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EVALUATION OF PRESCRIPTION PATTERN OF INPATIENTS WITH NEUROLOGICAL DISORDERS IN A TERTIARY CARE HOSPITAL

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INTRODUCTION

Neurological disorders constitute a multifaceted spectrum of conditions affecting the nervous system, encompassing the brain, spinal cord, and peripheral nerves. These disorders present a significant challenge for healthcare professionals due to their intricate nature, varying symptomatology, and the profound impact they can have on the overall well-being of individuals. Conditions such as Alzheimer's disease, epilepsy, stroke, and Parkinson's disease are just a few examples that fall under the umbrella of neurological disorders.

The intricacy of neurological disorders necessitates a nuanced approach to their diagnosis and management. Unlike some medical conditions with well-defined and straightforward treatment plans, neurological disorders often demand a more tailored and patient-specific intervention. The diverse manifestations of these disorders, ranging from cognitive impairments to motor dysfunctions, highlight the need for healthcare professionals to adopt a holistic perspective in developing treatment strategies.

AIM AND OBJECTIVES

AIM

To monitor the Irrational prescribing practice of drugs against neurological disorders and to develop Prescription pattern monitoring practice which serves as a tool for assessing the prescribing, dispensing and distribution practices of drugs against neurological disorders which facilitates rational use and assess the effectiveness in promoting rational use of drugs.

OBJECTIVES

To highlight the prescription practice of drugs against neurological disorders of inpatient department. On the basis of prepared questionnaires, to collected data from the patients.

Our points of interest are
- Age of the patients,
- Number of drugs per prescription,
- Number of drugs prescribed by generic name,
- Number of drugs from EDL (Essential Drug List)
- Diagnosis,
- Consulting time per patient,
- Dispensing time per patient,
- Number of drugs dispensed per prescription,
- Number of labeled drugs per dispensed drugs,
- Number of patients having correct knowledge of dose,
- Number of patients asking for follow-up
- Number of patients asked for duration of illness, past history or drugs history,
- Number of patients satisfied or dissatisfied with the health facility,
- Number of patients getting dosing instruction,
- Number of patients advised for investigation,
- About patient hearing, was it adequate or fair or little.

METHODOLOGY

Study design

This study was designed as a case-control study. Typically include only individuals with a specific characteristic, with a sample, often a tiny minority, of the rest of the population. Cross-sectional studies are descriptive studies. Unlike case-control studies, they can be used to describe, not only the odds ratio, but also absolute risks and relative risks from prevalences.

OBSERVATION

Total number of Prescriptions were studied 180, the gender (Male: Female) ratio was 1.52:1. Out of total 180 patients, 119 (66.11 %) were males whereas 61 (33.88 %) were females. No significant difference was observed according to age and sex. Cases were less in 21-40 years of age group in both the sex. (9% in males and 8 % in females) upgraded by 41 to 60 years of age group (32% in males and 30% in females) highest were in 0 to 20 years and > 80 years of age group. Out of 180 prescriptions analyzed, 58 (31.66 %) prescriptions were

of patients below 20 years of age. The number of patients belongs to > 80 years of age group (47.77%).

METHOD OF ANALYSIS

Data obtained from case record form will be presented as
i. Percentage of study participants receiving drugs against neurological disorders as monotherapy.
ii. Percentage of study participants receiving drugs against neurological disorders as combination therapy.
iii. Percentage of participants receiving different classes of drugs against neurological disorders.

For study of rationality status of prescriptions, a maximum of 3 points score system was assigned as follows:
• Main drug – 2 points
• Complementary drug – 1 Points

The most cases observed in our study were among the following neurological disorders,

- *Alzheimer's Disease (Memory Disorders),*
- *Epilepsy,*
- *Stroke,*
- *Parkinson's Disease.*

RESULTS

Various major finding and parameters regarding prescription patterns are demonstrated in tables and respective graphs below.

Age Distribution of Patients

It was seen that all patients regardless the age limit all are the common victims of semi-rational prescription of drugs. However, all age groups are at risk. 33% of the total patients less than 4 years of age, and the percentage of the patients are less than of age range of 35 years, who are most prone to drug abuse.

