

Drug utilization pattern in medical OPD of Govt. tertiary care teaching hospital with special emphasis on cardiovascular system



Medical Science

KEYWORDS : Prescription auditing, polypharmacy, cardiovascular system

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ABSTRACT

Introduction: Prescription order is an important transaction between the physician and patient. It brings into focus the diagnostic acumen and therapeutic proficiency of the physician with instruction for palliation or restoration of the patient's health. Drug utilization studies are a prerequisite for the formulation of drug policies. These studies give valuable information about drug status to the medical profession, public health administration and society. This is possible only when each and every prescription in the hospital is audited by a prescription auditing team. The principal aim of drug utilization research is to facilitate rational use of drugs in populations.

Aims & Objective: The purpose of present study was to evaluate the drug utilization pattern in medical OPD of Govt. tertiary care teaching hospital with special emphasis on cardiovascular system and incidence of polypharmacy.

Results: Total number of male patients (53.63 %) was slightly more in comparison to female patients (46.36 %) in present study. A number of 988 prescription out of 3000 was found in cardiovascular system (CVS) which is accounted for largest than other system.

Conclusions: Calcium channel blockers were the most frequently prescribed drug group followed by diuretics. Diuretics were also prescribed as a fixed dose combination in a significant frequency but no irrationality was found in their use. In CVS system, a number of 4.05 drugs per prescription were found.

Introduction:

Research in clinical pharmacology has shown that drugs are often not used to their full potential, either in terms of efficacy or safety. [1] Even a therapeutically proved effective drug may be useless if prescribed or employed in an inappropriate manner. [2] Therefore drug utilization research has in many countries come of age and it is playing an impressive role in health policy. WHO, 1985 defined the drug utilization as the marketing, distribution, prescription and use of drugs in society with special emphasis on the resulting medical, social and economic consequences. Drug utilization studies are a prerequisite for the formulation of drug policies. These studies give valuable information about drug status of medical profession, public health administration and society. The development of twin concepts of therapeutic formularies and essential drug lists are the major reason for studying drug utilization. In some areas when one set out to make a selection the base data required on current patterns of drug utilization will be lacking or inadequate and further research will be required.

Aims & Objective: The purpose of present study was to evaluate the prescribing and drug utilization pattern with an objective of studying the total number of prescriptions & their percentage in each system; age, sex and system wise distribution of patients; prescribing prevalence of cardiovascular drugs and incidence of polypharmacy.

Material & method: This drug utilization study was conducted retrospectively by analyzing copies of 3000 prescription in medical outpatient department (OPD) of government tertiary care teaching hospital, Ajmer. Five hundred prescriptions for each of last six months were selected randomly from the available copies of prescription in the medical OPD during last six months. Demographic characteristics such as age, sex & diagnosis were recorded. We analyzed each prescription to study the parameters needed to fulfill the objectives of the study. After collecting such data the results have been expressed in the tabulated form.

Results: Results of the study are shown in table 1 to 6. System wise & age group wise distributions are shown in table- 1 & 2 respectively. We found that total number of male patient (53.63%) was slightly more than the total number of female patient (46.36%). Nine hundred eighty eight prescriptions out of

the total prescriptions belong to cardiovascular system (32.93 %) which accounted for the largest percentage whereas smallest percentage of prescription was found in pyrexia of unknown origin (PUO) system (5.63%). Table- 3 shows the age & sex wise distribution of prescriptions belong to cardiovascular system (CVS). Prescribing prevalence of CVS drugs are shown in table-4. The incidence of polypharmacy overall and in individual system is described in table- 5 & 6 respectively.

Discussion: In present study we found that the male patients were slightly higher in number than female patients. This male: female ratio difference could be due the fact that even now most of our population still lives in rural areas and the woman folk are dependent on the males to take them to the hospital.

As evident from table-4, the total number of cardiovascular drugs was 1812. Calcium channel blockers (CCB) were the most commonly prescribed drug with an overall prescribing frequency of 16.03 % and a prescribing frequency of 26.54 % among CVS drugs. Amlodipine was the most commonly prescribed CCB. This finding correlates the study with Gupta et al. [3] The high prescribing frequency of CCB can be attributed to fact that they are useful in long-term treatment of hypertension and very effective as prophylactic agents in patients with angina of effort. They can also be used in patients with chronic obstructive disease who can't tolerate β -blockers.

Diuretics were the second most commonly prescribed drugs (17.32 %), as diuretics of benzothiadiazine group have proved extremely valuable in the treatment of mild-to-moderate hypertension. Angiotensin converting enzyme inhibitors (ACEI) were the next most commonly prescribed CVS drugs (12.14%) in our study as they are the first line drugs in all grade of hypertension. They reduce early as well as long term mortality in case of myocardial infarction (MI), if there are no contraindications. They also prevent and delay the end stage of renal disease in type I & type II diabetes. β -blockers also account for a large number of prescriptions (10.98%). Although α -blockers too have been included in the list of recommended first line antihypertensive agent in the seventh report of the Joint National Committee on detection, evaluation & treatment of hypertension. We surprisingly did not find any prescription of α -blockers. This could be due the adverse reaction associated with the use of α -blockers (orthostatic hypotension and dizziness have frequently been re-

ported in clinical trials although the incidence has varied from 1% to 75% of patient exposed to the drug [4] and use of other first line drugs are preferred to treat mild-to-moderate hypertension. Denis Xavier et al also found that α -blockers had been prescribed very few patients (0.8 % in cardiology and 2.1 % in the medicine department). [5] Antiplatelet drug- aspirin was prescribed prophylactically in most of the patient with cardiovascular disease. Low frequency of prescribing of lipid lowering drugs could be due to their cost and therefore the emphasis here could be of diet control and exercise.

