



“A descriptive study to assess the prevalence and associated risk factors of dementia among the elderly residing in Village Jamuhar, Rohtas, Bihar.”

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ABSTRACT

Background:

Dementia is a progressive neurocognitive disorder characterized by deterioration in memory, thinking, behaviour, and the ability to perform everyday activities. It represents a growing public health challenge, particularly among older adults in low-resource rural settings where awareness, early detection, and access to healthcare services remain limited. Several demographic, lifestyle, and medical factors have been associated with cognitive decline. Assessing the prevalence of cognitive impairment and its associated risk factors is essential for developing effective community-based strategies for early identification and prevention.

Aim:

This study aimed to assess the prevalence of cognitive impairment suggestive of dementia and its associated risk factors among elderly individuals residing in Village Jamuhar, Rohtas, Bihar.

Methods:

A quantitative study employing a descriptive cross-sectional community-based design was conducted among 100 elderly individuals aged 60 years and above. Participants were selected using a non-probability purposive sampling technique. Data were



collected through a structured interview schedule that included socio-demographic characteristics, assessment of associated risk factors, and the Mini-Mental State Examination (MMSE) for cognitive screening. Data were analysed using descriptive statistics (frequency, percentage, mean, median, mode, and standard deviation) and inferential statistics (Chi-square test) to examine the association between cognitive impairment and selected socio-demographic variables and risk factors.

Results:

Based on MMSE scores, 52% of the participants had normal cognitive function, 32% had mild cognitive impairment, and 16% had severe cognitive impairment. The mean MMSE score was 22.1 ± 4.8 . The most common associated risk factors identified were physical inactivity (44%), hypertension (40%), smoking (38%), poor nutritional status (36%), diabetes mellitus (30%), social isolation (28%), alcohol consumption (26%), and chronic stress (24%). Significant associations were observed between cognitive impairment and age, educational status, and socioeconomic status ($p < 0.05$). Among the assessed risk factors, smoking, physical inactivity, hypertension, diabetes mellitus, social isolation, and poor nutritional status showed statistically significant associations with cognitive impairment ($p < 0.05$).

Conclusion:

The study demonstrated that cognitive impairment suggestive of dementia is a significant public health concern among elderly individuals residing in the selected rural community. Advancing age, lower educational attainment, poor socioeconomic status, unhealthy lifestyle behaviours, and chronic medical conditions were significantly associated with cognitive impairment. Community-based cognitive screening, health education, risk factor modification, and improved access to geriatric healthcare services are recommended to facilitate early detection and reduce the burden of cognitive impairment among older adults.

Keywords:

Cognitive Impairment, Dementia, Elderly, Mini-Mental State Examination, Prevalence,



Risk Factors, Rural Community, Geriatric Health.

INTRODUCTION

Dementia is a progressive neurocognitive disorder characterized by deterioration in memory, thinking, behaviour, and the ability to perform activities of daily living. It is one of the leading causes of disability and dependency among older adults worldwide and has become an important public health concern due to increasing life expectancy and population ageing. Although dementia primarily affects elderly individuals, it is not a normal consequence of ageing and requires early recognition and appropriate management.

According to recent global estimates, more than 55 million people are living with dementia, with nearly 10 million new cases reported annually. Approximately two-thirds of these individuals reside in low- and middle-income countries where awareness, diagnostic facilities, and specialized healthcare services remain inadequate. In India, the burden of dementia is increasing because of demographic transition and the growing elderly population. However, dementia often remains underdiagnosed, particularly in rural communities where cognitive decline is frequently considered a normal part of ageing.

The development of dementia is influenced by several non-modifiable and modifiable risk factors. Advancing age is the strongest non-modifiable risk factor, whereas hypertension, diabetes mellitus, smoking, alcohol consumption, physical inactivity, poor nutritional status, low educational attainment, and social isolation have been consistently associated with cognitive impairment. Early identification and appropriate management of these risk factors may delay cognitive decline and improve healthy ageing among older adults.

