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Pattern of prevalence of diseases and drug prescription in a rural tertiary care teaching hospital of Bihar, India

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Abstract
Aim: To study the prevalence diseases and pattern of drug utilization.
Materials and Method: An observational, prospective study was carried out in the department of Pharmacology at Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar from April 2019 to Dec 2019. The data was collected from our OPDs. A total of 200 patients were included in the study.
Results: In total 670 medications were prescribed in 200 prescription notes. Demographic profile shows more females (60%) as compared to males (40%). Maximum patients (70%) were from age group of 20 – 60 yrs. Most common dosage form was oral in 76%, topical were prescribed in 13% and injectable were prescribed in 11%. Maximum numbers of prescriptions were written for duration of 4 to 5 days in 38% followed by than 7-10 days in 31%, more than 10 days in 18%, 1 to 3 days in 8% and While in 5% of prescriptions duration of treatment was not written.
Conclusion: In government sector policy should be framed according to felt need and consumption of the highly demand drugs in a given society, so that it lead to decrease unwanted expenditure on expensive drugs.

Keywords: drug prescription, pattern, antibiotics, diseases

1. Introduction
Inappropriate prescription is known all over the world as a major problem of health care delivery [1] It is more even in developing countries where health budgets are small and 30-40% of total health budget is spent on drugs [2] Knowledge of risk perceptions has demonstrated to be vitally important in understanding how individuals and societies manage the risks of daily life. In medicine perceptions of drug risks are probably to influence patients' treatment decisions, their compliance with treatment regimens, their views on the acceptability of adverse reactions and the drugs that cause them, and their attitudes toward government regulation of medications. Understanding perceptions is a prerequisite for designing better communication materials for patients and the general population [3] the drug use process can be separated into four fundamental components, namely: prescribing, dispensing, administration/ uptake and outcome (efficacy/safety) [4].
The evaluation of medication use is vital for clinical, educational and economic purposes.[5] Monitoring of prescriptions and drug utilization study could distinguish the related problems and give feed backs to the prescriber in order to make awareness for the rational use of drugs [6] It is therefore necessary to define the prescribing pattern and target the irrational prescribing habit for sending a remedial message [7] WHO defines drug utilization study as a structured process which is used to assess the quality of drug therapy by engaging in evaluation of data on drug prescribing, dispensing and patient use in a given health care environment, against predetermined, and agreed upon criteria and standards, with special emphasis on the resulting medical, social and economic consequences [8].
Therefore, the present study has been undertaken to observe the prescribing patterns of Antibiotics and the usage of these agents in different types of patients with different types of diseases in Bihar, India.

Material and methods
An observational, prospective study was carried out in the Department of Pharmacology at Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar from April 2019 to Dec 2019. The data was collected from OPDs of our hospital. A total of 200 patients were included in the study.
Methodology
New patients attending the outpatient Department of Medicine, Surgery, Gynecology and Obstetrics, ENT, Dental and others department in our hospitals during the study period were considered for analysis. Follow up visits during the study period were included and were counted as separate visits. Patients visiting the emergency department were not included in the study.
The average number of drugs per prescription, number of drugs prescribed per prescription, most common diagnosis, most commonly prescribed antibiotics, most commonly prescribed groups of drugs, percentage of prescriptions with injectable preparations.

Statistical analysis
The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included

computation of percentages and means.

Results

Table 1: based on demographic parameter

Gender	N=110	%
Male	120	60%
Female	80	40%
Age		
Below 20	34	17
20-40	80	40
40-60	60	30
Above 60	26	13

Table 2: Dosage forms profiles

Dosage	N=200	%
Oral	152	76
Topical	26	13
Injectable	22	11

Table 3: Duration of treatment profile

No. of days	N=200	%
1 to 3 days	16	8
4-5 days	76	38
7-10 days	62	31
More than 10 days	36	18
Not written	10	5

Table 4: Disease profile

Disease	N=200	%
miscellaneous	28	14
musculoskeletal	41	20.5
skin	24	12
CNS	23	11.5
ENT infections	13	6.5
Dental	8	4
GIT system	30	15
Respiratory system	33	16.5

Table 5: Number of drugs prescribed per prescription.

Prescription Containing Number of Drugs	Number of Prescriptions 200	%	Number of Prescriptions 200	Total number of Drugs	Average Number of Drugs Per Prescription
One	10	5	210	670	3.35
Two	30	15	60		
Three	90	45	270		
Four	40	20	160		
Five	16	8	80		
Six	8	4	48		
Seven	6	3	42		

Table 6: Most commonly prescribed groups of drugs.

Groups of drugs	N=670	%
NSAIDs ± Serratiopeptidase	165	24.63
Multivitamins and Minerals	132	19.70
Antibiotics	120	17.91
PPIs and antiemetic	80	11.94
Antihistaminic	42	6.27
Corticosteroids	38	5.67
Nasal decongestant	34	5.07
Anti-fungal	30	4.48
CNS drugs	30	4.48

Table 7: Most commonly prescribed antibiotic

Generic name of Antibiotic	Total Number of antibiotic N=120	Percentage (%)
Amoxicillin + clavulanic	38	31.67
Azithromycin	23	19.17
Doxycycline	18	15
Amoxicillin	8	6.67
Ofloxacin	8	6.67
Co-trimoxazole	8	6.67
Metronidazole	7	5.83
Tobramycin	5	4.17
Other	5	4.17

Discussion

Dosage forms most commonly prescribed were oral (76%), followed by topical (13%) and least were injectables (11%). Injectable use in this study were close to other Indian studies which reported 6.8% and 7% use of injectable respectively [9, 10].

Injectable were least preferred because in OPDs mostly patients are stable. Injectables may be more on the higher side if study was conducted in Emergency Department. Maximum number of prescription was written for duration of 4 to 5 days (38%) which was quite appropriate. Most common drugs prescribed were analgesics (24.63%), multivitamins (19.70%), antibiotics (17.91%) and antiulcer or antiemetic (11.94%). This means that these drugs are frequently needed by the community.Analgesics were most commonly prescribed drugs, may be because of patient's demand as patient may be more concerned for their pain. In our study antibiotics were prescribed in 17.91% of prescriptions, which is much lower than WHO reference value of 20 – 25.4% [11] our figures are even lower than figure shown by studies done in llorin (45%) [12].

Many studies from India also reported of high value between 40 -80% [13] our figures are close to the Nepal study which reported value of 17.5% [14] Antibiotic most commonly prescribed was amoxicillin + clavulanic acid (31.67%).

This combination has good efficacy because of increased spectrum of action and restored efficacy against amoxicillin resistant bacteria that produce β- lactamase.

Azithromycin was prescribed in 19.17%, it has remarkable pharma cokinetic properties and marked tissue distribution and intracellular penetration. Slow release from intracellular sites lead to long half-life and advantage of once a day dosing. Doxycycline was prescribed in 15% patients is a broad spectrum antibiotic, has bacteriostatic activity against Gram +ve and Gram –ve bacteria.

Cotrimoxazole prescribed in 6.67%, it has low level of resistant as compared to either drug alone.Multi-vitamins were prescribed in 19.70% of encounters in this study, which was quite low than other study in which 62.9% prescriptions having multi- vitamins [10] Multi-vitamins are mostly placebo, there use must be limited.

Conclusion

By conducting study on prevalence of diseases and drug utilization studies, hospital management and health department should make policies based on local community requirement and prescribers are also encouraged to prescribe accordingly. It helps to decrease burden on costly drugs.

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