e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(11); 1003-1008

Original Research Article

Medication Adherence among Geriatric Patients Attending Secondary Care Centres: A Cross-Sectional Study

Suryateja Vennelakanti[1], Surendra Babu Reddy[2]

[1]MBBS, MD., Assistant Professor, Dept of General Medicine, Gayatri Vidya Parishad Institute of Health Care and Medical Technology (Gvpihc & MT)

[2]MBBS, MD., Assistant Professor, Department of Community Medicine, Government Medical College, Rajamahendravaram

Received: 25-08-2024 / Revised: 23-09-2024 / Accepted: 25-10-2024

Corresponding Author: Dr. Surendra Babu Reddy

Conflict of interest: Nil

Abstract:

Background: Medication adherence among geriatric patients is crucial for effective management of chronic diseases and overall health outcomes. Adherence to medicine is an important aspect of enhancing quality of life and preventing difficulties associated with non-communicable diseases (NCDs) and long-standing diseases. This study aims to estimate the prevalence of medication adherence and factors affecting it in geriatric outpatients attending a secondary care center in South India.

Materials and Methods: It was an observational cross-sectional study. A pretested and predesigned questionnaire along with the modified Morisky Medication Adherence Scale (MMAS) was used to collect the level of medicine adherence and factors affecting it.

Results: 250 participants in the elderly group with chronic conditions were evaluated for their level of long-term drug compliance. The prevalence of good adherence to medication was 46%, moderate in 35%% and poor in 18% among the study subjects.

Conclusion: Level of compliance is positively associated with higher educational status, living with spouse and family, < three medicines per day, and < two comorbidities.

Key words : Geriatrics, Medication Adherence, Chronic Diseases.

Introduction

Around the world, the number of people over 60 years who are geriatric is generally rising. By 2030, 1 in 6 people in the world will be aged 60 years or over. The number of individuals in the world who are 60 years of age or older is expected to increase to 2.1 billion by 2050. [1] Due to the steadily rising geriatric population necessitating specialized care, there is an escalating global concern to enhance healthcare delivery systems, particularly in addressing chronic and recurrent illnesses that are more prevalent in later life, such as diabetes mellitus, hypertension, ischemic heart disease, arthritic disorders, neurodegenerative disorders, psychiatric illnesses, gastrointestinal disorders, ocular disorders, genitourinary disorders, and respiratory disorders, which may require chronic medication involving multiple pharmaceuticals. The chronic nature of the disease, the necessity for complex pharmacotherapy, escalating treatment costs, adverse effects, drug interactions, forgetfulness, and insufficient familial and social support may hinder elderly patients' adherence to long-term medication regimens. It is believed that only 50% of the general population adheres to their medications, with adherence rates in the elderly ranging from 47% to 100% [2]. Poor adherence among the elderly is a public health issue, leading to negative outcomes, pharmaceutical wastage, elevated healthcare costs, and significant disease progression resulting in increased disability or mortality.[3] Medication non-adherence represents a prevalent and critical public health concern. Due to their susceptibility to multiple comorbidities and increased risk of polypharmacy, elderly patients frequently face challenges with medication adherence, potentially leading to a higher likelihood of non-adherence to medications compared to younger individuals. [4] Medication adherence constitutes a self-management behaviour characterized by the consumption of medications in accordance with prescribed guidelines. This behaviour is essential for optimal disease control, symptom management, and the prevention of disease progression and long-term complications. However, it continues to pose a significant health risk for elderly individuals with chronic conditions. [5]

Many industrialized nations have conducted numerous studies to evaluate the issue and

prevalence of poor adherence in elderly patients [6]. However, there aren't many studies in the Indian population that evaluate the issue and the degree of medication adherence in older patients and study the different factors that contribute to non-adherence. In this regard, the current study was undertaken to assess the degree of medication adherence in older patients with chronic illnesses and to determine the factors affecting it.