Despite the increasing burden of dementia, community-based evidence from rural areas



of Bihar remains limited. Most available studies have been conducted in urban settings or tertiary healthcare institutions, leaving a significant gap in understanding the prevalence of cognitive impairment and its associated risk factors among elderly individuals residing in rural communities. Region-specific epidemiological data are essential for planning preventive interventions, strengthening community-based geriatric care, and improving early detection of cognitive impairment.

Therefore, the present study was undertaken to assess the prevalence of cognitive impairment suggestive of dementia and its associated risk factors among elderly individuals residing in Village Jamuhar, Rohtas, Bihar. The findings are expected to provide baseline evidence for community health professionals, nurses, and policymakers to develop effective screening programmes, health education initiatives, and preventive strategies aimed at promoting healthy ageing and reducing the burden of dementia in rural populations.

STATEMENT OF THE PROBLEM:

A descriptive study to assess the prevalence and associated risk factors of dementia among the elderly residing in Village Jamuhar, Rohtas, Bihar.

OBJECTIVES OF THE STUDY

- To assess the prevalence of dementia among elderly individuals residing in Village Jamuhar, Rohtas, Bihar.
- To identify the associated risk factors prevalence of dementia among elderly individuals.
- To determine the association between prevalence of dementia and selected demographic variables.
- To determine the association between prevalence of dementia and selected risk factors.

OPERATIONAL DEFINITION



Dementia

In this study, dementia refers to impairment in cognitive functions such as memory, orientation, attention, language, and judgment assessed using the Mini Mental State Examination (MMSE).

Elderly

Individuals aged 60 years and above.

Prevalence

The total number of existing cases of dementia identified among the study population during the period of data collection.

Risk Factors

Variables such as age, lifestyle habits, chronic diseases, and socio-demographic conditions that contribute to the development of dementia.

Demographic Variables

Characteristics such as age, gender, marital status, educational status, occupation, income, and co-morbid illness of elderly individuals.

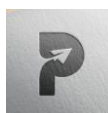
HYPOTHESIS

H₁ (Research Hypothesis):

There is a significant association between prevalence of dementia and selected demographic variables among elderly individuals residing in Village Jamuhar, Rohtas, Bihar.

ASSUMPTIONS

- Dementia is prevalent among elderly individuals residing in rural areas.
- Certain risk factors significantly influence the occurrence of dementia among elderly individuals.
- The Mini Mental State Examination (MMSE) is an effective tool for assessing cognitive impairment.
- Participants will provide honest and accurate information during data collection.



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- Early identification of dementia can help improve quality of life and management outcomes.

DELIMITATION

- The study is limited to elderly individuals aged 60 years and above.
- The study is confined to Village Jamuhar, Rohtas, Bihar.
- The study focuses only on dementia and its associated risk factors.
- The study includes only participants who are available and willing to participate.
- Data collection depends on participants' responses and MMSE assessment.

CONCEPTUAL FRAMEWORK

The present study was guided by the **Epidemiological Model**, which explains the relationship between socio-demographic, lifestyle, health-related, and social factors in the development of cognitive impairment among older adults. According to this framework, factors such as advancing age, low educational status, smoking, alcohol consumption, physical inactivity, hypertension, diabetes mellitus, social isolation, and poor socioeconomic status interact to influence cognitive decline. This framework provided the basis for identifying the prevalence of cognitive impairment and its associated risk factors among elderly individuals residing in Village Jamuhar, Rohtas, Bihar.

RESEARCH APPROACH

A quantitative approach with a descriptive cross-sectional community-based design was employed to assess the prevalence of cognitive impairment suggestive of dementia and its associated risk factors among elderly individuals. This approach enabled the systematic collection and statistical analysis of data to determine the distribution of cognitive impairment and its association with selected socio-demographic and health-related factors.

RESEARCH DESIGN

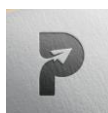
This quantitative descriptive cross-sectional community-based study was conducted to

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determine the prevalence of cognitive impairment suggestive of dementia and its associated risk factors among elderly individuals residing in Village Jamuhar, Rohtas, Bihar. The study employed an observational design to assess cognitive impairment and its association with selected socio-demographic and health-related variables.

