Internship Training at

Society of Community Health Oriented Operational Link

(SCHOOL)

Medication Adherence Among Elderly With Chronic Health Conditions in Community Settings

By

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PG/24/021

Under the guidance of

Dr. Punit Yadav

PGDM (Hospital and Health Management)
2024-26



International Institute of Health Management Research

New Delhi

The certificate is awarded to

Bhavna

In recognition of having successfully completed her

Internship under the Program

Vriddha Mitra

And has successfully completed her Project on

Medication Adherence Among Elderly With Chronic Health Conditions in Community Settings

3rd June,2026

Society of Community Health Oriented Operational Links

(SCHOOL)

She came across as a committed sincere & diligent person who has a strong drive & zeal for learning.

We wish her all the best for future endeavours.



Dr. Aastha Tandon

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Bhavna** student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at **Society of Community Health Oriented Operational Links** from 11th March,2026 to 30th Jume,2026 . The Candidate has successfully carried out the project designated to her during internship training and her approach to the study has been sincere, scientific and analytical. The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.



Dr. Punit Yadav

Academic and Student Affairs

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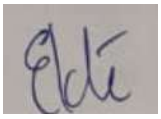
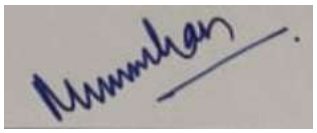
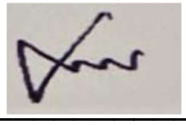
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CERTIFICATE OF APPROVAL

The following dissertation titled **"Medication Adherence Among Elderly with Chronic Health Conditions in Community Settings"** at **Society of Community Oriented Operational Links (SCHOOL)** is herby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

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CERTIFICATE FROM DISSERTATION ADVISORY COMMITTEE

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This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book





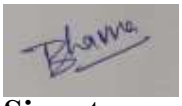
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Signature

FEEDBACK FORM

Name of the Student: Ms Bhavna .

Name of the Organisation in Which Dissertation Has Been Completed: Society of Community Health Oriented Operational Links (SCHOOL)

Area of Dissertation: Medication adherence among elderly with chronic health conditions in community Settings .

Attendance: 100%.

Objectives achieved: Proper research work was planned & done in same systematic manner .

Strengths: Quick Understanding, Active Participation, Smart work, Great with PPT creation

Suggestions for Improvement: Communication

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

Signature of the Organisation Mentor

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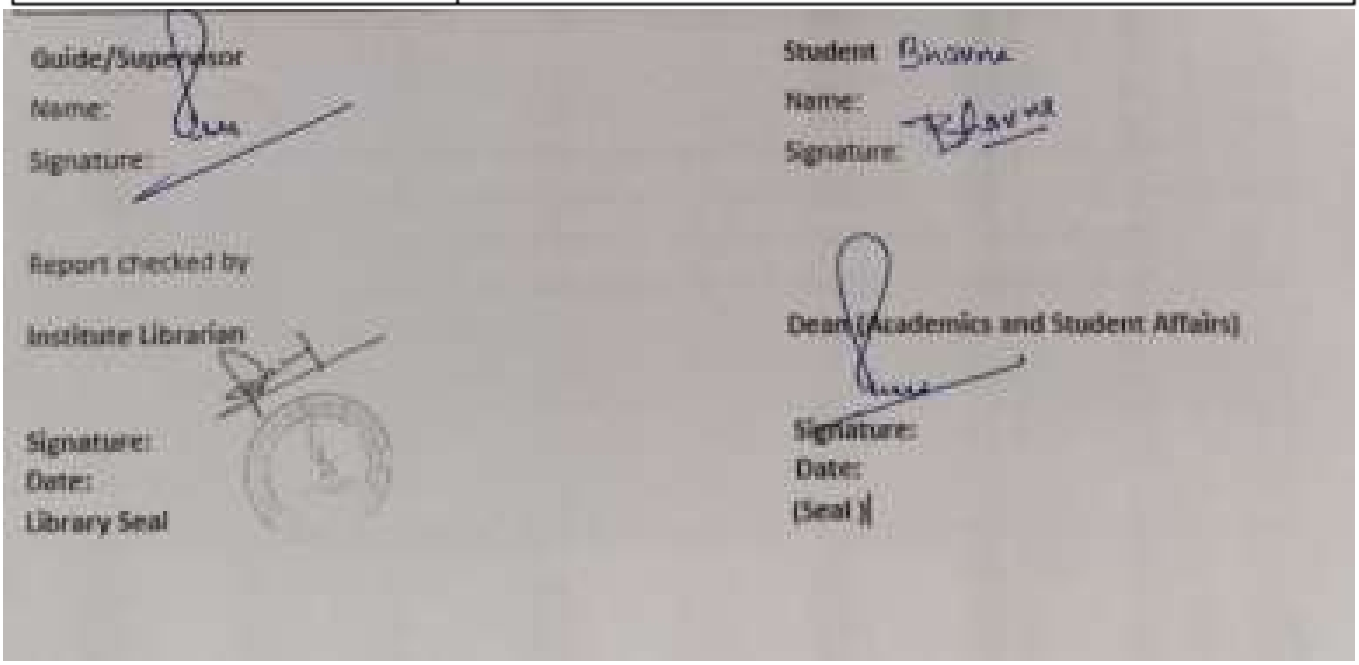
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Similar contents acceptable (%)	Up to **15** Percent as per policy		
Total words and % of similar contents Identified	% of similar content = 11% AI Content = 19%		
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A.2 ABOUT THE ORGANISATION

Society of Community Health Oriented Operational Links (SCHOOL), also known as 'SCHOOL for Development and Impact'. Since our founding in 2007, we have been dedicated to working with vulnerable communities to bring about visible impact in their lives. Guided by the Sustainable Development Goals, SCHOOL takes an integrated and transformative approach to development, focusing on the reciprocation between social systems, economy, culture, education, and livelihoods. Our unique approach includes addressing all the social determinants that impact human lives, with a strong focus on empowerment and participation.

While we have specific programs and focus areas, our ultimate goal is to protect vulnerable populations and ensure good health and well-being. Join us in making a positive impact in the world.

Established in 2007, Society of Community Health Oriented Operational Links (SCHOOL) is a registered not-for-profit organization working towards Sustainable Development Goal 3 – Good Health and Well-Being.

The aim of the organization has always been to provide last mile connectivity to vulnerable people across age groups by adopting a ‘life course approach’ – serving groups from newborns to the SCHOOL partners with various organizations and also joins hands with governments to ensure the smooth implementation of programs in various geographies across India.

SCHOOL recognizes that there are different approaches, visions, models and tools available to achieve sustainable development globally, nationally and locally. These are in accordance with both, the circumstances and priorities. While, the challenges of the day call for integrated solutions; in order to address these effectively, a cross-thematic approach that brings in inputs from varied thematic areas has become essential. SCHOOL, continues to build its efforts and upholds the reality that in order to impact health, a robust and threefold vigour of education, empowerment and equality is required.

Vriddha Mitra

SCHOOL through its flagship initiative 'Vriddha Mitra' works with vulnerable older people in India. Vriddha Mitra's vision is of an India in which older people can lead dignified, wholesome and secured lives. And it focuses on building an age friendly ecosystem for the elderly population in India.

An age-friendly ecosystem translates into the 'change' in:

• How we think, feel and act towards the older people;

• How important it is to develop support structures that foster the abilities of older people;

• And how we deliver care, support and services that are responsive to the requirements of older people.