Total number of Prescriptions were studied 180, the gender (Male: Female) ratio was 1.52:1. Out of total 180 patients, 119 (66.11 %) were males whereas 61 (33.88 %) were females. No significant difference was observed according to age and sex. Cases were less in 21-40 years of age group in both the sex (10%)18. upgraded by 41 to 60 years of age group 26(14%), highest were in 0 to 20 years and > 80 years of age group. Out of 180 prescriptions analyzed, 50 (27.77 %) prescriptions were of patients below 20 years of age. The number of patients belongs to > 80 years of age group were 86 (47.77%).

Overall % of prescription for neurological disorders

Table 1: Percentage of prescription for neurological disorders.

Alzheimer's Disease	**34.23% - 62**
Epilepsy	37.43% - 67
Stroke	14.12% - 26
Parkinson's Disease	14.11%- 25

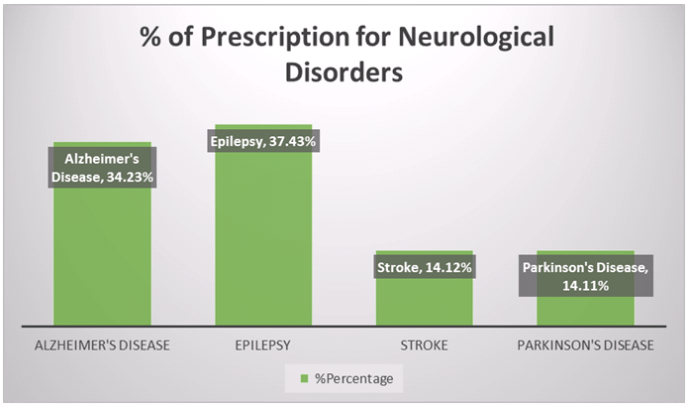

Figure 1: Percentage Age distribution of patient.

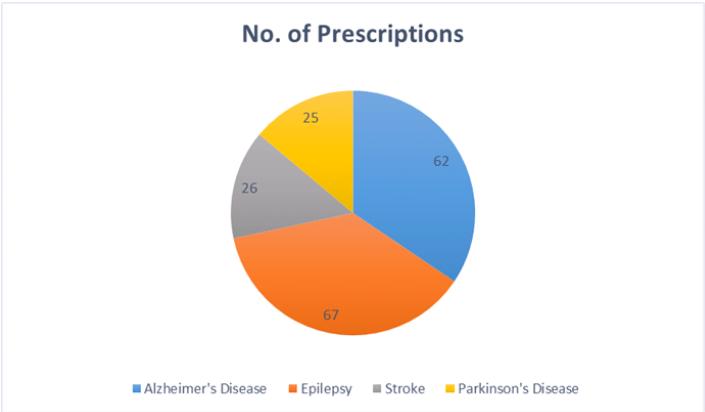

Figure 2: No. of Prescriptions pattern by neurological disorders group.

Table 2: Multiple neurological disorder's prescription pattern by age group.

Neurological Disorders	below 20 years of age	21 - 40 years of age	41 to 60 years of age	> 80 years of age
Alzheimer's Disease	-	-	20%(12)	80% (50)
Epilepsy	53%(36)	-	2%(1)	45%(30)
Stroke	23.07% (6)	34.61% (9)	30.76% (8)	11.53% (3)
Parkinson's Disease	32% (8)	36% (9)	24% (6)	8% (2)
N=180	27.77% (50)	10% (18)	14.44% (26)	47.77% (86)