RESEARCH VARIABLES

The variables included in the present study were:

Dependent Variable:

- Level of cognitive impairment (dementia)

Independent Variables (Risk Factors):

- Age
- Gender
- Education
- Lifestyle factors (smoking, alcohol consumption, physical activity)
- Chronic diseases (hypertension, diabetes)
- Social factors (isolation, socioeconomic status)

SETTING OF THE STUDY

The study was carried out in Village Jamuhar, Rohtas district, Bihar, India, a rural community with limited access to specialized geriatric healthcare services. The setting was considered appropriate for assessing the prevalence of cognitive impairment and its associated risk factors among community-dwelling elderly individuals.

POPULATION

The population of the study was consist of **all elderly individuals aged 60 years and above residing in Village Jamuhar, Rohtas, Bihar.**

Target Population

The target population comprised all elderly individuals aged 60 years and above residing in Village Jamuhar, Rohtas, Bihar.



Accessible Population

The accessible population comprised elderly individuals aged 60 years and above residing in Village Jamuhar, Rohtas, Bihar, who were available during the data collection period and met the study eligibility criteria.

Sample

The sample consisted of 100 elderly individuals aged 60 years and above residing in Village Jamuhar, Rohtas, Bihar, who fulfilled the inclusion criteria and consented to participate in the study.

Sample Size

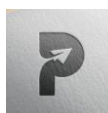
The sample size of the present study comprised 100 elderly individuals.

Sampling Technique

A non-probability purposive sampling technique was employed to recruit elderly individuals who met the predefined inclusion criteria. This technique was considered appropriate for selecting eligible participants from the study population in the community setting.

SAMPLING CRITERIA

Inclusion Criteria



- Elderly individuals aged 60 years and above
- Residents of Village Jamuhar
- Individuals who are willing to participate
- Individuals who are able to understand and respond independently or with caregiver assistance.

Exclusion Criteria

- Elderly individuals who are severely ill
- Individuals with severe hearing or speech problems

Data Collection Instrument

Data were collected using a structured interview schedule comprising three sections.

Section I included socio-demographic characteristics such as age, gender, marital status, educational status, occupation, and socioeconomic status.

Section II assessed potential risk factors for cognitive impairment, including smoking, alcohol consumption, physical activity, medical history (hypertension and diabetes mellitus), and social interaction and support.

Section III consisted of the **Mini-Mental State Examination (MMSE)**, a standardized and validated instrument widely used for screening cognitive impairment among older adults. The MMSE evaluates six cognitive domains: orientation, registration, attention and calculation, recall, language, and visuospatial ability.

MMSE scores were interpreted as **24–30 (normal cognition)**, **18–23 (mild cognitive impairment)**, and **0–17 (severe cognitive impairment)**.

Instrument Validity

The study instrument was reviewed for content validity by experts in Mental Health Nursing, Psychiatry, and Community Health Nursing. Necessary modifications were made based on their recommendations.

Instrument Reliability



The reliability of the study instrument was established using the test–retest method. The instrument demonstrated satisfactory reliability and was considered suitable for the study.

Pilot Study

A pilot study was conducted among 10 elderly individuals who were excluded from the final sample. The findings confirmed the feasibility of the study and the suitability of the data collection instrument and procedure.

Data Collection Procedure

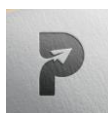
Following approval from the Institutional Ethics Committee and permission from the local authorities, eligible participants were recruited for the study. Written informed consent was obtained from all participants prior to data collection. Face-to-face interviews were conducted during household visits using a structured interview schedule in the local language. Confidentiality and anonymity of the participants were maintained throughout the study.

Statistical Analysis

Data were entered, coded, and analysed using appropriate statistical methods. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize participants' characteristics and study variables. Inferential analysis was performed using the Chi-square test to examine the association between cognitive impairment and selected socio-demographic variables. Statistical significance was established at a p -value of <0.05 .

Ethical Considerations

The study was approved by the Institutional Ethics Committee before its commencement. Written informed consent was obtained from all participants after explaining the purpose of the study. Confidentiality and anonymity were strictly maintained, and participation was entirely voluntary, with participants free to withdraw at any time without penalty.