'Vriddha Mitra' reaches the elderlies directly by establishing 'Community-based Mechanisms'. It creates champions and spokesperson who can advocate for the elderlies.

It creates livelihood options, not just for earning income but also for keeping them engaged. It collaborates with the government at all levels (national, state, district/ city level). And builds linkages with varied other stakeholders that help in improving the quality of life of the elderlies

In doing so 'Vriddha Mitra' works through five different divisions focusing on:

Community Based Mechanism

(our field-based projects): which encompasses our community based comprehensive support model, which has been tested in 2 slums of Pune city, further scaled up to 63 more slums in Pune in April 2020 in collaboration with the Pune Municipal Corporation (PMC). This model has also been scaled up in 2021 to cities of Mumbai and Bhopal and Bhitarwar block in Gwalior district of Madhya Pradesh. Our total direct reach is more than 10000 elderlies in all 4 locations in the country.

Policy-Advocacy

focuses on dialogue at the national, state and district/ city levels on two aspects, one is increasing the uptake of existing schemes and programs and the other is introduction of newer and better policies and programs for the elderly.

Championing

involves two core activities, one, creating platforms that help in promoting the cause of elderly and two, creating champions/ spokespersons of all ages to support and advocate for the cause of elderlies.

Livelihood

In this division, we highlight the need for work, and active as well as productive engagement of the elderly along with demystifying the perception that a person above 60 years needs to retire and live a life without new activities, skills or contribution to the country and self. Lifelong learning, active engagement and productivity, and inculcating a sense of achievement are the core aspects of this division.

Research

There is a dearth of understanding regarding the challenges of the elderlies that emanates from scientific studies. Our community-based projects work towards improving the quality of life of the elderlies, and this is being scientifically captured. We also see a great need to initiate many more studies across the country for better understanding.

A.3.1 Acknowledgement

I express my sincere thanks to my mentor **Dr. Punit Yadav** for his continuous guidance and support with constructive feedback throughout the course of this dissertation. He was able to identify the gaps and push for clearer thinking. It made the process more rigorous and challenging at times but ultimately more meaningful.

I am deeply thankful to **Dr. Aastha Tandon**, my organisational mentor, for her continuous guidance, encouragement, and practical insights throughout the dissertation. Her support, valuable recommendations, and willingness to share her knowledge greatly enriched my learning experience and contributed significantly to the successful completion of this work.

I also extend my heartfelt appreciation to all the faculty members whose guidance, encouragement, and academic inputs have played a vital role in strengthening my knowledge and supporting me throughout my postgraduate studies. Their teachings and mentorship have been invaluable in the successful completion of this dissertation.

Finally, I would like to express my sincere thanks to everyone who directly or indirectly contributed to this study. Their cooperation, encouragement, and support have been greatly appreciated and have made the completion of this dissertation possible.

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Chapter 1 : Introduction

1.1Introduction to topic

Worldwide, the proportion of people age 60 and over is growing faster than any other age increasing the burden of elderly population in many countries. The demographic shift seen because of longer life expectance and advancements in healthcare brings both challenges and opportunities with it.

Population ageing is emerging as one of the most significant demographic and public health challenges of the 21st century. Improvements in healthcare services, nutrition and disease prevention have led to increased life expectancy across the world. As a result of older adults is rising rapidly. According to the United Nations, the global population aged 60 years and above is projected to double from 1 billion in 2020 to approximately 2.2 billion by 2050.[1]. The demographic transition is not only reshaping population structure but also significantly increasing the burden on health systems, especially in low- and middle – income countries. The rapid growth of elderly population is considered one of the most important public health challenges of the 21st century, as it is associated with increased healthcare demand, long term care needs and rising economic burden on health systems.

Ageing is closely linked with biological, physiological and functional decline, which increases susceptibility to chronic illness. Older adults are more likely to suffer from multiple non – communicable disease (NCDs) such as hypertension, diabetes mellitus, cardiovascular disease, chronic obstructive pulmonary disease (COPD), arthritis, stroke, chronic kidney disease and neurogenerative disorders. These conditions are typically long – lasting, progressive and require continuous medical attention and lifelong pharmacological treatment. Consequently, elderly individuals are among the highest users of healthcare services and prescribed medications globally.

In low- and middle- income countries like India, demographic ageing is occurring alongside rapid urbanisation and epidemiological transition transition. India’s elderly population is expanding steadily and projections suggest that individuals ages 60 years and above will constitute more than 13% of the total population by 2031, compared to around 10% in 2021 [2] This increase is accompanied by a growing burden of chronic disease, particularly in urban slums communities where poverty, overcrowding, poop sanitation, and limited access to healthcare services further intensify health inequalities.

The World Health Organisation (WHO) identifies non- communicable disease as the leading cause of death globally, responsible for nearly 74% of all deaths worldwide [3] A significant proportion of this burden is borne by older adults, which often lives with multiple chronic conditions simultaneously. Although effective pharmacological treatments are available for most chronic disease, their success largely depends on long term and consistent medication use. Without proper medication adherence, even the most effective treatment regimens fails to achieve desired clinical outcomes.

Medication adherence is defined by the WHO as "the extent to which a person's behaviour is taking medication corresponds with agreed recommendations from a healthcare provider" [4] . It is a key determinant of treatment effectiveness in chronic disease management. However, medication adherence is a complex behavioural process influenced by multiple interacting factors such as patient characteristics, healthcare system factors, socio- economic conditions and therapy – related issues. Despite its importance, medication non – adherence remains a widespread and persistent global problem.

Evidence suggests that in developed countries, adherence among patients with chronic disease averages only around 50%, while in developing counties the rate is often lower due to systematic healthcare limitations, lower health literacy and financial constraints [5]. Almost half of the patients fail to follow their prescribed medication regimens which can lead to inadequate disease control and preventable health problems This challenge is especially pronounced among older returners as age generated physical and cognitive changes can increase their susceptibility to health risk and make medication management more difficult.

Medication non adherence can generally be classified in two types: intentional and unintentional. Intentional non adherence occurs when patient consciously choose not to follow their prescribed treatment plan. This may be influenced by cultural or traditional beliefs concern about side effects doubts about the effectiveness of medication or personal perception about their illness and treatment.

In contrast unintentional non adherence happens patients want to follow their treatment but face practical challenges. Common reasons include forgetfulness, misunderstanding description instructions, complex medication regiments, Visual impairment, cognitive decline or physical limitations that make it difficult to manage medications independently.

Both intentional and unintentional non adherence are common among older adults and can significantly affect their health outcome quality of life.

Clinically non - adherence leads to poor disease control, disease progression, increased compilations, reduced functional ability and higher mortality rates. From a healthcare system perspective, it contributes to frequent hospital admissions, Emergency departments visits, prolonged hospital stays and increased health care expenditure. Globally medication non adherence is recognised as a major public health issue and the WHO has highlighted that improving adherence may have a greater impact on population health than the development of new medications [4]

In India, studies have reported variable medication adherence rates among elderly patients with chronic diseases, ranging from low to moderate depending on study setting and population. Factors consistently associated with poor adherence include low literacy, inadequate patient counselling, financial constraints, lack of caregiver support and insufficient follow up from health care providers [6]. Urban slum populations face additional challenges due to unstable living conditions, limited access to health care facilities, overcrowding and competing livelihood priorities that affect health seeking behaviour.

Despite increasing awareness of chronic disease management, there remains a significant gap in understanding medication adherence among elderly population in community - based settings particularly in underserved urban slum areas such as Madanpur Khadar. Most existing research has been conducted in hospital settings which may not accurately reflect real world adherence behaviour in community environments where supervision and structured care are minimal.

