriate drugs in correct doses and dispensing them properly. Reports on drug prescription from a few developing countries including India indicate that the general pattern is of pharmacy, frequent use of vitamins and wrong medications. Inappropriate treatment is also common[4]. In both the developed and the developing countries, medically inappropriate, ineffective and economically inefficient use of drugs commonly occurs in health care facilities[5]. The assessment of drug utilization is important for clinical, educational and economic purposes[6]. Monitoring of prescriptions and drug utilization study could identify the associated problems and provide feed backs to the prescriber so as to create awareness for the rational use of drugs[7] this study was undertaken to identify the present trends of drug utilizations in a tertiary care hospitals of Rewa, district of Central India of Madhya Pradesh. It is also defined to the problem of irrational drug uses and suggests modifications in practitioners' prescribing habits so as to make medical care rational and cost effective.

MATERIAL AND METHODS

The study was carried out in the department of pharmacology, S.S.M.C and & S.G.M.H Rewa over a period of six months between July 2013 to Jan 2014. Prescriptions were randomly collected from the Patients visiting OPDs departments of S.G.M. Hospital. Prescriptions slips were taken in form of Xerox copy from the patients after taking the consent. Prescriptions were analyzed according to the WHO/INRUD indicators for; a) Number of drugs per prescriptions. b) Number of antibiotics per prescriptions. C) Number of drugs prescribed per generic name. d) Number of drugs prescribed from the WHO model list of essential medicines (EML) and, e) most commonly prescribed drug group. F) Demographic and clinical treatment data of patients were also collected from these prescriptions in the following format: 1) Age and sex of patient. 2) Diagnosis of patient. 3) Percentage of AMAs prescribed in the order of preference. 4) Average number of drugs per patient. 5) Dose and routes of AMAs. 6) Rationality. 7) Percentage of AMAs. This study was approved by the Institutional ethical committee (IEC). It was processed and analyzed manually and by computer using appropriate software.

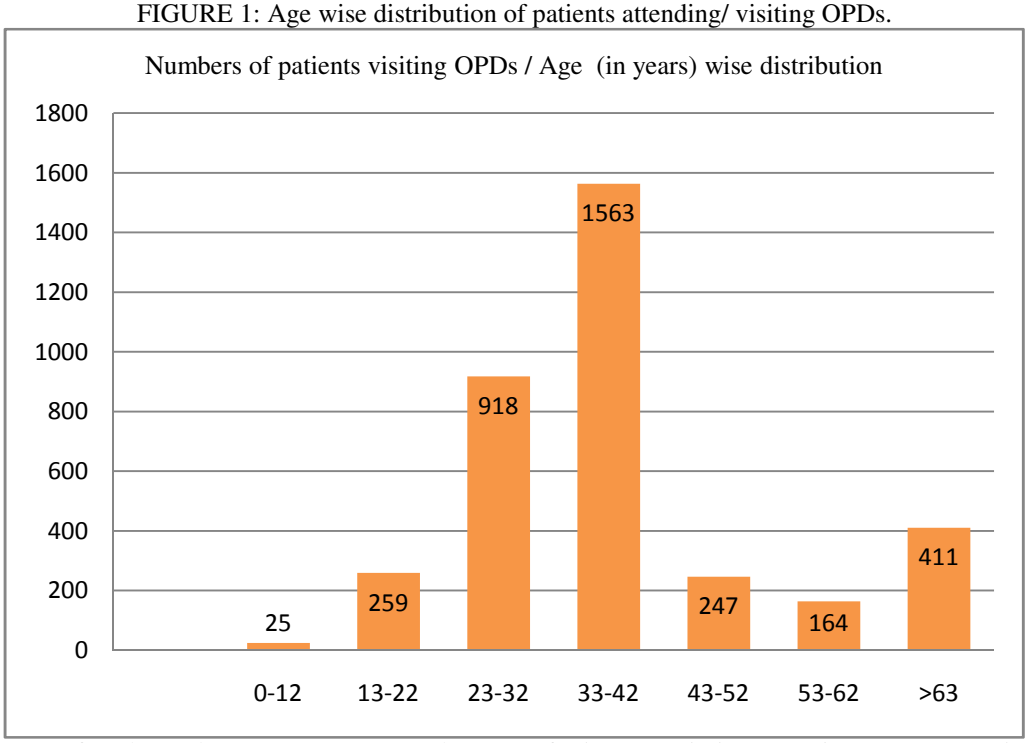
RESULTS:

This study was conducted in the Department Of Pharmacology, SS Medical College, Rewa, (MP) between July-2013 to Jan-2014; during this period 3587 prescriptions were collected and analyzed. In demographic profiles it was found that the maximum 43.57% patients attending OPD were 33-42 age groups, others in decreasing order is as follow 25.59% were 23-32 years; 11.45% were >63 years; 7.22% were 13-22 year age groups, (Fig. 1)

DISCUSSCION

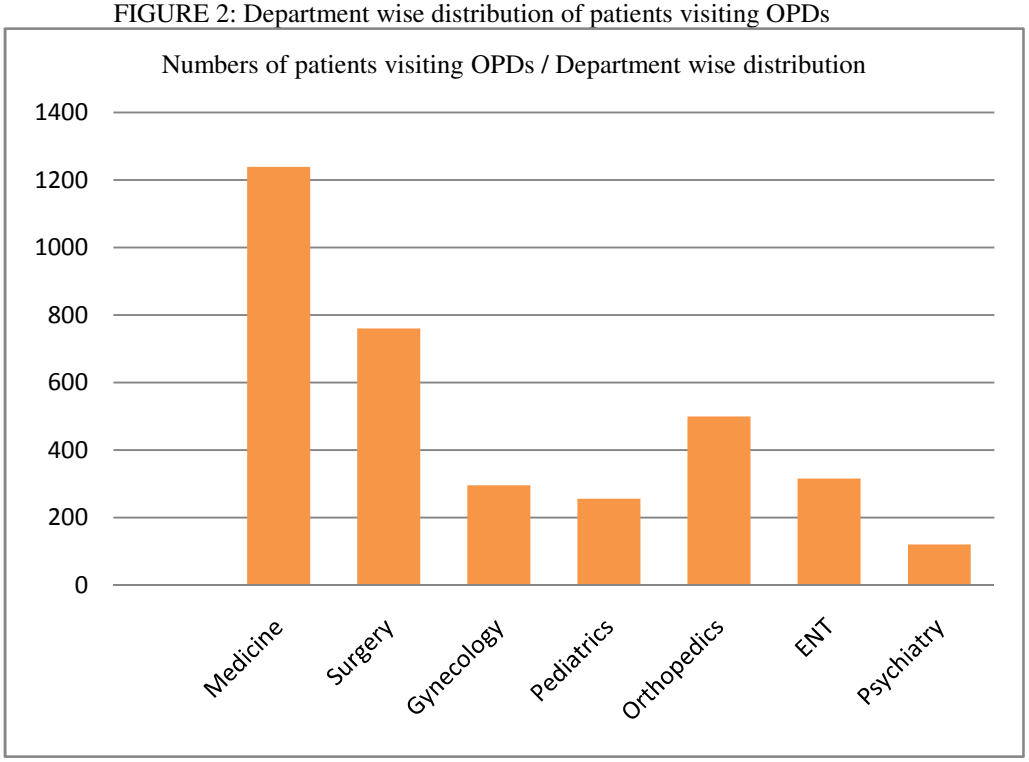
Irrational drug use and inappropriate prescribing by professionals is a worldwide phenomenon. Providing the right medicine to the right people at the right time is a central priority of health care. Rational drug use address problems that have serious consequences for patients if proper treatment is not given which can minimize the misuse of drugs by plan essential drug selection and estimate the drug needs of the community. The age distribution of the patients showed that middle age groups constituted the highest number visited to OPD the region behind this might be because of more conscious about health of this age group and also they represent higher proportion of the population. In this study female patients visit more compare to male, These high number of female visitors were housewife's whose mainly resides in rural areas had unaware about their health and hygiene and less educated so they are more prone to infections. In this study maximum 34.54% prescriptions were belong to Department of medicines, this may reflect to more incidence of infectious disease in this region of India. In our study maximum no of prescriptions had three to five drugs. Polypharmacy ≥2 was evident in majority of prescriptions. It was observed that nutritional supplements constituted the major group of drugs and prescribed most of the prescriptions. In this study average number of drugs per prescription is 3.11.this figure is similar to the study conducted in democratic Yemen[8], Pakistan[9], India[10]and Nigeria[11] where an average no. prescribed drug was 3, 3.1, 3.7 and 3.8 respectively, while other Indian studies conducted in Puna[12] and Banglore[13] were reported 2.8 and 2.71 drugs per prescription respectively. However WHO recommended that average no. of drug per prescription should be 2.0.[14] The variation in result may be due to differences in characteristics of health care delivery system, morbidity and mortality characteristics' in the population. Poly pharmacy tendency was noticeable in several prescriptions in which as many as 7-10 drugs were encountered in single prescriptions. The major drawback of polypharmacies is high risk of drug interactions, reduced patients compliance and high incidence of drug toxicities. Various reasons can account for this deviation from the recommended WHO values. It can be due to unrealistic expectations, quick relief from patients, common practice of irrational drug combinations, unnecessary use of vitamins, and aggressive medicine promotions. The most Common group of drugs prescribed in our study was Nutritional Supplements (multivitamins, minerals & enzymes)