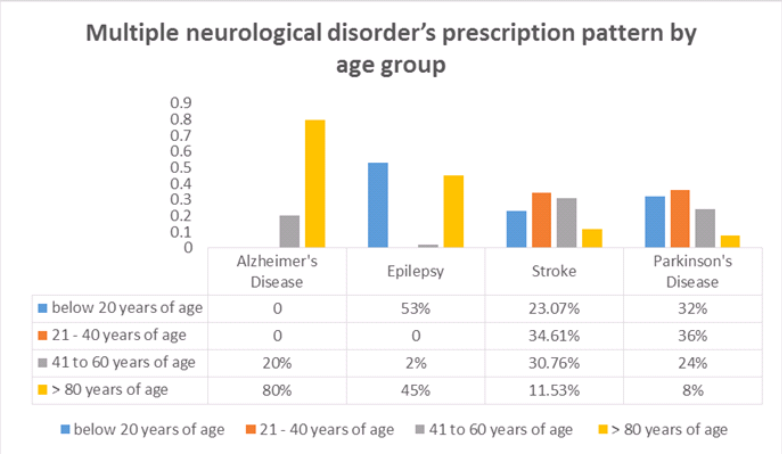

Figure 3: Multiple neurological disorders' prescription pattern by age group.

For study of rationality status of prescriptions, a maximum of 3 points score system was assigned as follows

- Main drug – 2 points
- Complementary drug – 1 points

The total points less than or equal to 15 points of a particular prescription, if observed then it is said to be considered as semi-rational.

Table 3: Prescription pattern for rational use of drugs against Alzheimer's Disease.

Alzheimer's Disease (62 Prescriptions)		Repeat prescription within 1–2 days		Repeat prescription within 3–10 days		Points Scored
Prescribed Drugs	**Prescriptions**	**(%)**	**Adj.**	**(%)**	**Adj.**	**Total**
Donepezil*	17(27.83%)	35.29	6	64.70	11	34
Rivastigmine*	28(45.22%)	32.14	9	67.85	19	56
Galantamine	10(16.12%)	70	7	30	3	10
Memantine	7(10.88%)	42.85	3	57.14	4	7
*Note: **Main Drug, 45 prescriptions are rational and 17 prescriptions are semi - rational*						

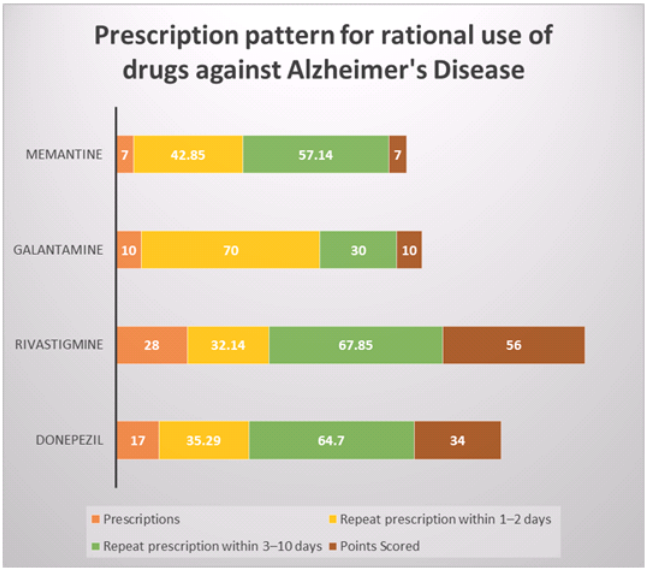

Figure 4: Percentage Prescription pattern for rational use of drugs against Alzheimer's Disease.

Table 4: Number of Drugs prescribed per Case against Alzheimer's disease.

Alzheimer's Disease		
	No. of case	**Percentage % of drug prescribed**
No drugs	-	-
One drug	6	9.67%
Two drugs	38	61.29%
Three drugs	10	16.12%
Four drugs	7	11.29%
More than five drugs	-	-

