RESEARCH ARTICLE

A COMPARATIVE DRUG UTILIZATION STUDY OF DEPRESSION PATIENTS BETWEEN TERTIARY CARE TEACHING HOSPITAL AND PRIVATE PRACTITIONERS OF DEHRADUN CITY, UTTARAKHAND

[1]Dr. Shaktibala Dutta, [2]Dr. Vijay Kaul, [3*]Dr. Mirza Atif Beg, [4]Dr. Nand Kishore Singh, [5]Dr. Srihari Dutta, [6]Dr. Shalu Bawa, [7]Dr. Mohammad Anjoom, [8]Dr. Saubhagya Sindhu, [9]Dr. Ankita Negi

[1]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

[2]Department of Psychiatry, Nepalganj Medical College, Nepal

[3]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

[4]Department of Psychiatry, SGRRIM&HS, Patel Nagar, Dehradun, India

[5]Immunization Health Specialist, Unicef, New Delhi, India Country Office India.

[6]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

[7]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

[8]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

[9]Department of Pharmacology, SGRRIM&HS, Patel Nagar, Dehradun, India

*Corresponding Author's Email: mabeg1997@gmail.com

ABSTRACT

Background: Drug utilization studies are beneficial in clinical practice for rational prescribing, as there is continuous proliferation of new drugs and the increasing recognition of their delayed adverse effects. Depression is an important global public health problem thus making such studies a must for minimizing the medication errors.

Aim and objectives: Present study audits the prescribing pattern of psychiatric private practitioners (PPs) vs psychiatric practitioners of tertiary care teaching hospital (TCTH) at Dehradun, Uttarakhand.

Materials and methods: A total of 371 prescriptions were analysed, 196 were collected from PPs and 175 from TCTH at Dehradun. They were analysed using WHO drug use indicators and National List of Essential Medicines (NLEM-2013).

Results: Anxiolytics 150(25.25%) were most commonly prescribed by the PPs followed by antidepressants 120(20.20%) and antipsychotics 111(18.48%), whereas antidepressants 105 (27.78%) was the major drug group prescribed by TCTH followed by anxiolytics 102(26.98%) and antipsychotics 37(9.79%). Tricyclic antidepressants(TCAs) were most frequently prescribed antidepressants followed by selective serotonin reuptake inhibitors(SSRIs) at TCTH whereas SSRIs were the major antidepressants prescribed by PPs. Anxiolytics and anticholinergics co-prescription with antidepressants and antipsychotics respectively, was a common observation among PPs and TCTH. Analysis of prescription revealed average number of drugs prescribed per prescription in teaching hospital is 2.16 vs 3.03 among the private practitioners. 18.25% Fixed drug combinations(FDCs) were prescribed by TCTH while 0% were prescribed by PPs. 55.39% and 55.56% drugs were prescribed from the NLEM-2013 by the PPs and the TCTH respectively.

Conclusion: There were lesser number of drugs prescribed per prescription and more frequent use of drug combinations at TCTH while no drug combinations and greater number of drugs per prescription were prescribed by PPs. Newer class of drugs were more frequently prescribed by PPs.

Key words: Drug utilization studies, antidepressants, antipsychotics, anxiolytics, Fixed drug combinations.

INTRODUCTION

The World Health Organisation (WHO) defines drug utilization as the marketing, distribution, prescription and the use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences [1]. Rational drug prescribing is the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost [2]. Irrational prescribing and disparity between the prescription and the consumption of medicines may offset the benefits. The recent proliferation of new

drugs and the increasing recognition of delayed adverse effects have stimulated interest in the prescribing patterns of physicians. Depression is an important global public health problem and is a major cause of disability and premature death [3]. With the advancement of new drug research and better research outcome, psychotropic drug prescribing patterns have changed globally over the last few years and limited data is available explaining the drug utilization pattern and awareness among the psychiatric practitioners. Therefore the objective of the present study was to observe the prescribing pattern of drugs among psychiatrists and to compare the drug utilization pattern between a tertiary care teaching hospital and private psychiatric practitioners at Dehradun, Uttarakhand.

MATERIALS AND METHOD

Prescriptions were collected randomly from private psychiatric practitioners (PPs) as well as a Tertiary Care Teaching Hospital (TCTH) at Dehradun. Prescriptions were collected from the OPD during first two hours while patients were making their visits. Prescriptions were entered in a preformed proforma and were analysed on the basis of WHO drug use indicators and National List of Essential Medicines (NLEM-2013).