FIGURE 1: Age wise distribution of patients attending/ visiting OPDs.



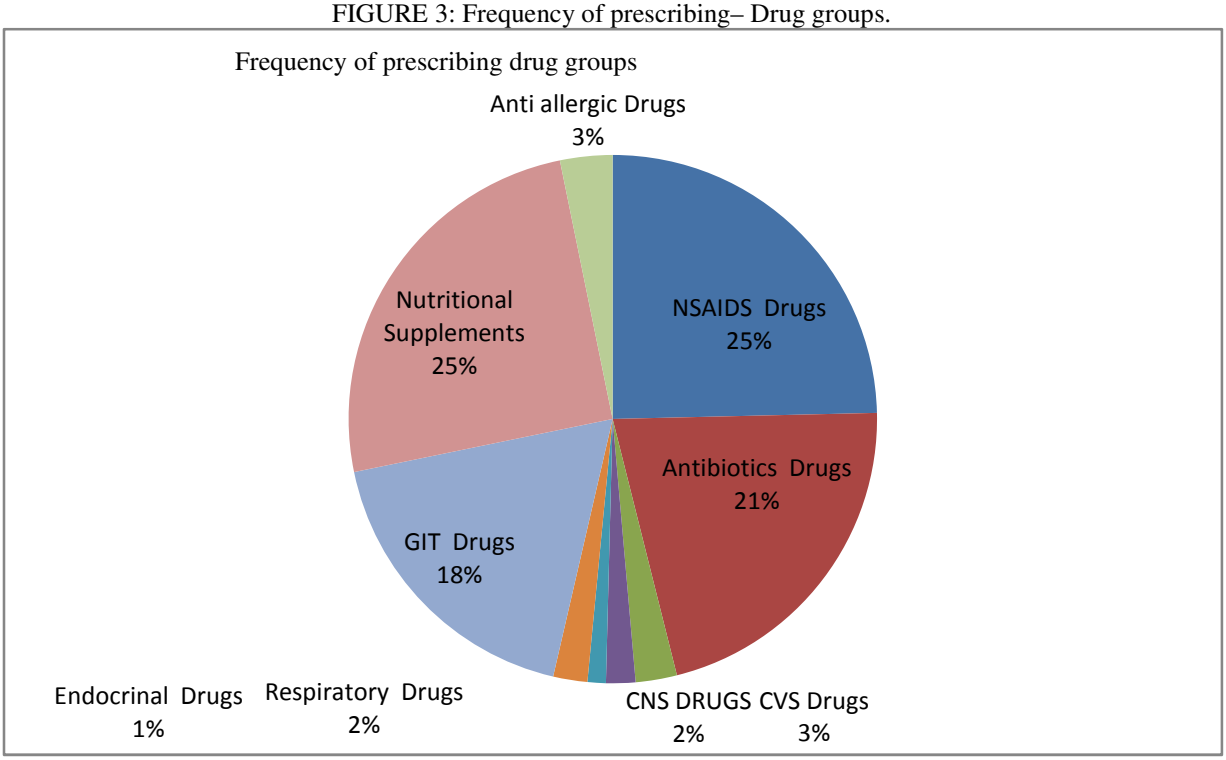
Of these 59.29% were females and rest 40.70% were males. Out of 3587 prescriptions; maximum 1239 (34.54%) patients were belong to department of medicine others are 21.18% were surgery, 13.9% were Orthopedics, 8.8% were ENT, 8.25% were Gynecology, 7.13% were Pediatrics and 3.34% were belong to Psychiatry respectively. (Fig. 2)