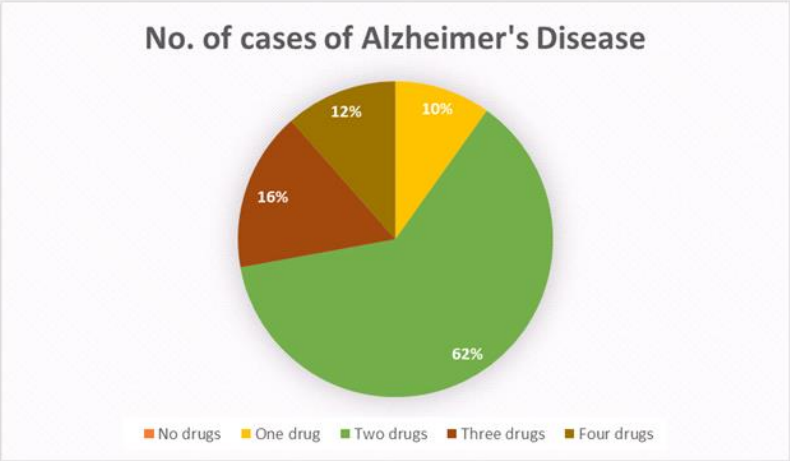

Figure 5: Number of Drugs prescribed per Case against Alzheimer's disease.

Table 5: Prescription pattern for rational use of Antiepileptic drugs.

Antiepileptic drugs (67 Prescriptions)		**Repeat prescription within 1–2 days**		**Repeat prescription within 3–10 days**		**Points Scored**
Prescribed Drugs	**Prescriptions**	**(%)**	**Adj.**	**(%)**	**Adj.**	**Total**
Sodium valproate*	29(42.65%)	44.82	13	55.17	16	58
Phenytoin *	19(27%)	89.47	17	10.52	2	38
Phenobarbitone	15(22.8%)	46.66	7	53.33	8	15
Clobazam	4(6.37%)	75	3	25	1	4
*Note: **Main Drug, 48 prescriptions are rational and 19 prescriptions are semi - rational*						

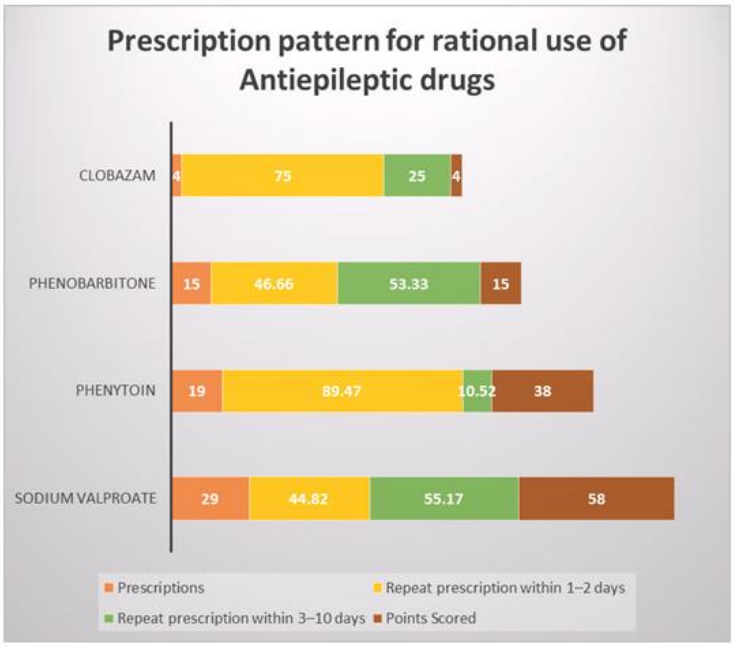

Figure 6: Percentage Prescription pattern for rational use of Antiepileptic drugs.

Table 6: Number of Antiepileptic drugs prescribed per Case.

Antiepileptic drugs		
	No. of case	**Percentage % of drug prescribed**
No drugs	-	-
One drug	37	55.22%
Two drugs	22	32.83%
Three drugs	8	11.94%
Four drugs	-	-
More than five drugs	-	-

