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Evaluation Of Determinants Related To Medication Non-Adherence In Emergency Medicine Patients: A Prospective Observational Study

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ABSTRACT

Background: With the escalating use of medications, there is a corresponding rise in non-adherence, posing a significant public health challenge. Medication adherence is crucial for treatment efficacy and it reflects the alignment of an individual's behaviour with medical advice. Thus, a study was devised to assess the prevalence of non-adherence-related medical emergency admissions, evaluate adherence frequency, identify implicated drug classes, and analyze underlying causes.
Methodology: The study was conducted over 12 months. This observational, prospective, uni-centric study enrolled patients diagnosed with non-adherence by clinicians using Morisky Green Levine Scale (MGL).
Results: Among drug-related medical emergencies, 93 cases were attributed to non-adherence, with a mean patient age of 55.26 years. Seizures emerged as the predominant chief complaint. Antihypertensives were the most commonly prescribed medications, followed by antidiabetics, antiepileptics, and anticoagulants. Notably, a statistically significant association between moderate adherence levels and unemployment was observed. ($p<0.001$)
Conclusion: The results of our study help identify several characteristics that can be used to identify elders at risk of suffering drug-related or non-adherence-related hospitalizations.

Key Words: *Non-adherence, Emergency Medicine Department, Medication, Elderly*

INTRODUCTION

Adherence is defined as the extent to which a person's behaviour in terms of taking medications, following diets, or executing lifestyle changes coincides with medical or health advice[1,2] Compliance broadly means the extent to which a person's behaviour, in terms of taking medications, following diets and executing lifestyle changes, visiting for follow-up etc., coincides with medical and health advice.[3] Compliance with medication usually means "The extent to which the patient takes the medication as prescribed." Rosack explained the phenomenon of adherence to medication in terms of refill rate. Patients who had only half of their expected refill rate were termed "non-adherent".[4]

Chronic conditions, such as human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS) and tuberculosis, may be infectious in origin and will need the same kind of care as many other chronic non-communicable diseases such as hypertension, diabetes and depression. [1,5]

Adherence is simultaneously influenced by several factors such as the ability of patients to follow treatment plans, socioeconomic factors, healthcare team and system-related factors, condition-related factors, and therapy-related factors. The idea of adherence emphasises a process where the right course of treatment is chosen following consultation between the prescriber and the patient. It implies that the patient is not required to accept a specific treatment and will not be solely held accountable if a treatment plan fails due to non-adherence.[6]

Objective:

The objective of this study was to ascertain the proportion of medical emergency admissions attributable to non-adherence, estimate the frequency of non-adherence-related admissions in the emergency medicine department, identify

implicated drug classes, and analyse the putative causes for all cases.

Methodology

This observational, prospective, non-interventional study was conducted at the Emergency Medicine Department of a Tertiary Care Teaching Hospital in Ahmedabad, India over 12 months. Ethical considerations include getting approval from the Institutional Review Board (IRB) before commencing research and data collection. Participant confidentiality and privacy will be ensured, with informed consent obtained from all the participants. The study included individuals aged 18 years and above, of any gender, who were categorised as non-adherent to treatment by physicians. Patients who did not consent were excluded from the study. Non-adherence was assessed using the Morisky Green Levine Scale (MGL). Data were collected and recorded in Microsoft Excel worksheet version 2007, and statistical analysis was performed using the Statistical Package for Social Science (SPSS) version 21.0 and Microsoft Excel 2016. A p-value of < 0.05 was considered statistically significant

Results

A total of 208 patients presented with drug-related medical emergencies, with 93 (44.71%) cases attributed to non-adherence. The mean age of the patients was 55.93 ± 9.42 years, with 39 (41.93%) patients aged 60 years and above experiencing higher incidences of non-adherence compared to those below 60 years.

Table 1: Observed chief complaints of patients presented with non-adherence to drug therapy.