FIGURE 2: Department wise distribution of patients visiting OPDs



Frequency of prescribing group of drugs shows that Nutritional supplements' (25.83%), NSAIDs (25.43%), Antibiotics (22.19%) and GIT drugs (18.75%) were most common prescribed groups, while least common prescribed groups were Endocrinal Drugs 1.17%. The CNS, Respiratory, CVS and Anti allergic drugs were prescribed 1.86%, 2.15%, 2.59%, and 3.32% respectively. (Fig 3)

FIGURE 3: Frequency of prescribing– Drug groups.



Total 11,173 drugs were prescribed in 3587 prescriptions, in different prescriptions no of prescribed drugs were varies; it may be in a range from 1 to 10 or more drugs per prescriptions. In this study maximum (96.88%) prescribed drugs were belong to generic class and rest 3.11% were prescribed by branded class, the average no of drugs per prescriptions was 3.11 however in this study maximum no. of prescriptions which were prescribed per prescription were four. Maximum 36.71 % (1317) prescriptions had 4 drugs, 30.61% (1098) prescriptions had 3 drugs, 14.35% (515) had 2 drugs, 6.35% (228) had 5 drugs, 5.85% (210) had 1 drug and only 2.03% (73) prescriptions had 7-10 or more drugs per prescription. (Shown in Table 1)

TABLE 1: Distribution of encounters by type of drugs prescribed.

S. No.	No. of drugs per prescription	No. & % of Prescriptions having No. of drugs	
		Number	Percentage
1	1	210	5.85 %
2	2	515	14.35 %
3	3	1098	30.61 %
4	4	1317	36.71 %
5	5	228	6.35 %
6	6	146	4.07 %
7	7-10	73	2.03 %
	Total	3587	100 %

In OPD most commonly (in 100% prescriptions) prescribed dosage forms were tablet, injectable form used only 8.83%, other forms like Capsules, Syrups and Ointment/Gel/Creams were prescribed 27.51%, 19.23%, and 4.99% respectively. (Shown in Table 2)

TABLE 2: Frequency of prescribing different Doses forms.

S. No.	Doses forms n=3587	No. & % of different Doses forms used	
		Number	Percentage
1	Injections	317	2.83 %
2	Tablets	7117	63.69 %
3	Capsules	1987	17.78 %
4	Syrups	1062	9.48 %
5	Ointment/Gel/Creams	690	6.17 %

Of total prescribed drugs 96.88% drugs were prescribed by their generic names, brand names were used only for 3.11% drugs, and fixed dose combinations were used in 33.43% drugs. (Shown Table in 3)

TABLE 3: Analysis of WHO Prescribing Indicators.