Additionally, community-based studies are crucial because they identify real-world obstacles to drug adherence that are frequently overlooked in clinical setting. These include accessibility issues social support systems, cultural beliefs and daily life challenges that influence health behaviours. Therefore, studying medication and the community level provide a more accurate and comprehensive understanding of the problem.

To systematically access medication adherence validated tools such as Morisky Medication Adherence Scale (MMAS – 8) are widely used. The scale has been extensively validated across different populations and provides a standardised method for measuring adherence behaviour in chronic disease patients [7]. It helps in categorising patients into high, medium and low adherence groups, thereby allowing researchers to identify at - risk population and associated determinants.

Improving medication adherence among elderly individuals require a multi- dimensional approach. Patient education, simplification of medication regimens, involvement of caregivers, use of reminder systems, regular follow up and strengthening primary health care services are some of strategies that have been shown to improve adherence rates. Community health workers also play an important role in providing continuous support and monitoring medication practises among elderly individuals in resource limited settings.

Understanding the level of adherence and its associated factors in community setting is essential for designing effective public health intervention. Therefore, the present study is undertaken to excess medication adherence among elderly individuals with chronic health conditions in community settings and to Identify the factors influencing adherence behaviour the findings of the study are expected to contribute geriatric healthcare planning and policy development.

1.2 Background of the Study

Population ageing is one of the most significant demographic transitions of the 21st century. Advances in healthcare, improved nutrition, sanitation, and disease prevention have contributed to increased life expectancy, resulting in a rapid rise in the elderly population worldwide. According to the United Nations, the global population aged 60 years and above is projected to increase from 1 billion in 2020 to approximately 2.2 billion by 2050. This demographic shift has increased the prevalence of chronic non-communicable diseases (NCDs), creating substantial challenges for healthcare systems, particularly in low- and middle-income countries.

Older adults commonly experience chronic conditions such as hypertension, diabetes mellitus, cardiovascular diseases, chronic kidney disease, arthritis, chronic obstructive pulmonary disease (COPD), stroke, and neurodegenerative disorders. These illnesses require long-term pharmacological treatment and regular follow-up, making medication adherence a critical component of disease management. However, medication adherence among elderly individuals is influenced by multiple factors, including health literacy, cognitive decline, polypharmacy, financial constraints, social support, and healthcare accessibility.

In India, the ageing population is increasing rapidly alongside an epidemiological transition towards chronic diseases. Urban slum populations are particularly vulnerable due to poverty,

overcrowding, inadequate healthcare access, and poor health literacy. These socio-economic challenges often hinder effective management of chronic illnesses and increase the risk of medication non-adherence. Consequently, improving medication adherence has become an important public health priority for reducing complications, improving quality of life, and minimizing healthcare costs among older adults.

1.3 Need of the Study

Medication adherence is essential for achieving favourable treatment outcomes in elderly individuals living with chronic health conditions. Despite the availability of effective medications, poor adherence remains a major public health concern, leading to uncontrolled disease, avoidable complications, increased hospitalizations, reduced quality of life, and higher healthcare expenditure. The World Health Organization recognizes medication non-adherence as one of the leading causes of poor treatment outcomes in chronic disease management.

Although several studies have examined medication adherence among patients with chronic diseases, most have been conducted in hospital or outpatient settings. Limited evidence is available regarding medication adherence among elderly individuals residing in community-based urban slum settings, where healthcare access, socioeconomic conditions, caregiver support, and health literacy differ considerably from institutional settings.

Madanpur Khadar, an urban slum in Delhi, represents a socioeconomically disadvantaged community where elderly individuals often face multiple barriers to managing chronic illnesses. Understanding the level of medication adherence and the factors influencing adherence behaviour in this setting is essential for developing targeted community-based interventions, strengthening primary healthcare services, and improving geriatric care.

The findings of the present study will contribute to the existing body of knowledge by providing evidence on medication adherence among elderly individuals with chronic health conditions in a community setting. The study may also assist healthcare providers, programme planners, and policymakers in designing strategies to improve adherence, promote healthy ageing, and enhance the effectiveness of chronic disease management programmes.

1.4 Rationale of the study

The increasing prevalence of chronic diseases among the elderly has made medication adherence a critical component of effective disease management. Although pharmacological therapies for conditions such as hypertension, diabetes mellitus, cardiovascular diseases, and other chronic illnesses are widely available, their effectiveness largely depends on patients taking medications as prescribed. Poor medication adherence can result in disease progression, preventable complications, frequent hospitalizations, increased healthcare expenditure, and reduced quality of life. Therefore, understanding medication adherence among older adults is essential for improving health outcomes and promoting healthy ageing.

In India, the ageing population is growing rapidly, particularly in urban areas where socioeconomic disparities and limited access to healthcare services pose additional challenges to chronic disease management. Elderly individuals living in urban slum communities often experience barriers such as low health literacy, financial constraints, polypharmacy, inadequate caregiver support, and poor access to healthcare facilities, all of which may negatively influence medication adherence. Despite these challenges, evidence on medication adherence among elderly individuals in community-based urban slum settings remains limited.

Madanpur Khadar, an urban slum in Delhi, represents a vulnerable population where elderly individuals frequently live with multiple chronic conditions and face significant social and healthcare challenges. Assessing medication adherence in this community will provide valuable insights into the magnitude of the problem and the factors influencing adherence behaviour in a real-world setting. Such evidence is important for designing targeted interventions, strengthening community-based geriatric care, improving patient education and counselling, and supporting primary healthcare services.

Furthermore, the findings of this study are expected to assist healthcare professionals, programme managers, policymakers, and public health practitioners in developing evidence-based strategies to improve medication adherence among elderly individuals. The study will also contribute to the existing literature on geriatric healthcare in India and support the planning of interventions aimed at enhancing chronic disease management, promoting healthy ageing, and improving the overall quality of life of older adults.

Chapter 2 : Literature Review

2.1 Foreign Studies

Brown and Bussell emphasised that medication non - adherence is a major global health issue contributing significantly to poor disease outcomes and increased health care costs, especially in chronic diseases requiring long term therapy. [8] They highlighted that improving adherence requires addressing behavioural, systematic and educational barriers simultaneously.

Jimmy and Jones reported that adherence measurement remains a challenge in clinical practice, with self-reported tools such as MMAS being widely used due to simplicity and feasibility, although they may be over estimate adherence levels [9].

Morisky et al. validated the MMAS-8 scale and demonstrated its strong predictive validity in identifying non adherence patients in chronic disease populations, particularly hypertension and diabetes[10]

A study conducted among elderly hypertensive patients reported that nearly half of the participants had poor medication adherence with polypharmacy and forgetfulness identified as major contributing factor [11]

Another study among older adults with mild cognitive impairment found that cognitive decline significantly reduce medication adherence and increase dependency on caregivers for medication management [12]

A systematic review on medication adherence in chronic disease reported that adherence rates globally remain around 40 - 60%, with low adherence observed in elderly populations due to multi-mobility and complex drug regimens [13]

A European cohort study found that social isolation and lack of family support were strongly associated with poor medication adherence in elderly populations [14]

A study accessing antihypertensive adherence in older adults identified side effects, lack of perceived need for medication and complex dosing schedules as key barriers of adherence [15]

A review on digital health interventions found that mobile reminders, tele-pharmacy and digital pill monitoring significantly improved adherence among elderly patients [16]

Another meta-analysis of adherence interventions show that multi-component interventions combining education, counselling and follow-up care where more effective than single interventions [17]