Sr. No.	Chief Complaints	No. of Patients	Percentage
1.	Seizures	36	38.71%
2.	Breathlessness	28	30.11%
3.	Giddiness	9	9.68%
4.	Altered Consciousness	7	7.53%
5.	Rebound Hypertension	3	3.22%
6.	Vomiting	3	3.22%
7.	Psychiatric illness	2	2.15%
8.	Fall	2	2.15%
9.	Weakness	1	1.07%
10.	Cough	1	1.07%
11.	Abdominal Pain	1	1.07%
Total		93	100%

Chief complaints varied among patients, with seizures being the most frequently observed (38.71%), followed by breathlessness in 28 patients (30.11%), giddiness in 9 patients (9.68%), altered consciousness in 7 patients (7.53%), and others.[Table 1]

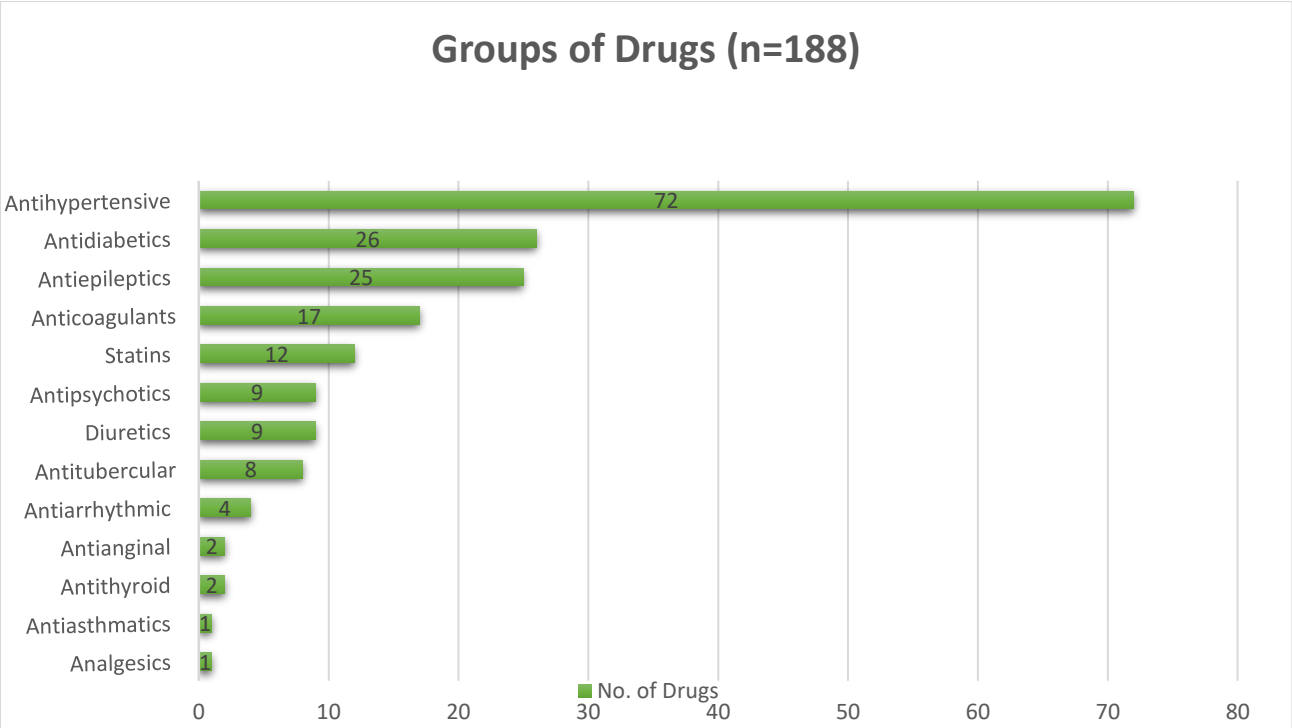

Figure 2: different drug classes seen in in non-adherent patients

In 93 patients, the total number of drugs prescribed was 188. In these patients, antihypertensives were the most frequently prescribed medications followed by antidiabetics, antiepileptics, anticoagulants and so on. [Figure 2]

Duration of Treatment:

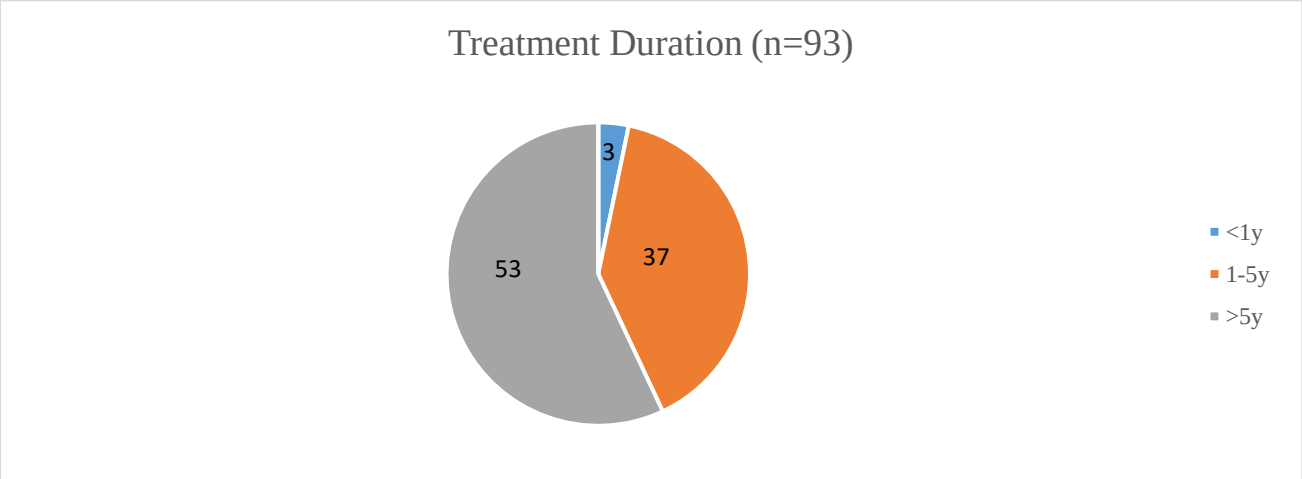

Figure 3: Duration of treatment in patients presenting with non-compliance to drug therapy.

The duration of treatment in 93 patients with compliance varied across three ranges: less than 1 year, 1-5 years, and more than 5 years. Among these, 53 (57%) patients receiving treatment for over 5 years exhibited higher non-compliance to drug therapy. In contrast, 37 (40%) patients receiving treatment for 1-5 years showed non-compliance. The lowest rate of non-compliance was observed in 3 (3%) patients receiving treatment for less than one year.(Figure3)