Aim: To study the Medication adherence among geriatric patients attending secondary care centres: a cross-sectional study

Objectives:

1) To estimate the Prevalence of medication adherence among elderly patients with chronic illnesses attending the outpatient department of General Medicine.
2) To determine the factors influencing medication adherence among the study subjects.

Materials and Methods:

Study Design: Observational Cross-Sectional study.

Place of study: Department of General Medicine at Pranaam Hospitals, Hyderabad. It is a hospital-based study.

Sample size: By taking the prevalence of Medication adherence among elderly as 50 percent from a study done by, Angadi N.B, Kavi A and Torgal S.S among Elderly for medication [7] adherence with 95 percent confidence interval, an allowable error of 7 percent, a non-response rate of 10 percent, the minimum sample size came to 224 and it was rounded off to 250 subjects.

Inclusion Criteria:

- Patients of either gender aged > 60 years with chronic illnesses receiving long term medications for more than 6 months
- Patients who gave written and informed consent

Exclusion Criteria:

- Newly diagnosed patients with treatment duration of less than six months
- Patients receiving intermittent short course therapy or treatment for recurrent acute illnesses
- Patients with malignancies or terminal illnesses

Study Period: The study was carried out for 6 months from 1st May 2019 to 30th October 2019.

Data Collection: All study participants provided written and informed consent after being satisfactorily explained about the study's procedure in their local language and English. Patients attending General Medine Opd were selected using a convenient sampling technique. A pretested and predesigned schedule was used to collect demographic details and general information like reasons for forgetfulness, family status etc. Patient adherence to the prescribed drugs was assessed using responses to a twenty-item pretested structured questionnaire based on the modified Morisky Medication Adherence Scale (MMAS) [8,9]. Scale of 0 to 10 is Poor, 11 to 15 is moderate and 16 to 20 is good adherence to medication.

Data Analysis: The data was double-checked and entered on Microsoft Excel-2019, and the final data analysis was done with the help of the statistical software SPSS 21. Continuous data was represented as mean and standard deviation, whereas categorical data was represented in proportions and frequencies. The data was tabulated and graphically represented. The Pearson Chi-square test was used to find the associations for categorical variables. $P < 0.05$ is considered significant

Results

A total of 250 patients were participated in the study, out of which 125 (50%) were males and the rest 125(50%) were females. The mean age of the study participants was 68.1 ± 7.1 years.70 % of study subjects were in the age group of 60 to 70 years, 24 % in the age group of 71 to 80 years followed by 6% in the age group of 81 years and above. The prevalence of good adherence to medication was 45.5% followed by moderate adherence was 27.3 % and Poor adherence was 27.2. women have better adherence to medication compared to males (52 % vs 40%). The average number of medications consumed per subject per day was 4.9 ±2.5 , Major morbidity among the study participants were Diabetes and Hypertension followed by coronary artery disease. Factors that effected the compliance to medication was increasing age, low educational status, consumption of more than three medicines per day and having more than two comorbidities. All these factors are significantly associated with poor adherence to medication ($P < 0.05$).

Table 1: Distribution of study subjects according to adherence to medication

Compliance Level	Frequency	Percent
Good	115	46.0
Moderate	90	36.0
Poor	45	18.0
Total	250	100.0