RESULT

A total number of 371 prescriptions were analysed, of which 196 were from PPs and 175 from TCTH. The mean age of patients from TCTH was 38.22±1.03 years while that from PPs was 40.41±1.34 years. Out of total 196 patients from PPs, 106 (54.08%) were females and 90 (45.92%) were males. Out of total 175 patients from TCTH, 99 (56.57%) were females and 76 (43.43%) were males. Majority of patients were married (76%, 52.04%) and were housewives (45.14%, 28.06%) in TCTH and PPs data respectively (Table 1).

Table 1: Comparison of Demographic profile

Parameters	TCTH (n=175)	PPs (n=196)
Mean age	38.22±1.03	40.41±1.34
Age in years		
<18	4 (2.29%)	15 (7.65%)
18-30	49 (28.0%)	49 (25.0%)
31-50	93 (53.14%)	79 (40.31%)
51-70	24 (13.71%)	46 (23.47%)
>70	5 (2.86%)	7 (3.57%)
Female:Male	1.30:1	1.17:1
Married:Unmarried	3.17:1	1.58:1
Occupation		
Housewife	79 (45.14%)	55 (28.06%)
Government job	15 (8.57%)	38 (19.39%)
Businessman	39 (22.29%)	42 (21.43%)
Student	27 (15.43%)	33 (16.84%)
Retired	5 (2.86%)	10 (5.10%)
Unemployed	10 (5.71%)	18 (9.18%)

Table 2: Drug prescribing pattern

Drug group	TCTH (n=378)	PPs (n=594)
Antianxiety	102 (26.98%)	150 (25.25%)
Antidepressants	105 (27.78%)	120(20.20%)
Antipsychotics	37 (9.79%)	111 (18.48%)
Antiepileptic	30 (7.94%)	92 (15.39%)
Anticholinergics	11 (2.91%)	6 (1.01%)
Others	93 (24.60%)	118 (19.67%)

Among the different categories of drugs prescribed, anxiolytics 150 (25.25%) were most commonly prescribed drug group by the PPs followed by antidepressants 120(20.20%) and antipsychotics 111 (18.48%), whereas antidepressants 105 (27.78%) was the major drug group prescribed by TCTH followed by anxiolytics 102 (26.98%) and antipsychotics 37 (9.79%) (Table 2).

Among 120 antidepressants prescribed by PPs, Venlafaxine 37 (30.83%) was the most common one, followed by mirtazapine 30 (25%), fluoxetine 21 (17.5%), escitalopram 19 (15.83%), paroxetine 8 (6.67%), duloxetine 3 (2.5%) and fluvoxamine 2 (1.67%). Among 105 antidepressants prescribed by TCTH, Amitriptyline 26 (24.76%) constituted major group followed by Escitalopram 24 (22.86%), venlafaxine 20 (19.04%), fluoxetine 12 (11.43%), nortryptyline 7 (6.67%), duloxetine 7 (6.67%) and others (Paroxetine, Fluvoxamine, Mirtazapine) (Table 3).

Out of total 150 anxiolytics prescribed by PPs, alprazolam 89 (59.33%) was most common drug prescribed followed by lorazepam 24 (16%), zolpidem 22 (14.67%) and others (Propranolol, Clonazepam, Etiozolam, Ramelteon, Diazepam). Among 102 anxiolytics prescribed by TCTH, propranolol 44 (43.14%) was most commonly prescribed followed by diazepam 35 (34.31%), clonazepam 18 (17.65%), lorazepam 4 (3.92%) and etiozolam 1 (0.98%) (Table 4).

Table 3: Most commonly prescribed anti-depressant drugs

Drugs	TCTH(n=105)	PPs(n=120)
Fluoxetine	12 (11.43%)	21 (17.5%)
Amitriptyline	26 (24.76%)	-
Escitalopram	24 (22.86%)	19 (15.83%)
Paroxetine	1 (0.95%)	8 (6.67%)
Fluvoxamine	3 (2.86%)	2 (1.67%)
Nortryptyline	7 (6.67%)	-
Venlafaxine	20 (19.04%)	37 (30.83%)
Duloxetine	7 (6.67%)	3 (2.5%)
Mirtazapine	5 (4.76%)	30 (25%)