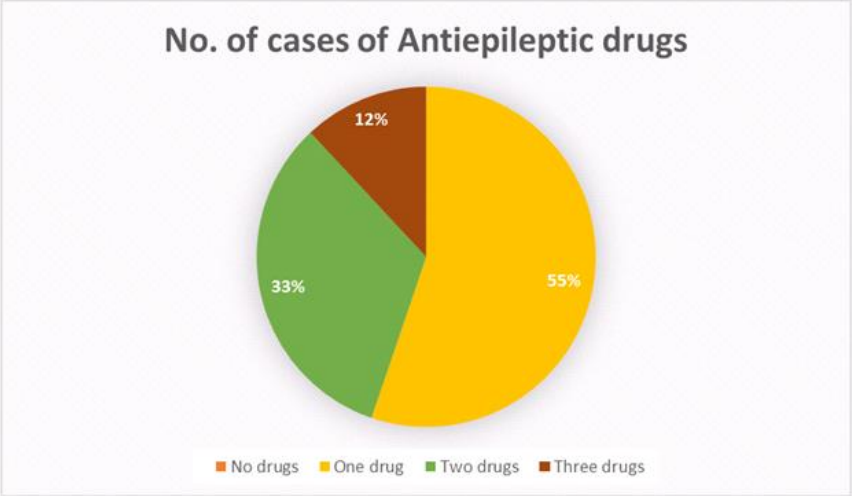

Figure 7: Number of Antiepileptic drugs prescribed per Case.

Table 7: Prescription pattern for rational use of drugs against Stroke.

Stroke (26 Prescriptions)		Repeat prescription within 1–2 days		Repeat prescription within 3–10 days		Points Scored
Prescribed Drugs	**Prescriptions**	**(%)**	**Adj.**	**(%)**	**Adj.**	**Total**
Aspirin*	19(73.20%)	68.42	13	31.57	6	38
Heparin	5(11%)	60	3	40	2	5
Warfarin	2(6.23 %)	100	2	0	0	2
*Note: *Main Drug, 19 prescriptions are rational and 7 prescriptions are semi - rational*						

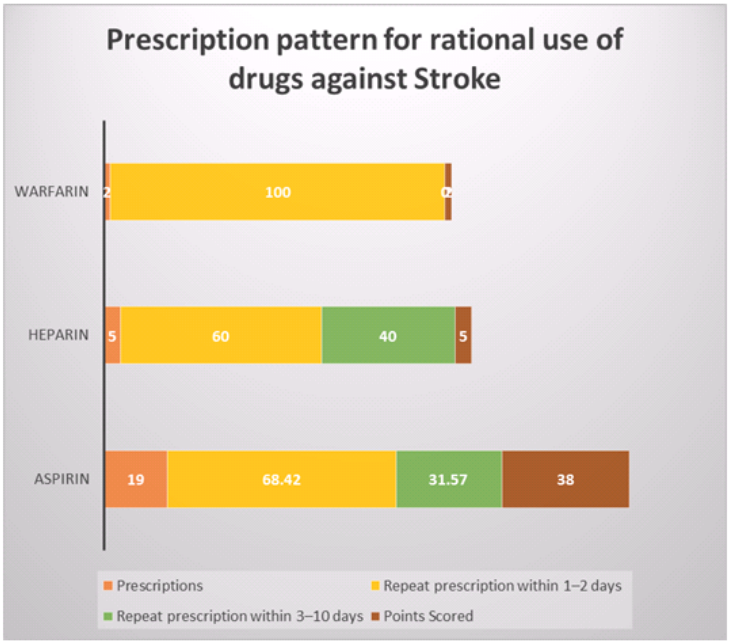

Figure 8: Percentage Prescription pattern for rational use of drugs against Stroke.

Table 8: Prescription pattern for rational use of drugs against Parkinson's disease.

Stroke		
	No. of case	**Percentage % of drug prescribed**
No drugs	-	-
One drug	21	88.46%
Two drugs	4	11.53%
Three drugs	-	-
Four drugs	-	-
More than five drugs	-	-

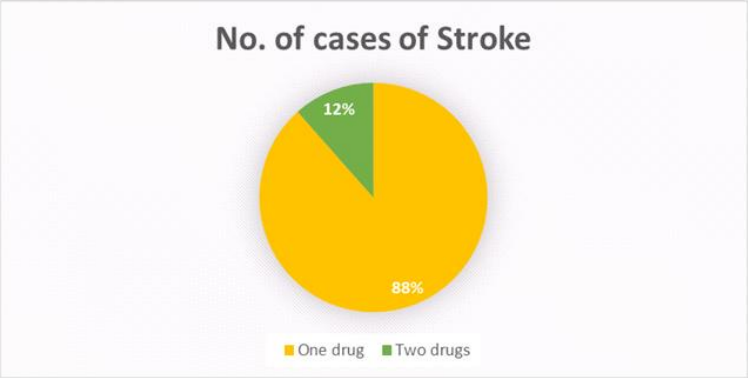

Figure 9: Number of Drugs prescribed per Case against Stroke.