A hospital based study reported that elderly patients with multiple chronic conditions had significantly lower adherence compared to those with single disease conditions due to increased medication burden [18]

A study using electronic record analysis found that approximately 20-25% of elderly patients were non adherent which directly impacted hospitalisation rates and treatment outcomes [19]

2.2 Indian Studies

A study conducted in North India among hypertensive elderly patients found that adherence was suboptimal and major determinants included low education, financial dependency and polypharmacy [20]

A community based study in Uttarakhand using MMAS-8 scale reported that a large proportion of elderly patients had medium to low adherence level, mainly due to forgetfulness and lack of awareness [21]

A tertiary care hospital study in Gujarat reported that only about half of elderly patients adhere to prescribed medications, with socio-economic status and lack of counselling being significant predictor [22]

A study in Maharashtra found that polypharmacy significantly reduced medication adherence among elderly patients attending geriatric outpatient departments [23]

A South Indian study reported that family support and caregiver involvement significantly improved adherence level among elderly individuals with chronic diseases [24]

A community based urban slum study in India found that poverty low literacy and limited healthcare excess One major barriers to mitigation adherence [25]

A study from Karnataka showed that adherence decreased significantly with increasing number of medication and duration of illness [26]

A Telangana based study reported that nearly 60% of elderly patients had poor adherence and lack of regular follow up contributed significantly to this issue [27]

A Tamil Nadu study found that awareness about disease and medication purpose significantly improved adherence levels among elderly individuals [28]

A Delhi NCR study highlighted that career dependency plays a crucial role in medication adherence among physically dependent elderly individuals [29]

A community intervention study in India demonstrated that health education and regular counselling sessions significantly improved mitigation adherence among elderly population [30]

2.3 Research Gaps Identified

Although extensive global and national literature exists on medication adherence among elderly individuals with chronic health conditions, important contextual and population specific gaps remain, particularly in community based urban slums settings. Most international studies have established that medication adherence among elderly population is suboptimal and is influenced by factors such as polypharmacy, multimorbidity, cognitive decline, forgetfulness and lack of social and caregiver support. [8-19] . Similarly Indian studies have highlighted socio economic constraints, low literacy in adequate counselling and health system related barriers as major determinants of poor adherence. [20-30] . However, these studies are largely conducted in hospital settings, tertiary care sectors or relatively stable urban populations which do not fully reflect the real life conditions of elderly individuals living in marginalised urban slum communities.

A key gap identified in relation to present study is the lack of focused community based evidence from urban slum areas such as South Delhi where elderly populations face multiple interacting vulnerabilities including poverty, overcrowded living conditions, irregular healthcare access and dependence on informal caregivers. These factors are likely to significantly influence medication taking behaviour but remain under-explored in existing literature. Furthermore, more studies have examined medication adherence in isolation or have focused on specific disease groups (such as hypertension or diabetes), whereas there is limited evidence accessing adherence among elderly individuals with multiple chronic conditions in a single community-based framework.

Another important gaps in is the limited use of standardised and validated adherence assessment tools such as Morisky Medication Adherence scale (MMAS-8) in slum based elderly populations in India, leading to inconsistences in measurement and comparison across

studies. In addition, there is insufficient exploration of combined influence of socio demographic factors (age, education, income, living arrangements), clinical factors (number of diseases, duration of illness, polypharmacy) and behavioural factors (knowledge and self-care practises) within a single analytical model.

Therefore, the present study is designed to address these gaps by assessing medication adherence among elderly individuals with chronic health conditions in a community based urban slum setting Madanpur Khadar. It will also examine the association between medication adherence and key socioeconomic demographic, clinical and knowledge related factors. The findings are expected to provide context specific evidence that guide targeted interventions such as patient education caregiver involvement medication reminders and strengthening of primary healthcare service of elderly population and underserved communities.

Chapter 3: Research Objective

3.1 General Objective

To assess medication adherence among elderly individuals aged 60 years and above suffering from chronic health conditions in a community based urban slum setting (Madanpur Khadar) and to understand the factors influencing medication adherence behaviour.

3.2 Specific Objectives

1. To assess the level of medication adherence among elderly individuals more than or equal to 60 years:

   This objective aims to measure the extent to which elderly individuals follow their prescribed medication regimen using the Morisky Medication Adherence Scale (MMAS-8). The participants will be categorised into high, medium and low adherence groups and an overall understanding of adherence patterns will be provided within the study population.

2. To identify a common chronic health condition among the elderly populations:

   This objective focuses on documenting the prevalent chronic diseases among elderly participants such as hypertension, diabetes mellitus, cardiovascular disease, arthritis COPD and other long term conditions. It will help in understanding the disease burden profile within the community and its relation to medication use behaviour.

3. To Identify factors associated with medication non adherence:

   This objective aims to explore the various contributing factors responsible for poor medication adherence among elderly individuals. These may include forgetfulness, complexity and medication regimens side effects, financial constraints, lack of awareness, poor health literacy and inadequate caregiver support. The study will help

in identifying key barrier affecting consistent medication views.

4. To assess knowledge regarding prescribed medication:

   This objective evaluates the level of awareness among elderly individual about their medications including knowledge of drug names, purpose of medication, correct doses, timing of administration and actions to be taken in case of missed doses. It will help determine whether knowledge deficits contribute to non-adherence behaviour.

5. To examine the association between socio demographic factors and medication adherence:

   This objective focuses on analysing the relationship between medication adherence and socioeconomic demographic variables such as age, gender, education level, vital status, occupation, monthly income and living arrangements. It will be determined whether these factors have an influence on adherence behaviour among elderly individuals.

3.3 Research Question

What is the level of medication adherence among elderly individuals with chronic health conditions and how our social demographic factors, clinical conditions and medication related knowledge associated with adherence behaviour in a community based urban slum setting?