Table 4: Prescribing trend of anti-anxiety drugs

Drugs	TCTH(n=102)	PPs(n=150)
Alprazolam	-	89 (59.33%)
Lorazepam	4 (3.92%)	24 (16%)
Zolpidem	-	22 (14.67%)
Propranolol	44 (43.14%)	5 (3.33%)
Clonazepam	18 (17.65%)	5 (3.33%)
Etiozolam	1 (0.98%)	2 (1.33%)
Ramelteon	-	2 (1.33%)
Diazepam	35 (34.31%)	1 (0.68%)

111 antipsychotics were prescribed by PPs compared to 37 prescribed by TCTH. Olanzapine 47 (42.34%) was most commonly prescribed followed by Risperidone 27 (24.32%), Haloperidol 14 (12.61%), Aripiprazole 11 (9.91%), Quetiapine 7 (6.31%), Trifluoperazine 3 (2.71%) and Amisulpiride 2 (1.80%). Among 37 antipsychotics prescribed by TCTH, Risperidone 20 (54.05%) was the most common drug prescribed followed by olanzapine 10 (27.03%), Levosulpiride 4 (10.81%), Amisulpiride 2 (5.41%) and Quetiapine 1 (2.70%) (Table 5).

Table 5: Prescribing trend of antipsychotics

Drugs	TCTH(n=37)	PPs(n=111)
Olanzapine	10 (27.03%)	47 (42.34%)
Risperidone	20 (54.05%)	27 (24.32%)
Aripiprazole	-	11 (9.91%)
Quetiapine	1 (2.70%)	7 (6.31%)
Amisulpiride	2 (5.41%)	2 (1.80%)
Levosulpiride	4 (10.81%)	-
Haloperidol	-	14 (12.61%)
Trifluoperazine	-	3 (2.71%)

Among the antiepileptics/mood stabilizers prescribed, 92 were prescribed by PPs of which which, Divalproex sodium 41 (44.37%), Lamotrigine 26 (28.26%) and Lithium Carbonate 12 (13.04%) were frequently prescribed, while, a total of 30 drugs were prescribed by TCTH of which Divalproex sodium 25 (83.33%), Pregabalin 3 (10%), Lamotrigine 1 (3.33%), and Topiramate 1 (3.33%), were commonly prescribed (Table 6).

Table 6: Prescribing trend of antiepileptics/mood stabilizers

Drugs	TCTH(n=30)	PPs(n=92)
Divalproex sodium	25 (83.33%)	41 (44.37%)
Pregabalin	3 (10.0%)	-
Lamotrigine	1 (3.33%)	26 (28.26%)
Lithium Carbonate	-	12 (13.04%)
Levetiracetam	-	6 (6.32%)
Oxcarbazepine	-	6 (6.32%)
Topiramate	1 (3.33%)	1 (1.69%)

The average number of drugs prescribed per prescription by PPs was 3.03, while that by TCTH was 2.16. 100% drugs were prescribed by brand names. 18.25% Fixed drug combinations (FDCs) were prescribed by TCTH while 0% were prescribed by PPs. 55.39% and 55.56% drugs were prescribed from the NLEM-2013 by the PPs and the TCTH respectively (Table 8).

Table 7: Most commonly prescribed drugs

Drug group	TCTH (n=378)	PPs (n=594)
Antianxiety	Propranolol	Alprazolam
	Diazepam	Lorazepam
Antidepressants	Amitriptyline	Venlafaxine
	Escitalopram	Mirtazapine
	Venlafaxine	Fluoxetine
Antipsychotics	Risperidone	Olanzapine
	Olanzapine	Risperidone
	Levosulpiride	Haloperidol
Antiepileptic	Divalproex sodium	Divalproex sodium
	Pregabalin	Lamotrigine
Anticholinergics	Trihexiphenidyl	Trihexiphenidyl
Others	Multivitamins	Calcium salts
	Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)	Multivitamins

Table 8: WHO recommended prescribing indicators

Parameters	TCTH	PPs
Average number of drugs/prescription	2.16	3.03
Percentage of the drugs prescribed by generic name	0%	0%
Percentage of fixed drug combinations (FDCs)	18.25%	0%
Percentage of the drugs prescribed from NLEM 2013	55.56%	55.39%

DISCUSSION

Depression is an important global public health problem and is a major cause of disability and premature death [3]. Drug utilization studies are pointers to prescribing behaviour of clinicians and help in improving it. A prescription therefore may be taken as a reflection of the physician's attitude, whether a private practitioner or working in a tertiary care teaching hospital, towards the disease and the role of the drug in its treatment providing an insight into the nature of the health care delivery system.