Table 9: Prescription pattern for rational use of drugs against Parkinson's disease.

Parkinson's Disease (25 Prescriptions)		Repeat prescription within 1–2 days		Repeat prescription within 3–10 days		Points Scored
Prescribed Drugs	**Prescriptions**	**(%)**	**Adj.**	**(%)**	**Adj.**	**Total**
Levodopa*	13(52%)	76.92	10	23.07	3	26
Pramipexole	6(24%)	66.66	4	33.33	2	6
Apomorphine	2(8%)	100	2	0	0	2
Tolcapone	1(4%)	100	1	0	0	1
Benztropine	1(4%)	100	1	0	0	1
Trihexyphenidyl	1(4%)	100	1	0	0	1
Amantadine	1(4%)	100	1	0	0	1
*Note: *Main Drug, 13 prescriptions are rational and 12 prescriptions are semi - rational*						

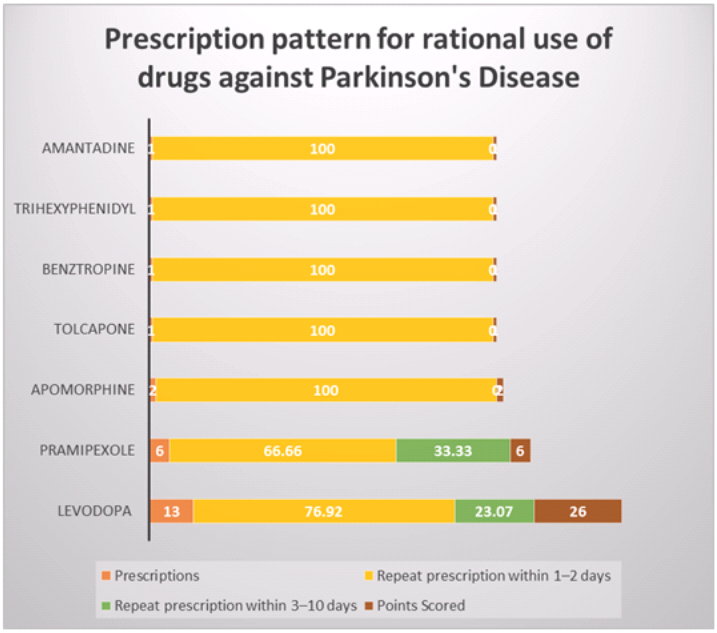

Figure 10: Percentage Prescription pattern for rational use of drugs against Parkinson's disease.

Table 10: Number of Drugs prescribed per Case against Parkinson's disease.

Parkinson's Disease		
	No. of case	**Percentage % of drug prescribed**
No drugs	-	-
One druga	20	80%
Two drugs	2	12%
Three drugs	3	8%
Four drugs	-	-
More than five drugs	-	-