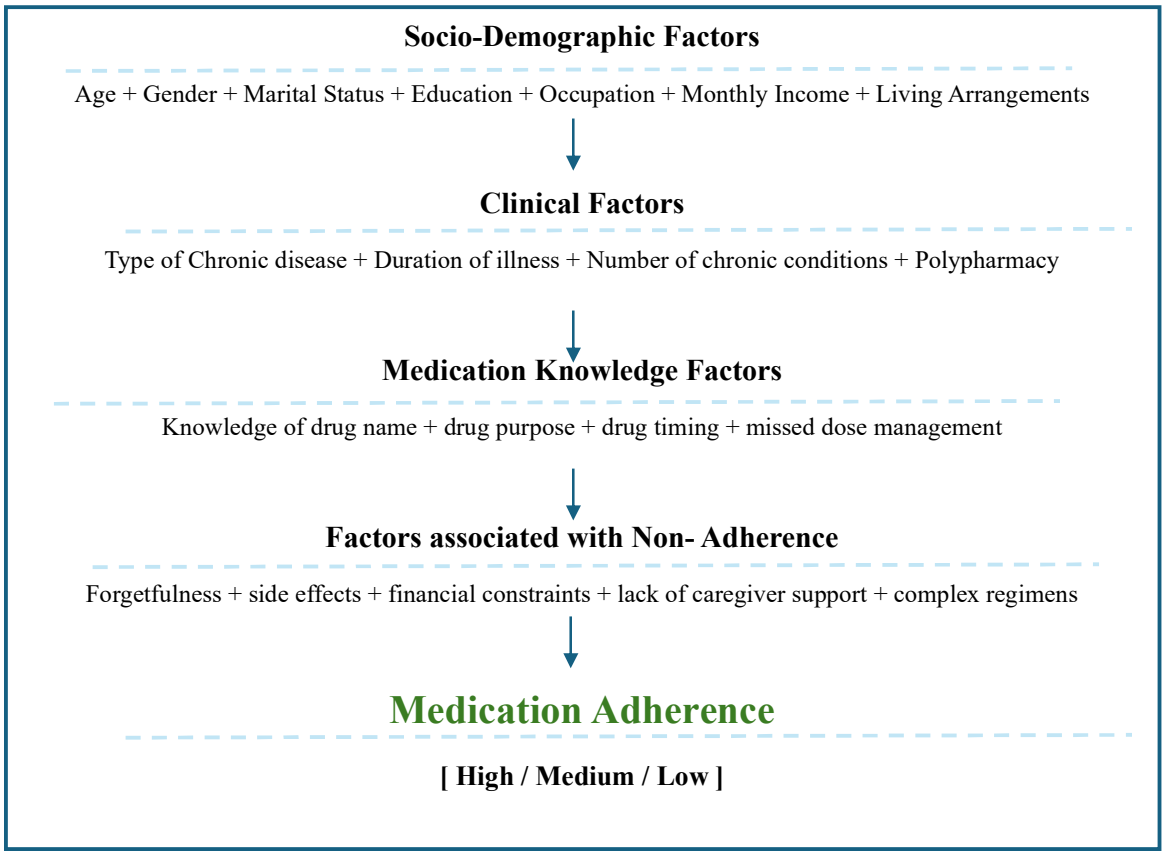
3.4 Conceptual Framework

The present study is based on the concept that medication adherence among elderly individuals with chronic health conditions is a multi-factorial phenomenon influenced by socio-demographic characteristics, disease related factors, medication related factors and knowledge regarding prescribed treatment.

Medication adherence is not solely determined by an individual's willingness to take medicines. Rather, it is affected by several interacting factors including age related changes, educational status, financial resources, disease burden, complexity of treatment regimens and understanding of medication instructions. Elderly individuals living with chronic illness often require long term treatment and may face challenges such as forgetfulness, physical limitation, cognitive decline, dependence on caregiver and multiple medication views. These challenges can directly or indirectly influence adherence behaviour.

The framework assumes that socio-demographic characteristics influence health seeking behaviour and access to healthcare services, while clinical characteristics determine the complexity of treatment. Knowledge regarding medications act as an intermediate factor that may improve or reduce adherence depending on level of understanding. Together these factors ultimately influence medication adherence among elderly individuals.

Figure: 3.4



3.5 Terminology Used

Medication Adherence

Medication Adherence refers to the extent to which elderly individuals take their prescribed medicines according to the recommendations of their health care provider. In the present study medication adherence will be measured using the Morisky Medication Adherence Scale (MMAS-8) and categorised as high, medium or low adherence based on the prescribed scoring criteria.

Elderly Individual

An elderly individual referred to a person aged 60 years and above as per the definition adopted by the government of India and World Health Organisation for developing countries.

Chronic Health Condition

A chronic health disease condition refers to a long term disease or health problem that persists for 3 month or longer and requires continuous medical management. In this study chronic condition include hypertension, diabetes mellitus, cardiovascular disease, arthritis, chronic obstructive pulmonary disease (COPD), asthma, thyroid disorders and other physician diagnosed chronic illnesses.

Medication Non-Adherence

Medication non-adherence refers to failure to take prescribed medicines according to the recommended dosage, timing, frequency or duration. It may include forgetting doses, stopping medications without medical advice, skipping doses or taking meditation inconsistently.

Medication Knowledge

Medical knowledge refers to the participant's awareness and understanding of prescribed medicines including their name, purpose, dosage, scheduled time of administration and actions to be taken if those is missed.

Polypharmacy

Polypharmacy refers to concurrent use of multiple medications by an individual. For the purpose of the study, polypharmacy will generally refer to the use of five or more medications simultaneously.

Chapter 4 : Methodology

4.1 Research Design

The present study adopted a community-based cross-sectional descriptive research design. The cross sectional design was considered appropriate because it enabled to assess medication adherence and associated factor among elderly individual at a specific point of time. The descriptive nature of the study facilitated the systematic collection of information regarding medication-taking behaviour, knowledge of prescribed medication and factors influencing adherence among elderly individual with chronic health conditions.

4.2 Study Area

The study was conducted in Madanpur Khadar, an urban slum area located in South East Delhi. The area was selected because of is sizeable elderly population and the presence of individuals from diverse socio economic backgrounds. The community setting provided an opportunity to access medication adherence among elderly individuals living with chronic health conditions in their natural environment.

4.3 Study Population

The study population consisted of elderly individuals aged 60 years and above residing in Madanpur Khadar who had been diagnosed with at least one chronic health condition and were receiving medication for its management.

4.4 Inclusion Criteria

Participants were included in the study if they:

- Were aged 60 years and above
- Had been diagnosed with at least one chronic disease
- Had been taking prescribed medicine for minimum period of three months

- They were willing to participate in the study
- Provide it informed consent

4.5 Exclusion Criteria

The following participants were excluded from the study:

- Elderly individuals who were severely ill and unable to respond to the interview questions.
- Individuals with cognitive impairment that prevented effective communication during the interview.
- Elderly individuals who declined participation.

4.6 Sample Size

A total of 150 elderly participants were included in the study. The sample size was determined based on feasibility, availability of eligible participants, study duration and available resources**.**

4.7 Sampling Technique

A cluster sampling technique was used to select study participants. Eligible elderly individuals who met the inclusion criteria were identified through household visits within the selected community. Participants were recruited until the required sample size was achieved.

4.8 Study Duration

Data collection was carried out over a period of one month.

4.9 Data Collection Method

Data was collected through face-to-face structured interviews using a pre-test questionnaire. The interviewer administered method was chosen because many elderly participants had varying level of literacy and some experience to visual and age related difficulties that could

affect self-administration of questioning.

Each interview required approximately 15 to 20 minutes to complete.

4.10 Study Tool

Data was collected using a structured questionnaire consisting of three sections:

Section A: Socio-Demographic and Clinical Profile

This section collected information regarding:

- Age
- Gender
- Marital status
- Educational status
- Occupation
- Monthly income
- Living arrangements
- Type of chronic disease
- Duration of illness
- Number of medications currently taken

Section B: Medication Adherence Scale

Medication adherence was assessed using Morisky Medication Adherence Scale (MMAS-8) The scale consisted of eight items that evaluated medication taking behaviour among the individuals with chronic disease.

The questionnaire included items such as:

- Do you something forget to take your medicine?
- In the past two weeks were there any days when you did not take your medicine?
- Have you ever stopped taking medicine without informing your doctor?
- When you feel better do you sometimes stop taking medicines?
- When you feel worse after taking medicines do you stop taking them?
- Do you find it difficult to remember taking all medicines?
- Did you take your medicine yesterday?

- When travelling or busy do you sometimes mistaking your medicines?

Based on MMAS-8 scoring criteria participants were categorised into:

- High adherence
- Medium adherence
- Low adherence

Section C Medication Knowledge Assessment

This section assessed participants knowledge regarding prescribed medicines.

Participants were asked whether they knew:

- The name of their medication
- The purpose of their medication
- The correct timing of medication administration
- The appropriate action to be taken when dose was missed.

4.11 Ethical Considerations

Written informed consent was obtained from all participants before enrolment in the study. Participation was voluntary and participants were informed of their rights to withdraw from the study at any stage without any consequences. Confidentiality and anonymity of participants w are maintained throughout the study and all information collected was used solely for academic and research purposes.