Out of total of 371 prescriptions analysed, 196 from PPs and 175 from TCTH, female patients formed the majority and is consistent with studies by Grover et al and Avanthi et al [4, 5]. Majority of patients in both TCTH and PPs, were in the age group range of 30-51 years in both sexes, which is similar to studies by Dutta et al and Trivedi et al [6, 7]. Depression was common among housewives in both TCTH and PPs and is comparable to previous study [5].

Among the different categories of drugs prescribed at TCTH and by PPs, anxiolytics, anti-depressants and antipsychotics were the most commonly drug groups prescribed which is consistent with previous studies [4, 7]. Out of total antidepressants prescribed by PPs, SSRIs (Selective Serotonin Reuptake Inhibitors) were the most common followed by SNRIs (Serotonin Norepinephrine Reuptake Inhibitors) and atypical antidepressants whereas TCAs (Tricyclic Antidepressants) in addition to the above groups were prescribed at TCTH. The prescribing pattern of antidepressants is consistent with previous studies [8, 9]. This difference in prescribing pattern was observed probably due to the fact that patients visiting TCTH were from middle to lower socioeconomic class and the TCAs are relatively cheaper compared to SSRIs. Better tolerability, combined with their mild adverse effects, accounts for the popularity of SSRIs as the most widely prescribed anti-depressants [5, 10]. Current treatment guidelines mostly recommend use of SSRIs as the first line agents in patients of depression [11].

Anxiety symptoms are co-morbid with depression and benzodiazepines, among anxiolytics, were most commonly prescribed at TCTH and by PPs, consistent with previous studies [4, 7]. Newer non-benzodiazepines drugs, Zolpidem and Ramelteon were prescribed by PPs depicting the increase in awareness and the readiness, to use new drugs, among the psychiatric PPs. Another reason for higher rate of prescription of benzodiazepine by PPs, could be anticipated worsening of anxiety which is commonly seen with the use of SSRIs.

Atypical antipsychotics were frequently prescribed compared to the typical or classical antipsychotics at TCTH and by PPs, consistent with previous studies [6, 7, 9, 12]. Atypical antipsychotics are now rated as first line agents since they have low propensity to cause extra-pyramidal side effects, efficacy against refractory cases, better tolerance, low relapse rate, and safer adverse effect profile [12]. Trihexyphenidyl was the most common anticholinergic prescribed both at TCTH and by PPs, similar to previous studies [6, 8, 9]. Similar observation was observed in a study by Ren et al. where when anticholinergic agents were used concomitantly with atypical antipsychotics; patients tend to stay on target drug significantly longer than those who did not use any anticholinergic agents [13].

The average number of drugs per prescription is important in psychiatry as polypharmacy and misuse of psychotherapeutic drugs is common [5]. The average number of drugs per prescription prescribed by PPs was 3.03 while at TCTH was 2.16, comparable to studies by Lahon et al and Memon et al where 2.32 and 2.72 drugs were prescribed per prescription respectively [2, 14]. Although irrational polypharmacy occurs too frequently but in many instances it is necessary to manage the patient with multiple medications and that makes rational polypharmacy. No FDCs were prescribed by PPs but 18.25% FDCs were prescribed at TCTH, which can be compared to previous studies, in one wherein no FDCs were prescribed while in other 91% FDCs were prescribed [2, 5]. Almost equal number of drugs was prescribed from the NEML-2013, 55.39% and 55.56% by PPs and at TCTH respectively, which is higher compared to previous study [2]. 100% drugs were prescribed by their brand names by both PPs and at TCTH, which is not in accordance with the WHO guidelines, as rational prescribing requires generic prescription, suggesting popularity of brands and influence of pharmaceutical companies amongst the psychiatrists.

CONCLUSION

Studying and analysing the prescription patterns seeks to monitor, evaluate and help the physicians in understanding how the available drugs can be best put to use practically. They suggest, if necessary, modifications in prescribing patterns so as to make medical care rational and our study was a step in that direction. In the present study, it was difficult to come to a specific conclusion on rational prescribing in the prescriptions collected from the PPs and TCTH. There were lesser number of drugs prescribed per prescription and more frequent use of drug combinations at TCTH while no drug combinations and greater number of drugs per prescription were prescribed by PPs. Newer class of drugs were being increasingly prescribed by PPs, SSRIs as antidepressants and non-benzodiazepine anxiolytics, zolpidem and ramelteon. This study may help to identify the problems involved in therapeutic decision making, among the psychiatric practitioners based on which future research studies could be contemplated to promote rational prescribing.

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