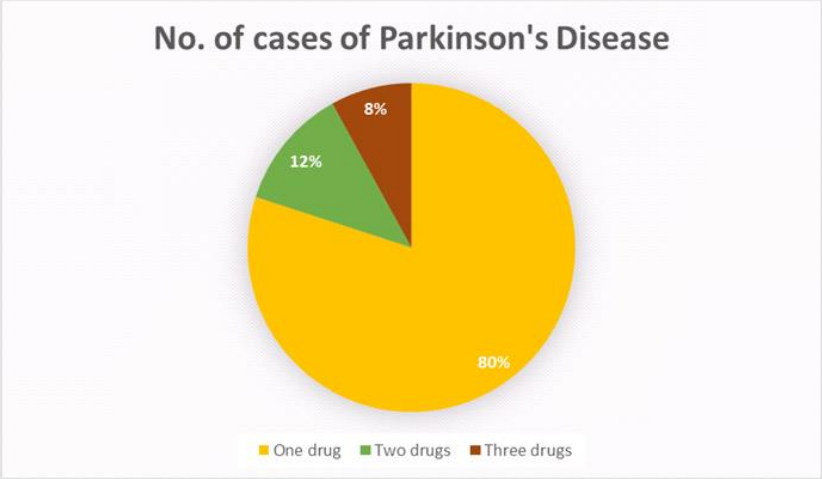

Figure 11: Number of Drugs prescribed per Case against Parkinson's disease.

Table 11: Average number of drugs against neurological disorders.

	Alzheimer's Disease		**Epilepsy**		**Stroke**		**Parkinson's Disease**	
	Cases	**Drugs**	**Cases**	**Drugs**	**Cases**	**Drugs**	**Cases**	**Drugs**
Rational use of Drugs	45	80	48	81	19	21	13	20
Average Number of Drugs per prescription	1.73		1.68		1.10		1.53	
Semi-Rational use of Drugs	17	60	19	24	7	8	12	12
Average Number of Drugs per prescription	3.41		1.26		1.14		1	
Total Number of Drugs	140		105		29		32	

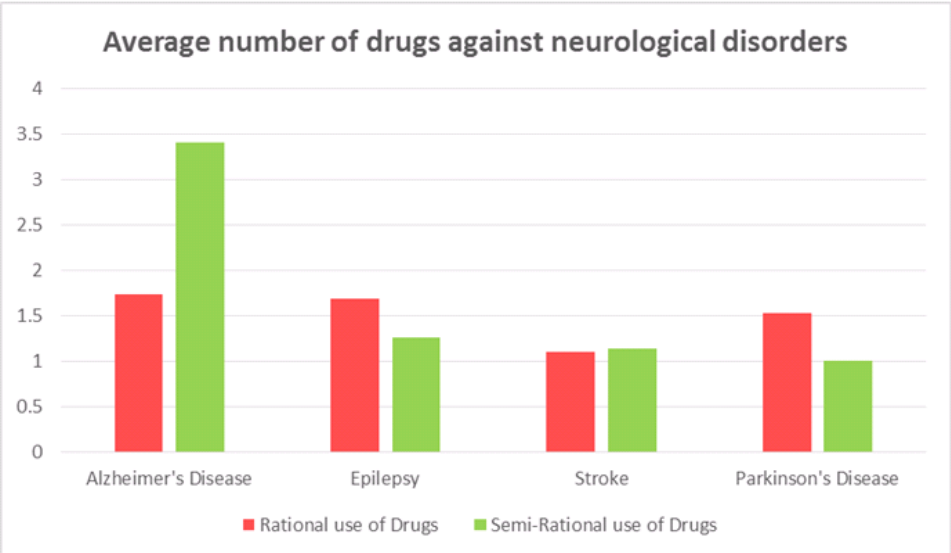

Figure 12: Average number of drugs against neurological disorders.

Check List for Clinical Encounter

In IPD more than 42 prescriptions do not ask about duration of present illness. Doctors do not take any history prescribed patients "past illness" but in IPD it is not so improved and it was 27 prescriptions. 139 prescribed patients were willing to tell their previously taken drug history in IPD. Only 29 prescribed patients got investigation advice in IPD, 6 prescribed patients do not get any instruction regarding taking the drugs in IPD.

Table 12: Check List for Clinical Encounter IPD.