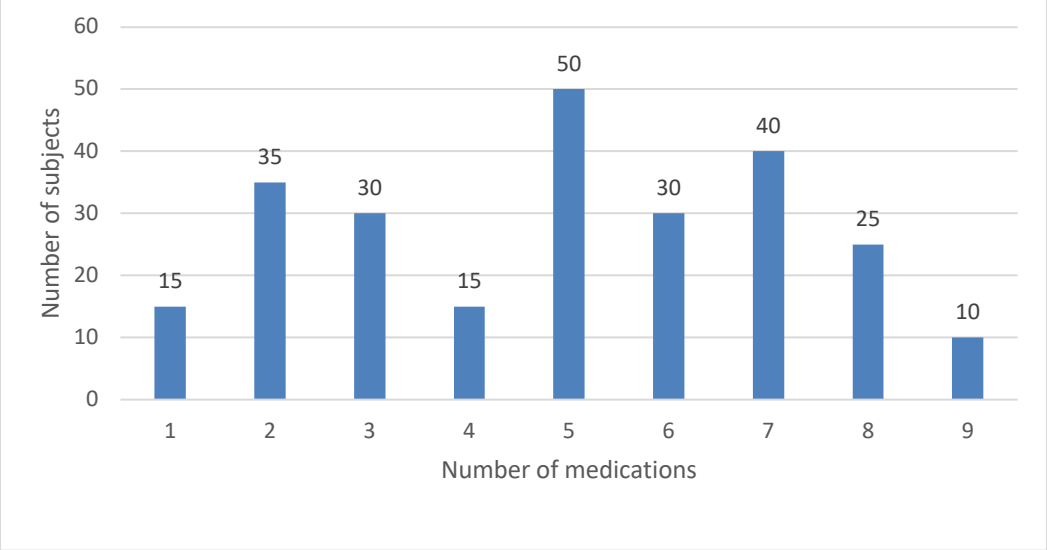

Figure 1: Distribution of study Subjects according to the number of medications consuming Per person per day

Table 2: Study subjects according to various factors affecting the level of compliance

Factors		Level of Compliance			Total	P Value
		Good	Moderate	Poor		0.0001
Family status	living alone	5	0	10	15	
		33.30%	0.00%	66.70%	100.00%	
	living at old age home	0	0	5	5	
		0.00%	0.00%	100.00%	100.00%	
	living with family	60	50	25	135	
		44.40%	37.00%	18.50%	100.00%	
	living with spouse	50	40	5	95	
		52.60%	42.10%	5.30%	100.00%	
Educational Status	primary	5	10	10	25	0.001
		20.0%	40.0%	40.0%	100.0%	
	secondary	25	15	15	55	
		45.5%	27.3%	27.3%	100.0%	
	graduate	65	50	20	135	
		48.1%	37.0%	14.8%	100.0%	
	post graduate	20	15	0	35	
		57.1%	42.9%	0.0%	100.0%	
Financial status	< 30000	40	20	10	70	0.08
		57.1%	28.6%	14.3%	100.0%	
	> 30000	75	70	35	180	
		41.7%	38.9%	19.4%	100.0%	
Age Groups	60 to 70 years	100	60	15	175	0.0001
		57.1%	34.3%	8.6%	100.0%	
	71 to 80 years	5	30	25	60	
		8.3%	50.0%	41.7%	100.0%	
	81 years and above	10	0	5	15	
		66.7%	0.0%	33.3%	100.0%	
	Female	65	35	25	125	0.03

Gender		52.0%	28.0%	20.0%	100.0%	
	Male	50	55	20	125	
		40.0%	44.0%	16.0%	100.0%	
No of Medicines	up to 3 medicines	70	10	0	80	0.0001
		87.5%	12.5%	0.0%	100.0%	
	> 3 medicines	45	80	45	170	
		26.5%	47.1%	26.5%	100.0%	
No of illness	single	40	5	0	45	0.0001
		88.9%	11.1%	0.0%	100.0%	
	Double	63	20	0	83	
		75.9%	24.1%	0.0%	100.0%	
	Three or more	12	65	45	122	
		9.8%	53.3%	36.9%	100.0%	

** Chi-square was used to find the association

Discussion

In the present study, 250 subjects of geriatric age group with chronic illnesses were assessed for the level of adherence for long term medications and various factors influencing medication adherence were analysed. The level of adherence was good in 46%, moderate in 36% and poor in 18% of the subjects. The level of adherence observed in the present study was in accordance with the observations made by Shruthi et al and other studies. [10,11]

Good adherence towards medication was observed in 57.1% of study participants belong 60 to 70 years age group and majority 50 % in the age group of 71 to 80 years had shown moderate adherence. These observations suggest that compliance towards medciation adherence decreases with increasing age and this difference is found to be statistically significant (P < 0.0001). Probably Age may significantly influence medication compliance, perhaps due to age-related functional decline. Similar observations were made in other studies [12,13].