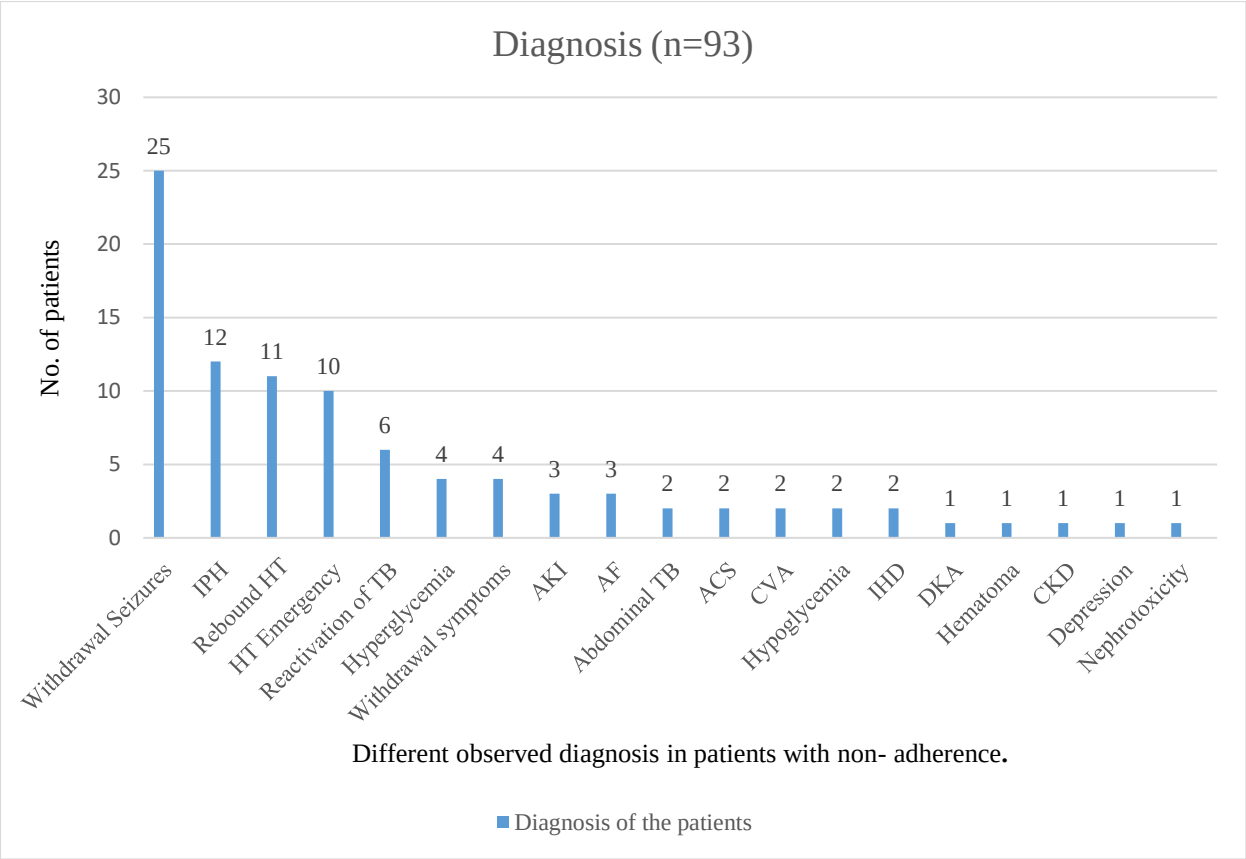

Figure 4: Different observed diagnoses in patients with non-adherence

The predominant diagnosis reported was withdrawal seizures, followed by haemorrhage, rebound hypertension, and hypertensive emergency.

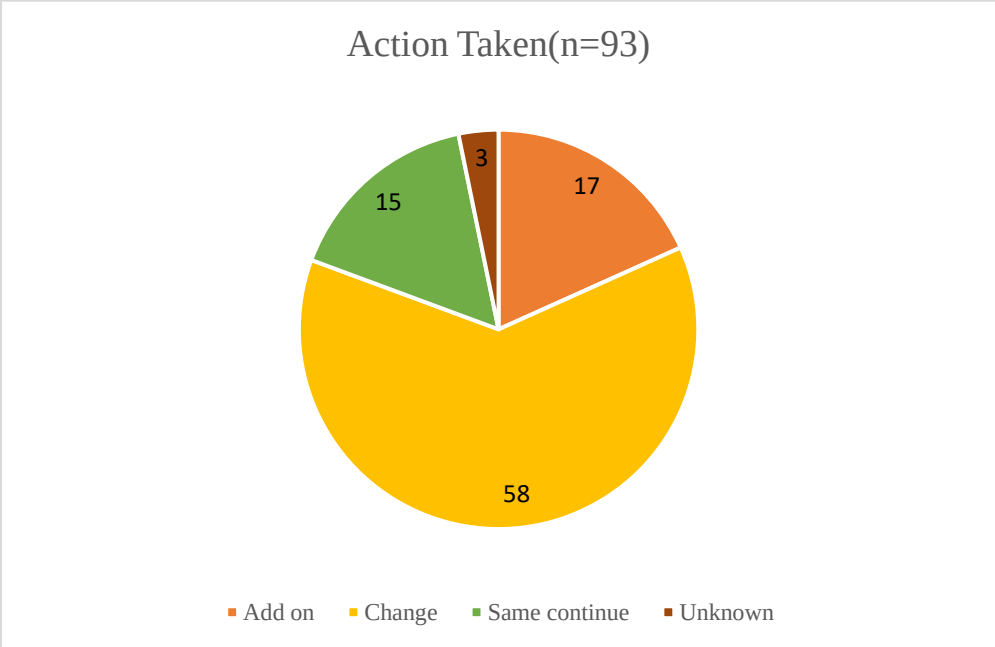

Figure 5: Action taken in the patients of non-adherence to drug therapy.

Clinicians responded to the different observed diagnoses by implementing various actions, including changing medications, adding additional drugs, and continuing the same medications for certain patients.