Indication	IPD		
	Yes	No	N.A.
Asking about duration of present illness	126	42	12
Taking history of past illness	145	27	8
Taking previous drug history	139	30	11
Investigation advised	29	142	9
Instruction about taking drugs	164	6	10
Instruction about diet	158	17	5

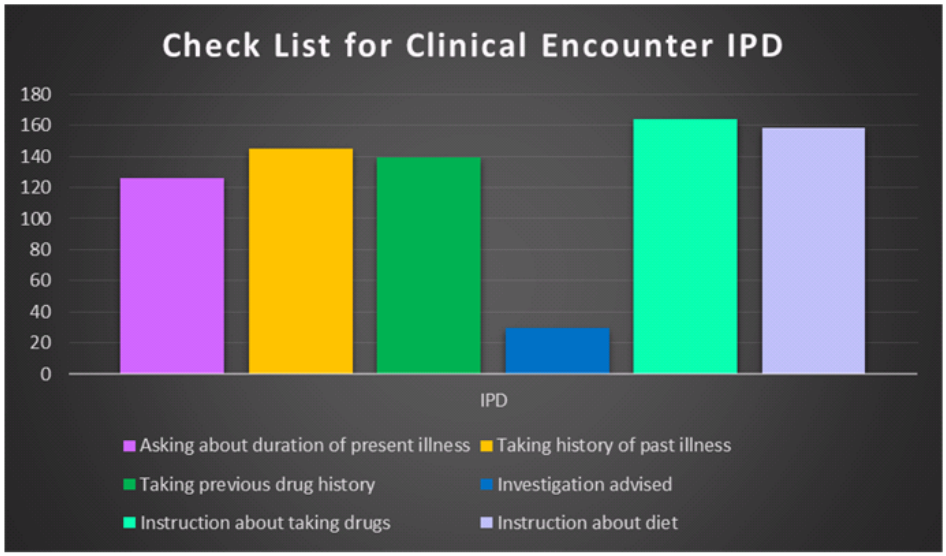

Figure 13: Check List for Clinical Encounter in IPD.

DISCUSSION

The presented data reveals a comprehensive analysis of prescription patterns for neurological disorders across different age groups. The findings shed light on several critical aspects, including age distribution, gender ratios, prevalence of neurological disorders, and the rationality of drug prescriptions. Let's delve into the key insights derived from the data.

Age and Gender Distribution

The study highlights that patients of all age groups are susceptible to semi-rational drug prescriptions. Notably, individuals under 4 years and those above 80 years face a higher risk. The gender distribution reveals a higher prevalence among males (66.11%) compared to females (33.88%). Interestingly, there's a higher incidence of neurological disorders in the younger and older age groups, with a significant number of prescriptions for patients below 20 years and above 80 years.

Prescription Patterns for Neurological Disorders

The data categorizes neurological disorders, including Alzheimer's disease, Epilepsy, Stroke, and Parkinson's disease. Alzheimer's and Epilepsy account for the majority of prescriptions, with specific age group distributions outlined. For instance, Alzheimer's disease prescriptions are prevalent in the >80 years age group (47.77%), while Epilepsy prescriptions are significant in the below 20 years age group (27.77%).

Rationality of Drug Prescriptions

The study introduces a scoring system to assess the rationality of prescriptions, emphasizing the main drug's importance. The analysis of Alzheimer's disease, Antiepileptic drugs, Stroke, and Parkinson's Disease prescriptions based on this scoring system provides valuable insights. Notably, a considerable percentage of prescriptions for these disorders are deemed rational, demonstrating a cautious approach in drug prescription.

Number of Drugs Prescribed

Examining the number of drugs per prescription unveils variations across neurological disorders. For instance, Parkinson's disease prescriptions tend to involve a higher number of drugs, with 80% involving at least two drugs.

On the contrary, Stroke prescriptions mostly consist of one drug (88.46%).

Checklist for Clinical Encounter

The study assesses the clinical encounter process, revealing areas for improvement. Notably, the data indicates a need for more detailed inquiries about the duration of present illness and past illness history. The investigation advice and instructions regarding drug intake show room for enhancement, underlining the importance of a comprehensive clinical approach.

CONCLUSION

In conclusion, this dissertation's data offers a nuanced understanding of prescription patterns for neurological disorders. The insights into age distribution, gender ratios, rationality of drug prescriptions, and clinical encounter practices provide a foundation for addressing potential gaps in healthcare delivery. Further research and interventions can be designed based on these findings to enhance the quality and efficacy of neurological disorder treatments.

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