Since our study has been confined to the medical OPD, here most of the CVS cases were only follow up cases of hypertension and ischemic heart disease.

Incidence of polypharmacy is shown in table- 5 & 6. According to Shrishyla et al, polypharmacy is an important index of the scope for review and educational intervention is prescribing practices. [6] In present study we found the average number of drugs per prescription was 3.37. Average number of drugs per prescription in CVS disorders was 4.05 which are quite higher compared to that in other systems in the study, (Table- 6). Although it has been recommended that not more than two drugs per prescription should be given for fear of drug interaction [7] but the result of our study has a justification that a large number of drugs like antiplatelets and hypolipidaemics etc. have to be prescribed prophylactically for patient with CVS disorder. Srishyla et al took an audit in an Indian hospital setting to find out the incidence of polypharmacy. They reported a mean number of two drugs per prescription. [6] Other hospital based studies in India reported figures of 3 to 5 drugs per prescription. [8] Similarly Kanakambal et al too revealed in a study that average number of drugs per prescription was 3.75. [9] Thus our study regarding polypharmacy in a tertiary teaching hospital is in accordance with Geoge Kutty et al, Kanakambal et al & Uppal et al. [9, 10 & 11]

Conclusion: Our study shows that calcium channel blockers were the most commonly prescribed group of drugs followed by the diuretics for cardiovascular system ailments. Diuretics were also prescribed as a fixed dose combination in a significant frequency but no irrationality was found in their use. In CVS system, a number of 4.05 drugs per prescription found in our study is similar to those found in other studies in India and is justified for the patients of CVS disorders who need a higher number of drugs compared to those with disorder of other systems. However we recommend that periodical prescription audit as well as seminar on the rational use of drugs should be held and medical practitioners should be made aware of any lacunae observed.

Table 1: System wise distribution (n = 3000)

System	Male (%)	Female (%)	Total (%)
CVS	462 46.76	526 53.23	988 2.93
GIT	489 59.27	336 40.72	825 27.50
Respiratory	388 63.19	226 36.08	614 20.46
CNS	164 40.59	240 59.40	404 13.46
PUO	106 62.72	63 37.27	169 5.63
Total	1609 53.63	1391 46.36	3000

Table 2: Age group wise distribution

Age-group	Male Number (%)	Female Number (%)	Total Number (%)
< 16 years	76 2.53	41 1.37	117 3.9

16-25 years	321 10.7	236 7.87	557 18.57
26-35 years	369 12.3	336 11.2	705 23.5
36-45 years	413 13.76	311 10.37	724 24.13
46-55 years	185 6.17	192 6.4	377 12.57
56-65 years	135 4.5	179 5.97	314 10.47
66-75 years	86 2.87	74 2.47	160 5.33
> 75 years	24 0.8	22 0.73	46 1.53
Total	1609 53.63	1391 46.36	3000

Table 3: Age & Sex wise distribution in CVS system

Age-group (years)	Male		Female		Total	
	Number	(%)	Number	(%)	Number	(%)
<16	04	0.40	04	0.40	08	0.80
16-25	22	2.23	24	2.42	46	4.65
26-35	37	3.74	67	6.78	104	10.52
36-45	174	17.61	146	14.78	320	32.39
46-55	78	7.89	97	9.81	175	17.71
56-65	77	7.79	121	12.24	198	20.04
66-75	55	5.57	52	5.26	107	10.82
> 75	15	1.51	15	1.52	30	3.03
Total	462	46.76	526	53.24	988	100

Table 4: Prescribing prevalence of CVS drugs (n= 1812) n = total number of CVS drugs prescribed

Drugs	Total	Prescribing frequency in CVS
Nitrates	163	8.99
Blockers	199	10.98
Losartan	90	4.96
ACE inhibitors	220	12.14
Digitalis	25	1.37
CCBs	481	26.54
Antiplatelets	184	10.15
Anticoagulants	20	1.10
Lipid lowering agents	43	2.37
Clonidine	53	4.02
Diuretics	314	17.32
Single	134	7.39
Combination	180	9.93

Table 5: Overall incidence of polypharmacy- No. of drugs / prescription No. of prescriptions in each system Total no. of drugs

	CVS	Respi.	GIT	CNS + PUO	Total
1	51	24	63	78	216
2	162	103	230	170	665
3	231	226	320	165	942
4	198	176	153	112	639
5	130	58	47	40	275
6	99	17	08	08	132
7	61	05	03	00	69
8	33	01	01	00	35
9	14	01	00	00	15
> 9	09	03	00	00	12
Total	988	614	825	573	3000

Table 6: Incidence of polypharmacy in individual system

System	No. of drugs	No. of prescriptions	No. of drugs/ prescriptions
CVS	4011	988	4.05
Respiratory	2086	614	3.39
GIT	2407	825	2.91
CNS + PUO	1609	573	2.80

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