Chapter 5 : Results

A total of 150 elderly individuals with chronic health conditions participated in the study. The largest proportion of participants belong to 70-79 years age group (35.3%) followed by 60-69 years (33.3%) and 80 years above (31.3%).[Table – 1]. The mean age of participants was 74.0 years (SD=8.8), with females accounting for 50.7% (n=76) and males 46.3% (n=74). [Table-2] . 24.7% of participants have no formal education, while 21.3% have completed their primary education. Participants with higher secondary education constituted 20.7%, graduates and above 18%, and those with secondary education 15.3%. [Table-3]. Hypertension was the most commonly reported chronic condition (16%) followed by diabetes (15.3%), thyroid disorder (15.3%), arthritis (14%), COPD (12.7%) and other long term illnesses (11.3%).[Table-4].

Most participants (39.3%) were taking 3-5 medications, while 32% were taking 1-2 medications and 28.7% were taking more than 5 medications.[Table-5]. Furthermore, 60% of total participants had caregiver support.

Assessment of medication adherence revealed generally favourable adherence behaviours. Approximately 66.7% of participants reported that they did not forget to take their medications, 76.0% had not missed any dose during the previous two weeks and 81.3% reported that they did not discontinue medication without consulting their physician. A high proportion of respondents indicated that they continue taking medication even when they felt better (84.7%) or worse (90.0%). Additionally, 90% reported taking their medication on the day preceding the survey. [Table – 6]

Regarding medication-related knowledge, 60.7% of participants knew the name of their medication, 76% understood the purpose of their medications and 75.3% were aware of the correct timing of administration. However, only 58% knew the appropriate action to take if a dose was missed. [Table – 7]

The overall medication adherence score ranged from 3-8, within a mean score of 6.35 (SD=1.13). Based on adherence categorization 16% of participants demonstrated high adherence, 62% demonstrated moderate adherence and 22% demonstrated low adherence. [Table – 8].

These findings indicate that while the majority of elderly participants exhibited moderate adherence to prescribed medications, a substantial proportion remained at risk for suboptimal medication taking behaviour.

Chi-square analysis was performed to determine the association between medication adherence level and selected social demographic and clinical variables. No statistically significant association was observed between medication adherence and gender (χ^2, p=0.625), educational status (χ^2, p=0.230), caregiver support (χ^2, p=0.267), number of described medication (χ^2, p=0.731) or medication reminder method (χ^2, p=0.189). Since all p-values were greater than the pre-determined significance level of 0.05, the Null Hypothesis was retained. These findings suggest that medication adherence among the study participants were not significantly influenced by the selected demographic and treatment related characteristics

Chapter 6: Discussion

The present study assessed medication adherence among elderly individuals with chronic health conditions in a community setting. The findings revealed that the majority of participants were aged between 70 and 79 years with an almost equal distribution of males and females. A substantial proportion of participants had low educational attainment with nearly one fourth having no formal education. These demographic characteristics are important because ageing, literacy levels and health awareness have been identified as factors influencing medication taking behaviour among older adults. The proportion of participants in older age groups reflect the increasing burden of chronic disease among elderly populations and highlights the need of effective long term disease management strategies.

Hypertension emerged as the most common chronic health condition among the participants, followed closely by diabetes, thyroid disorders, heart disease, arthritis and respiratory conditions. This pattern is consistent with the epidemiological transition observed in many developing countries where non-communicable disease accounts for a large proportion of morbidity among older adults. The coexistence of multiple chronic conditions often necessitates long term medication use and increase the complexity of treatment regimens. In the present study more than one third of participants were taking three to five medications daily, while nearly one third were taking more than five medications. Such findings initiate a considerably prevalence of polypharmacy which is a well-recognised challenged in geriatric healthcare. Polypharmacy can increase the risk of medication error, adverse drug reaction and treatment fatigue, all of which can be negatively affect medication adherence.

The assessment of medication adherence behaviour revealed generally positive practices among the study participants. A large majority reported that they did not stop taking medications when they felt better or worse and had taken their medications on the day preceding the survey. These findings suggest that many participants recognise the importance of continuing prescribed treatment despite fluctuations in symptoms. Such behaviour is particularly important in chronic disease management where treatment effectiveness depends on sustained adherence rather than symptom-based medication use. However despite these encouraging findings a notable proportion of participants reported forgetting to take medications, experiencing difficulty remembering medication schedules or missing doses during the previous two weeks. Forgetfulness remains one of the most frequently reported barriers to medication adherence among elderly populations. Age related cognitive changes

multiple medications schedules, visual impairment and inadequate family support may contribute to these challenges. These findings therefore indicate that while intentional non-adherence was relatively uncommon, unintentional non-adherence resulting from forgetfulness continues to be a significant concern.

Medication related knowledge among participants was generally satisfaction. More than three quarters of respondents knew the purpose of their medications and the correct timing of administration. Adequate knowledge regarding medication purpose and timing is essential because it enables participant to understand the benefit of treatment and encourage consistent medication taking behaviour. Nevertheless, only approximately three fifth of participants knew the names of their medications or understood the appropriate action to take after missing a dose. These findings suggest the presence of important knowledge gaps that would potentially affect treatment outcomes. Elderly individuals who are unable to identify their medications or manage missed doses appropriately may be at a greater risk of medication error and disease complications. The observed deficiency may be related to lower educational level, insufficient counselling by healthcare provider or dependence on family members for medication management. These findings emphasise the importance of strengthening patient education and counselling service within the community healthcare programmes.

The assessment of medication-taking behaviour revealed that most participants exhibited a moderate degree of adherence, whereas only a small proportion fell into the low- or high-adherence categories. These findings suggest that, while participants generally followed their prescribed treatment plans, occasional lapses such as missed doses or inconsistencies in following medication instructions were common. Complete non adherence was relatively infrequent; however, the number of participants with consistency high adherence was also limited.

These findings highlight the need for strategies aimed at improving medication taking behaviour. The pre-dominance of moderate adherence may be attributed to combining of facilitating factors such as adequate medication knowledge and caregiver support alongside barriers including forgetfulness and complex treatment regimens Given that chronic disease often require long term or lifelong therapy even occasional lapses in medication use can reduce treatment effectiveness and increase the likelihood of disease progression and complications.

The findings of this study underscore the importance of promoting medication adherence among older adults particularly as the ageing population continues to grow ensuring that elderly individuals take their medications as prescribed is essential for effective disease management reducing preventable hospitalisation and enhancing overall quality of life. Community based measures such as medication counselling home follow up services pill organisers medication schedules and mobile reminder systems can help address common challenges associated with medication use. At the same time health care professionals should provide clear and comprehensive information about medications including their purpose dosage and management of missed doses. The active involvement of family members and caregiver is equally important especially for older adults with cognitive or physical limitations strengthening community health programmes that support medication adherence may play a key role in improving chronic disease outcome and overall health among elderly.

Although this study sheds light on medication adherence among elderly individuals with chronic illness several limitations should be noted. The findings were based on participants sell reported information which may be influenced by memory errors or inaccuracies in reporting. In addition, the cross sectional study design captures information at a single point in time and therefore cannot determine causal relationships between adherence and the fact related factors. Despite these limitations the study adds the existing evidence on medication adherence among community dwelling other older adults and emphasises the need of for focused strategies and supportive measures to improve adherence and overall health outcomes.

Overall, the findings indicate the medication adherence among elderly individuals with chronic health conditions involves predominantly moderate. Participants generally demonstrated positive medication-taking behaviour and reasonable levels of medication knowledge; however, forgetfulness and gaps in knowledge regarding medication management will make significant concerns. The result emphasise the need for continuous patient education caregiver involvement and community based adherence support strategies to promote optimal medication use and improve health outcome among older adults.