S. No.	**Prescribing Indicators**	Number & Percentage	
		Number	Percentage
1	Total number of prescriptions	3587	-
2	Total number of prescribed drugs	11173	-
3	Average number of drugs per prescription	3.11	-
4	Drugs prescribed under generic names n=11173	10825	96.88 %
5	Drugs prescribed under brand names n=11173	348	3.11 %
6	Fixed dose combinations used n=11173	3843	33.43 %
7	Number of drugs prescribed form EML of India	11173	100 %
8	Number of drugs prescribed form EML of WHO	11173	100 %
9	Number of encounters with an antibiotics prescribed	2484	21.61 %

25.83% followed by NSAIDs 25.43%, antibiotics 22.19%, GIT 18.75 and antihistaminic 3.32 %. This was similar to that of other studies.[15,16,17] Vitamins and minerals, (22.20%), were most frequently prescribed drugs in study conducted by [18]**Kumar Raj and [19]Pati et al.** In our study the rate of generic drugs prescribing was found to be very high (96.88%) which is equal to that reported in study conducted in Cambodia (99.80%)[20] and in the Republic of Iran in which 98% of GPs prescribed by generic name[21]. other studies conducted in India (73.4%)[22,] Brazil (30.6%)[23], Nepal 1(63.5%)[24] and 2 (59.0%),[25] were reported less prescriptions of generic drugs. The studies conducted in Allahabad, and Meerut was showed only 2%[26] and 3.79%[27]generic drugs prescriptions respectively. The factor that may contributed to low proportion of generic drug prescription is the poor promotion, and a belief among prescribers that generic drugs were manufactured from raw materials and had low efficacy and potency. Use of generic names is recommended by WHO and regarded as an important factor for promoting RUD. In this study high generic drugs prescribing rate (96.88%) was due to a dream project of MP Govt '*Sardar Vallabh Bhai Patel Muft Dava Yojana"* by which prescribers were ordered to prescribe drug only by their generic name and ban to prescribing the drugs by brand names The use of generic drugs contributes to cost reduction and provides more alternatives for drug purchases.[28]In our study, we found that only 2.83% of drugs were prescribed in form of injections, this was some less than study conducted at Meerut[27] UP in which only 6.19% injectables were prescribed, and much less compare to study in Yemen[29], and 'in between' AIIMS and Safdarjung hospitals[30] where it was 25-60% 4.44% and 1.40% respectively, but nutritional supplements and specific antibiotic with their dose and duration.

was slightly higher than that in Sri Lanka, where only 1% of the prescribed drugs were injectables[31] Fixed dose combinations in our study were used in 33.43% of prescriptions. This figure is comparatively lower and near same to several Indian studies which reported 75% and 60%, 28.85% and 40.92% usage of FDCs respectively.[32,33,34,27] It may warrant inappropriate use of unwanted drugs which can lead to adverse effects and drug interactions. Use of fixed dose combinations should be discouraged unless strictly necessary.

CONCLUSSION

Prescription auditing gives a clear picture of the prescribing practices in our hospital setting. Our study reveals that despite all the efforts taken by the government and the WHO, the pattern of prescription in terms of completeness and rationality remains poor. There is a need for improvement in the standards of prescription patterns in all aspects, in terms of polypharmacy, absence of the diagnosis, relative absence of the directions about the use of drugs and excessive use of nutritional supplements was evident. to improve the quality of care, it is necessary to change the present prescribing habits as are set by Govt. with the Standard Treatment Guidelines. To reduce the complications of polypharmacy and improve the rational practice we recommend that the prescribers keep the number of medicines to the lowest and prescribe only those that are necessary. This study recommends the prescribers to attend regular continuing medical education, short-term training sessions, including a briefing on proper prescription writing, so as to update their knowledge. They should mention the diagnosis properly within the prescription, and should be careful in prescribing

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