Several factors contributed to admissions related to non-adherence, including age, ability to recall medication regimens, number of physicians consulted, and number of prescribed medications. Patients unable to recall their

regimens exhibited a higher rate of non-adherent admissions compared to those who could recall. Similarly, patients with partial recall also demonstrated a higher rate of non-adherent admissions (54.8%, p<0.001). The likelihood of non-adherence admissions increased with the number of physicians consulted regularly (p<0.01), with an odds ratio of 4.9 for patients seeing more than 3 physicians compared to fewer than 3 physicians. Additionally, a higher number of prescribed medications correlated with a greater proportion of non-adherent admissions (p<0.01), with an odds ratio of 4 for patients taking three or more medications compared to fewer than 3. Patients hospitalised for non-adherence with only partial recall had an odds ratio of 5.3 compared to those with total recall.

Table: 5 Characteristics of patients according to level of adherence.

Characteristics	Total (n=93)	Moderate level adherence (n=67)	Low level adherence (n=26)	P value
Age (mean± S.D.)	55.93 ± 9.42	64.13 ± 12.88	52.71 ± 11.8	<0.001
Gender Male Female	 47(50.54%) 46(49.46%)	 36 (76.59%) 31(67.39%)	 11(23.40%) 15(32.60%)	 0.1
Employment Employed Unemployed	 39 (41.93%) 54 (58.07%)	 24 (61.50%) 43 (38.50%)	 15 (38.50%) 11 (20.38%)	 <0.001
Number of Medications (Mean ± S.D.)	2.30 ± 1.70	4.33 ± 1.11	7. 54 ± 1.88	<0.001

Patients with moderate levels of adherence were predominantly from the higher age group, and this difference was statistically significant.

While there was a trend towards a higher level of adherence among males, this difference was not statistically significant (p=0.1).

Interestingly, a moderate level of adherence was significantly more prevalent among unemployed patients (p<0.001).

Furthermore, patients receiving more than 7 drugs exhibited a lower level of adherence, with statistical significance (p<0.001).

Table: 6 Reasons for the low level of treatment adherence.

Reasons	Number of patients (n=93)	Percentage
Felt good so stopped	55	59.00%
Dissatisfaction with the medications	53	57.00%
Forgetfulness	50	54.00%
Difficulty in memorizing the drugs	37	40.00%

Discussion:

Our objectives of the present study were to determine the proportion of medical emergency admissions that were secondary to non-adherence to drug treatment and their causes and predictors.

In our study out of a total of 208 patients, medical hospital admissions secondary to non-adherence were 93(44.71%) patients, out of which 39 (41.93%) of patients were above the age of 60not comparable to Malhotra, et al. [7] which reported a small percentage of elderly (8%) only patients. These findings suggest that elderly patients were more prone to be non-adherent to drug treatment as compared to younger patients which may be due to age-related cognitive dysfunction, poor support from the family, co-morbidities and physical decline. [8]

The most common presenting symptom was withdrawal seizures. Longer disease duration, inadequate treatment-related counselling, patients' knowledge of the illness, patient's understanding of the disease and a feeling that taking the medications as prescribed is not important may have an impact on adherence. [9,10]

The drug that accounted for the highest number of non-adherent cases was anti-hypertensives. Several factors such as the lifelong need for medication, multiple drug regimens and cost were responsible for non-adherence. We can prevent the same by providing health education, promotion of self-care and self-management and awareness regarding the consequences of not taking medications.[11]

Worldwide there are many causes of non-adherence like cost [12], forgetfulness [13], age [13], side effects [14,15,16], polypharmacy [17] etc. In our study, the reason 3 out of 5 patients reported not adhering to medications was they felt good without drugs so they stopped taking medications compared to Col N et al. [18] which regarded poor recall of medication regimen as the major reason.

Our study, conducted at a tertiary care teaching hospital, highlights challenges in patient education and medication adherence. Limited time per patient and increasing medication complexity contribute to inadequate patient instruction. In India, factors such as illiteracy, poverty, and misconceptions further hinder patient compliance. Additionally, the absence of a structured role for paramedical staff in patient education exacerbates these challenges. Patients with impaired recall are more likely to seek assistance. Non-adherence management primarily involves medication adjustments, including drug changes and add-on prescriptions.