Chapter 7 : Conclusion

The study was conducted to assess medication adherence among elderly individuals with chronic health conditions in a community setting. The findings provide important insights into the medication-taking behaviours, medication-related knowledge and the adherence level of older adults managing long term illnesses. As the prevalence of chronic disease continues to increase with population ageing, medication adherence remains a critical determinant of treatment effectiveness, disease control, quality of life and healthcare utilization.

The study findings revealed that hypertension, diabetes, thyroid disorders, heart disease, arthritis and chronic respiratory conditions were among the most common chronic health conditions affecting the participants. A considerable proportion of participants were taking multiple medications daily reflecting the high prevalence of polypharmacy among the elderly population. Despite the complexity of treatment regimens, most participants demonstrated generally positive medication-taking behaviour. The majority reported that they continued taking medication even when they felt better or worse and had taken their prescribed medication on the day prior to data collection. These findings indicate a reasonable level of awareness regarding the importance of maintaining treatment continuity of chronic disease management.

The assessment of medication-related knowledge showed that most participants understood the purpose of their medication and the correct timing of administration. However, important knowledge gaps were identified regarding medication names and appropriate actions following missed doses. Such deficiencies may increase the risk of medication errors and compromise treatment outcomes. These findings emphasise the need for ongoing patient education and counselling to strengthen medication literacy among elderly individuals.

The majority of patients showed moderate adherence, whereas smaller percentage showed low or high adherence, according to the overall medication adherence assessment. The majority of individuals typically adhered to their recommended treatment regimens, but they occasionally had lapses in their medication-taking behaviours, as indicated by the predominance of moderate adherence. The percentage of highly devoted people remained low, despite the fact that total non-adherence was comparatively rare. The result may imply that there are chances to enhance adherence even more with focused interventions. The current study's moderate adherence may be the result of a balance between positive (like medication knowledge and caregiver assistance) and negative (like forgetfulness, and

treatment complexity) aspects. Because chronic illness necessitates long-term, frequency lifelong care, missing a few doses only reduces therapeutic efficacy and raises the danger of complexities.

The result of this study underscore the importance of implementing community-based strategies to improve medication adherence among elderly individuals with chronic health conditions. Interventions such as individualised medication counselling, regular follow-up visit, use of medication reminder system, pill organisers, family support, caregiver involvement and health education programmes may significantly improve adherence behaviours. Healthcare professionals particularly community health workers, nursing staffs, pharmacists and primary care physicians have a crucial role in promoting adherence through patient centred education and continuous support.

From a public health perspective, improving medication adherence among elderly populations has the potential to enhance disease control, reduce complications, minimise preventable hospital admissions, lower healthcare costs and improve overall quality of life. As a burden of chronic disease continues to grow, adherence-focus interventions should be integrated into routine health service and elderly care programmes.

The study concluded that the majority of elderly people with chronic health conditions had moderate drug adherence. Participants showed adequate medicine-taking behaviour and a respectable degree of mitigation awareness, but issues with forgetfulness and inadequate meditation comprehension persisted. Improving medication adherence and attaining improved health outcomes for senior population require staggling patient education, encouraging caregiver participation, and putting in place efficient adherence support measures at the community level. The results of this study provide important information that can guide healthcare professionals, policy makers and public health practitioners in developing interventions aimed at supporting medication adherence among older adults living with chronic illness.

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32 Medication adherence among elderly individuals in Delhi NCR

33 Community-based intervention to improve medication adherence among elderly individuals in India.

Tables and Figures

Table-1 : Age distribution

Age Group (Years)	Frequency (n)	Percentage (%)
60–69	50	33.3
70–79	53	35.3
≥80	47	31.3
Total	150	100.0

Table -2 : Gender distribution

Gender	Frequency (n)	Percentage (%)
Male	74	49.3
Female	76	50.7
Total	150	100.0

Table-3 : Educational Distribution

Educational Status	Frequency (n)	Percentage (%)
No formal education	37	24.7
Primary school	32	21.3
Secondary school	23	15.3
Higher secondary	31	20.7
Graduate and above	27	18.0

Educational Status	Frequency (n)	Percentage (%)
Total	150	100.0

Table -4 : Disease Distribution

Chronic Condition	Frequency (n)	Percentage (%)
Hypertension	24	16.0
Diabetes	23	15.3
Thyroid disorder	23	15.3
Heart disease	23	15.3
Arthritis	21	14.0
COPD/Asthma	19	12.7
Others	17	11.3
Total	150	100.0

Table-5 : No. of Medication

Number of Medications	Frequency (n)	Percentage (%)
1–2 medicines	48	32.0
3–5 medicines	59	39.3
More than 5 medicines	43	28.7
Total	150	100.0

Table =6 : Reasons of adherence

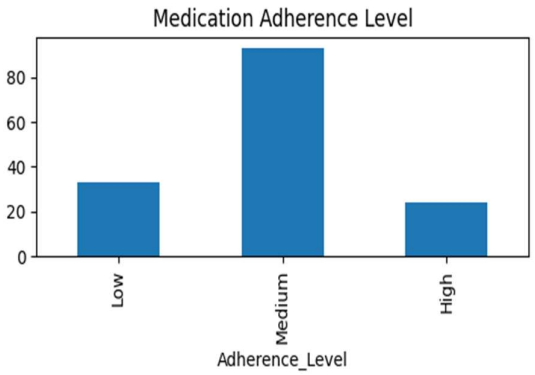
Item	Yes n (%)	No n (%)
Forget medication	50 (33.3)	100 (66.7)
Missed medication in last 2 weeks	36 (24.0)	114 (76.0)
Stop medication without doctor advice	28 (18.7)	122 (81.3)
Stop medication when feeling better	23 (15.3)	127 (84.7)
Stop medication when feeling worse	15 (10.0)	135 (90.0)
Difficulty remembering medication	41 (27.3)	109 (72.7)
Took medication yesterday	135 (90.0)	15 (10.0)
Miss medication when busy	40 (26.7)	110 (73.3)