It was observed in this study that compliance to medication was high among females compared to males and the difference is found to be statistically significant. Similar findings were reported in the study conducted by Rao Cr et al among patients of Diabetes and hypertension.

It was observed in present study that adherence to medication was good among those were having higher educational status compared to study subjects having primary and secondary education and difference was statistically significant (P < 0.001). This may be due to educated people are more aware of heath condition and complications. Similar findings were observed by studies conducted by Nicholos Ho PM, and Maclaughlin EJ etal [15,16,17]

The compliance level was higher in those subjects living with spouse or with family compared to those living alone or living in old age homes. The difference in the level of compliance was statistically significant (p=0.001). similar findings were observed by study conducted by Shruthi et al among the geriatric patients and study conducted by Shamsmee and Barakateam [18,19]

It was observed that Adherence to medication was good among the study subjects who were taking less than 3 pills per day compared to those who consume more than 3 pills per day and the difference was statistically significant (P<0.0001). It might be due to more number of pills particularly among geriatric age group leads to more confusion and Our study findings were supported by study conducted by Shruthi among geriatric patients.[20] similar findings were observed in previous studies.[21,22] In this study, Compliance to medication was good among the Participants who were suffering from single illness was 88.9 %, with double illness was 75.9 % only 9.8 % among those who were having more than two illness and it indicates with increasing number of comorbidities, compliance was decreasing and difference was statically significant (P < 0.0001) The number of comorbidities has a direct association with medication adherence as the subjects with multiple comorbidities clearly require a higher number of medications . similar findings were observed by Shruthi et al in his study.[20]

Summary: The study involved 250 patients, with 125 males and 125 females. The mean age was 68.1 years, with a majority aged 60-70. Good adherence to medication was 45.5%, moderate adherence 27.3%, and poor adherence 27.2%. Women had better adherence than males. Major morbidities were Diabetes, Hypertension, and coronary artery disease. Factors affecting medication compliance were increasing age, low educational status, consumption of more than three medicines per day, and having multiple comorbidities and living single or in old age homes

Conclusion

This study underscores the critical issue of medication adherence among elderly patients,

revealing that less than half demonstrate good compliance. The findings highlight significant gender differences, with women showing better adherence than men. Additionally, the presence of multiple comorbidities, advanced age, low educational levels, and polypharmacy are key factors contributing to poor adherence. These insights emphasize the need for healthcare providers to implement targeted strategies that address these barriers, ultimately aiming to enhance medication compliance and improve health outcomes for this vulnerable population. We can better equip patients to manage their chronic conditions by fostering a supportive environment and providing tailored education.