This study had various strengths, which included stratifying patients based on chief complaints. Also, this study was the first of its kind in India study that focused on the psychological/subconscious reasons that contribute to non-adherence. We failed to classify our results based on gender and age. Also, methods of promoting adherence can be used including patient education, improved and efficient prescribing, using compliance devices like medication alarms and developing more drug combinations.[19]

CONCLUSION:

Our study sheds light on key characteristics associated with drug-related and non-adherence-related hospitalizations among the elderly population. Specifically, elderly individuals with hypertension and diabetes, those with impaired medication recall, and those managing complex medication regimens are at heightened risk. Additionally, patients with a high number of prescribed medications or visits to multiple physicians are more susceptible to non-adherence. Addressing these challenges requires a multidisciplinary approach, necessitating collaboration among healthcare professionals, researchers, policymakers, and patients.

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REFERENCES:

1. Haynes, R. B. (1979). Determinants of compliance: The disease and the mechanics of treatment. Baltimore, MD: Johns Hopkins University Press.
2. Rand, C. S. (Year). Measuring adherence with therapy for chronic diseases: Implications for the treatment of heterozygous familial hypercholesterolemia.
3. Rana, N. H., &Ayub, M. (2002). Non-compliance to medicine in psychiatry patients. Pak J Med Sci, 18, 52–4.
4. Rosack, J. (2004). Education on medication adherence will reduce costs, improve outcome. Psychiatr News, 39, 20.
5. American Journal of Cardiology. (1993). 72, 68D-74D.
6. Chakrabarti, S. (2014). What's in a name? Compliance, adherence and concordance in chronic psychiatric disorders. World J Psychiatry, 4(2), 30-6.
7. Malhotra, S., Karan, R. S., Pandhi, P., et al. (2001). Drug-related medical emergencies in the elderly: Role of adverse drug reactions and non-compliance. Postgraduate Medical Journal, 77, 703-707.
8. Roy, N. T., Sajith, M., &Bansode, M. P. (2017). Assessment of factors associated with low adherence to pharmacotherapy in elderly patients. Journal of Young Pharmacists, 9(2), 272.
9. Zafar, A., Shahid, R., Nazish, S., Aljaafari, D., Alkhamis, F. A., Alsalman, S., ... &Alabdali, M. (2019). Nonadherence to antiepileptic medications: Still a major issue to be addressed in the management of epilepsy. Journal of neurosciences in rural practice, 10(01), 106-112.
10. Buck, D., Jacoby, A., Baker, G. A., & Chadwick, D. W. (1997). Factors influencing compliance with antiepileptic drug regimes. Seizure, 6, 87–93.
11. Kulkarni, S., &Graggaber, J. (2022). How to improve compliance to hypertension treatment. European Society of Cardiology, 22(6).
12. Briesacher, B. A., Gurwitz, J. H., &Soumerai, S. B. (2007). Patients at-risk for cost-related medication nonadherence: A review of the literature. Journal of general internal medicine, 22(6), 864-871.
13. Lynch, T. (2006). Medication costs as a primary cause of nonadherence in the elderly. The Consultant Pharmacist®, 21(2), 143-146.
14. Mohiuddin, A. K. (2019). Risks and reasons associated with medication non-adherence. J Clin Pharm, 1(1), 50-53.

15. WebMD. (2017). Side effects of high blood pressure medications. Hypertension Guide.
16. Lahon, K., Shetty, H. M., Paramel, A., & Sharma, G. (2011). Sexual dysfunction with the use of antidepressants in a tertiary care mental health setting-a retrospective case series. J PharmacolPharmacother, 2, 128-131.
17. Pasina, L., Brucato, A. L., Falcone, C., Cucchi, E., Bresciani, A., Sottocorno, M., ... & Nobili, A. (2014). Medication non-adherence among elderly patients newly discharged and receiving polypharmacy. Drugs & aging, 31(4), 283-289.
18. Col, N., Fanale, J. E., &Kronholm, P. (1990). The role of medication noncompliance and adverse drug reactions in hospitalizations of the elderly. Archives of internal medicine, 150(4), 841-845.
19. Stewart, R. B. (1991). Noncompliance in the elderly. Drugs & Aging, 1(3), 163-167.