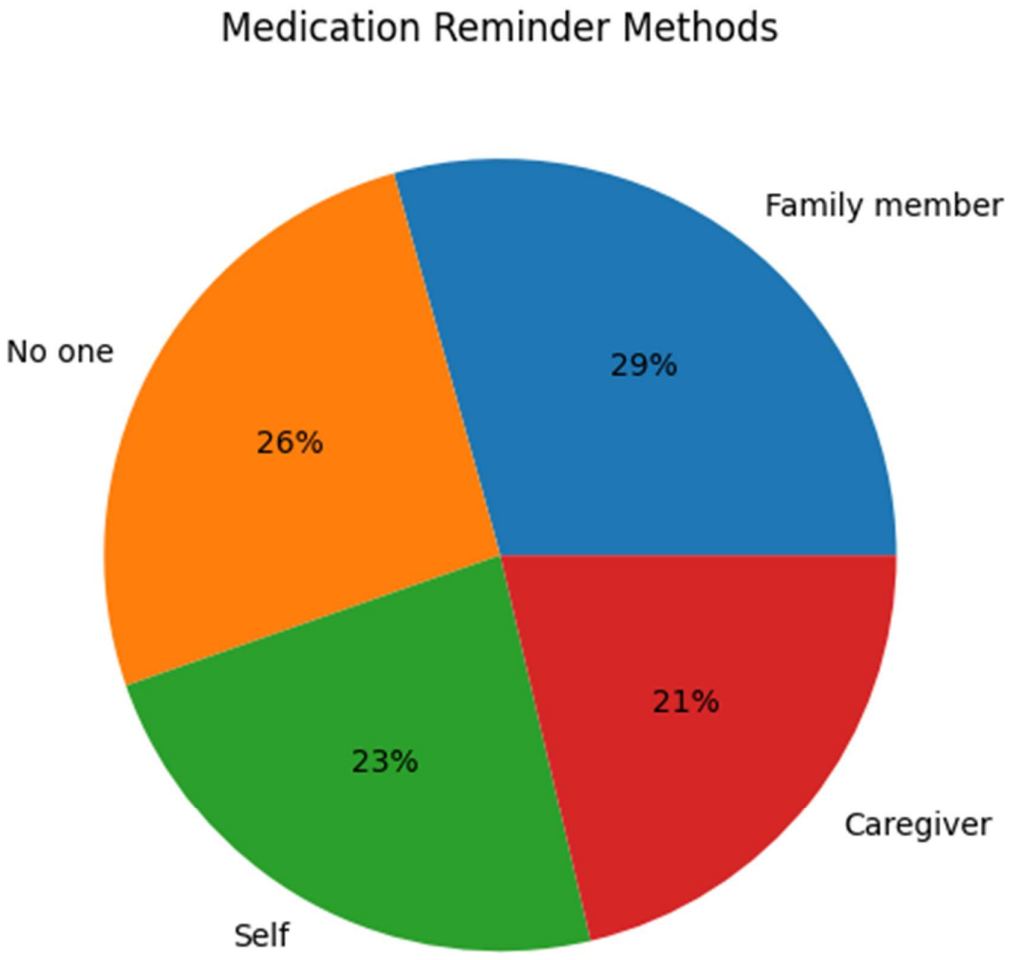
Table -7 : Medication knowledge

Knowledge Item	Yes n (%)	No n (%)
Know medication name	91 (60.7)	59 (39.3)
Know medication purpose	114 (76.0)	36 (24.0)
Know medication timing	113 (75.3)	37 (24.7)
Know action after missed dose	87 (58.0)	63 (42.0)

Table – 8 : Level of adherence

Adherence Level	Frequency (n)	Percentage (%)
Low adherence	33	22.0
Moderate adherence	93	62.0
High adherence	24	16.0
Total	150	100.0





Informed Consent Form

Title:
Medication Adherence Among Elderly With Chronic Health Conditions

Purpose:
You are invited to participate in a study to understand medication-taking practices among elderly individuals.

Procedure:
You will be asked questions about your medications and health condition. The interview will take approximately **15–20 minutes**.

Confidentiality:
All information will be kept confidential. Your name will not be recorded.

Voluntary Participation:

Participation is voluntary.

You may withdraw at any time.

Consent Statement:

"I have read the information and agree to participate in this study voluntarily."

Date: _____

Participant Signature: _____

Investigator Signature: _____

Questionnaire

Medication Adherence Among Elderly with Chronic Health Conditions in Community Settings

Participant ID: _____ **Date of Interview: _____**

Location: _____ **Interviewer Name: _____**

Section A: Socio-Demographic Profile

1. **Age (Years): _____**
2. **Gender**
   - □ Male
   - □ Female
   - □ Other
3. **Marital Status**
   - □ Married
   - □ Widowed
   - □ Single
   - □ **Divorced/Separated**
4. **Educational Status**
   - □ No Formal Education
   - □ Primary School
   - □ Secondary School
   - □ Higher Secondary
   - □ Graduate and Above
5. **Occupation**
   - □ Retired
   - □ Homemaker

□ Working

□ Unemployed

6. **Monthly Income**

□ No Income

□ Less than ₹5,000

□ ₹5,000–10,000

□ ₹10,001–20,000

□ Above ₹20,000

7. **Living Arrangement**

□ Living Alone

□ Living with Spouse

□ Living with Children

□ Living with Spouse and Children

□ Other

8. **Do you have a caregiver?**

□ Yes

□ No

9. **Who is your primary caregiver?**

□ Spouse

□ Son/Daughter

□ Relative

□ Paid Caregiver

□ No Caregiver

Section B: Clinical Profile

10. **Have you been diagnosed with any chronic disease?**

□ Yes

□ No

If Yes, specify:

□ Hypertension (High Blood Pressure)

□ Diabetes Mellitus

□ Heart Disease

□ Arthritis

□ COPD/Asthma

□ Thyroid Disorder

□ Chronic Kidney Disease

□ Stroke

□ Other _____

11. Duration of Illness

□ Less than 1 Year

□ 1–5 Years

□ 6–10 Years

□ More than 10 Years

12. Number of Chronic Diseases

□ One

□ Two

□ Three or More

13. Number of Medicines Taken Daily

□ 1–2 Medicines

□ 3–5 Medicines

□ More than 5 Medicines

14. Do you take medicines every day?

□ Yes

□ No

15. Who reminds you to take medicines?

□ Self

□ Family Member

□ Caregiver

□ Mobile Alarm

□ Nobody

16. Do you visit a healthcare provider regularly?

□ Yes

□ No

17. How often do you visit for follow-up?

□ **Monthly**

□ **Every 3 Months**

□ **Every 6 Months**

□ **Only When Needed**

18. Have you ever experienced side effects from your medicines?

□ Yes

□ No

Section C: Medication Adherence Assessment (MMAS-8 Based)

Please answer Yes or No.

19. Do you sometimes forget to take your medicines?

□ Yes □ No

20. During the past two weeks, were there any days when you did not take your medicines?

□ Yes □ No

21. Have you ever reduced or stopped taking your medicines without informing your doctor?

□ Yes □ No

22. When you feel better, do you sometimes stop taking your medicines?

□ Yes □ No

23. If you feel worse after taking medicines, do you stop taking them?

□ Yes □ No

24. Do you find it difficult to remember taking all your medicines?

□ Yes □ No

25. Did you take your medicines yesterday?

□ Yes □ No

26. When travelling or being away from home, do you sometimes forget to carry or take your medicines?

□ Yes □ No

Section D: Medication Knowledge Assessment

27. Do you know the names of your medicines?

□ Yes □ No

28. Do you know why you are taking these medicines?

□ Yes □ No

29. Do you know the correct timing of each medicine?

□ Yes □ No

30. Do you know the correct dosage of your medicines?

□ Yes □ No

31. Do you know what to do if you miss a dose?

□ Yes □ No

32. Have you ever received counselling regarding your medicines?

□ Yes □ No

33. Who explained your medicines to you?

□ Doctor

□ Nurse

□ Pharmacist

□ Family Member

□ Nobody

Section E: Factors Affecting Medication Adherence

34. What is the main reason for missing medicines? (Tick all that apply)

□ Forgetfulness

□ Financial Problems

□ Side Effects

□ Too Many Medicines

□ Lack of Family Support

□ Difficulty Visiting Health Facility

□ Feeling Better

□ Lack of Understanding

□ Medicine Not Available

□ Other _____

35. Do you find it difficult to buy medicines regularly?

□ Yes □ No

36. Do medication costs affect your treatment?

□ Yes □ No

37. Do family members support you in taking medicines?

□ Yes □ No

38. Do you think taking medicines regularly helps control your illness?

□ Yes □ No

39. Would you like reminders or support to improve medication adherence?

□ Yes □ No

Investigator's Remarks

_____

_____

_____

Signature of Participant: _____

Signature of Investigator: _____

Bhavna DIS3

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