Conflict of interest: Nil

Ethical Clearence: Has obtained clearance from institutional ethics committee

References

1. World Health Organization. Ageing and health; 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health. Accessed October 18, 2024.
2. Sai K, Chen J, Wen C. Medication adherence among geriatric outpatients prescribed multiple medications. The American Journal of Geriatric Pharmacotherapy. 2012;10(1):61–68. doi: 10.1016/j. amjopharm. 201 1. 11.005.
3. X2. Osterberg L, Blaschke T. Adherence to medication. New England Journal of Medicine. 2005;353:487–97. doi: 10.1056/NEJMra050 100.
4. L. Chiang-Hanisko, J.Y. Tan, L.C. Chiang Polypharmacy issues in older adults Hu Li Za Zhi, 61 (2014), pp. 97-104.
5. G Cicolini *et al.*Self-reported medication adherence and beliefs among elderly in multi-treatment: a cross-sectional study Appl Nurs Res(2016)
6. Jin J, Sklar G, Oh V, Li SH. Factors affecting therapeutic compliance: A review from the patient's perspective. Therapeutics and Clinical Risk Management. 2008;4(1):269–86
7. Angadi N. B, Kavi A, Torgal S. S. Therapeutic Adherence among Elderly with Chronic Diseases Residing in Urban Area of South India – A Descriptive Cross Sectional Study. Biomed Pharmacol J 2020;13(4)
8. Morisky DE, Ang A, Krousel-Wood M, Ward JH. Predictive validity of a medication adherence measure in an outpatient setting. *J Clin Hypertens*. 2008;10(5): 348-54.
9. Lam WY, Fresco P. Medication Adherence Measures: An Overview. *Bio Med Research International*. 2015;2015:217047, 12 pages, 20 15
10. Blenkiron P. The elderly and medication: understanding and compliance in a family practice. Postgrad Medical Journal. 1996;72:671–76. [PubMed]
11. Tiv M, Viel JF, Mauny F, Eschwège E, Weill A, Fournier C, et al. Medication adherence in Type 2 Diabetes: The ENTRED study 2007, a French population based study. PLoS One.
12. Benner JS, Glynn RJ, Mogun H, Neumann PJ, Weinstein MC, Avorn J. Long-term persistence in use of statin therapy in elderly patients. JAMA. 2002;288(4):455–61. [PubMed]
13. Okuno J, Yanagi H, Tomura S, Oka M, Hara S, Hirano C, et al. Compliance and medication knowledge among elderly Japanese home-care recipients. European Journal of Clinical Pharmacology. 1999;55(2):145–49. [PubMed]
14. Rao CR, Kamath VG, Shetty A, Kamath A. Treatment Compliance among Patients with Hypertension and Type 2 Diabetes Mellitus in a Coastal Population of Southern India. Int J Prev Med. 2014 Aug;5(8):992-8. PMID: 25489447; PMCID: PMC4258676.
15. Nichols G, Poirier S. Optimizing adherence to pharmaceutical care plans. *Journal of American Pharmaceutical Association*. 2000;40(4): 475-85.
16. Ho PM, Bryson C, Rumsfeld JS. Medication adherence: its importance incardiovascular outcomes. *Circulation Journal of the American Heart Association*. 2009;119:3028-35.
17. Maclaughlin EJ, Raehl CL, Treadway AK Sterling TL, Zoller DP, Bond CA. Assessing medication adherence in the elderly: Which tools to use in Clinical practice? *Drugs aging*. 2005;22(3):231-55
18. Refer: Shruthi R, Jyothi R, Pundarikaksha HP, Nagesh GN, Tushar TJ. A Study of Medication Compliance in Geriatric Patients with Chronic Illnesses at a Tertiary Care Hospital. J Clin Diagn Res. 2016 Dec;10(12):FC40-FC43. doi: 10.7860/JCDR/2016/21908.9088. Epub 2016 Dec 1. PMID: 28208878; PMCID: PMC 529 6451.
19. Shams MEE, Barakat EAM. Measuring the rate of therapeutic adherence among outpatients with T2DM in Egypt. *Saudi Pharm J*. 2010; 18(4):225-32
20. Shruthi R, Jyothi R, Pundarikaksha HP, Nagesh GN, Tushar TJ. A Study of Medication Compliance in Geriatric Patients with Chronic Illnesses at a Tertiary Care Hospital. J Clin Diagn Res. 2016 Dec;10(12):FC40-FC43. doi: 10.7860/JCDR/2016/21908.9088. Epub 2016 Dec 1. PMID: 28208878; PMCID: PMC5 296 451.
21. Ibrahim OH, Jirjees FJ, Mahdi HJ. Barriers affecting compliance of patients with chronic diseases: a preliminary study in United Arab Emirates (UAE) population. Asian Journal of Pharmaceutical and Clinical Research. 2011;4(Suppl 2):42–45. [Google Scholar]

22. Ioana Dana A, Simona S, Paula B, Laura O, Radu Ionut R, Gabriel U, et al. Noncompliance in a large population of elderly patients with cardiovascular disease. A Journal of Clinical Medicine. 2006.