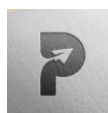
RESULT

Table 4.1

Frequency and Percentage Distribution of Socio-demographic Variables among Elderly Individuals

(N = 100)

S. No.	Socio-demographic Variables	Frequency (f)	Percentage (%)
1	Age in years		
	60–65 years	35	35%
	66–70 years	28	28%
	71–75 years	22	22%
	Above 75 years	15	15%
	Total	100	100%
2	Gender		
	Male	46	46%
	Female	54	54%
	Total	100	100%
3	Marital Status		
	Married	62	62%
	Widowed/Widower	30	30%
	Unmarried	8	8%
	Total	100	100%
4	Educational Status		
	Illiterate	40	40%
	Primary education	32	32%
	Secondary education	18	18%
	Higher education	10	10%
	Total	100	100%



5	Occupation		
	Agriculture	42	42%
	Labor work	24	24%
	Retired	18	18%
	Unemployed/Dependent	16	16%
	Total	100	100%
6	Type of Family		
	Joint family	58	58%
	Nuclear family	42	42%
	Total	100	100%
7	Socioeconomic Status		
	Low	48	48%
	Middle	38	38%
	High	14	14%
	Total	100	100%

Table 4.2

Distribution of Elderly Individuals according to Level of Cognitive Impairment using MMSE(N = 100)

Level of Cognitive Impairment	Score Range	Frequency (f)	Percentage (%)
Normal cognition	24–30	52	52%
Mild cognitive impairment	18–23	32	32%
Severe cognitive impairment	0–17	16	16%
Total		100	100%



Table 4.3

Mean, Median, Mode and Standard Deviation of MMSE Scores among Elderly Individuals

(N = 100)

Variable	Mean	Median	Mode	Standard Deviation
MMSE Score	22.1	22	24	4.8

Table 4.4

Frequency and Percentage Distribution of Risk Factors among Elderly Individuals

(N = 100)

S. No.	Risk Factors	Frequency (f)	Percentage (%)
1	Smoking	38	38%
2	Alcohol consumption	26	26%
3	Physical inactivity	44	44%
4	Hypertension	40	40%
5	Diabetes mellitus	30	30%
6	Social isolation	28	28%
7	Poor nutritional status	36	36%
8	Chronic stress	24	24%

Table 4.5

Association between prevalence of Dementia and Selected Socio-demographic Variables among Elderly Individuals

(N = 100)

Socio-demographic Variables	χ^2 Value	df	p-value	Significance
Age	8.12	3	<0.05	Significant



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Gender	2.14	1	>0.05	Not Significant
Marital status	3.20	2	>0.05	Not Significant
Educational status	9.36	3	<0.05	Significant
Occupation	2.98	3	>0.05	Not Significant
Type of family	1.84	1	>0.05	Not Significant
Socioeconomic status	6.42	2	<0.05	Significant

Table 4.6

Association between selected risk factors of dementia and socio demographic variables.

(N = 100)

Risk Factors	χ^2 Value	df	p-value	Significance
Smoking	5.82	1	<0.05	Significant
Alcohol consumption	2.76	1	>0.05	Not Significant
Physical inactivity	7.20	1	<0.05	Significant
Hypertension	8.44	1	<0.05	Significant
Diabetes mellitus	6.18	1	<0.05	Significant
Social isolation	5.34	1	<0.05	Significant
Poor nutritional status	4.92	1	<0.05	Significant

Chronic stress	2.48	1	>0.05	Not Significant
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Major Findings of the Study

The study findings indicated that the majority of participants were aged 60–69 years and that males constituted a higher proportion of the study population. Most participants had



low educational attainment and belonged to lower socioeconomic groups. Hypertension and diabetes mellitus were the most frequently reported chronic conditions, while physical inactivity and reduced social interaction were common among the participants. Smoking and alcohol consumption were also identified as important behavioural risk factors.

Regarding cognitive status, most elderly individuals had normal cognitive function, whereas a substantial proportion demonstrated mild cognitive impairment and a smaller proportion had severe cognitive impairment, suggesting that cognitive decline is prevalent among elderly individuals residing in the study area.

Nursing Practice

The findings underscore the pivotal role of nurses in the early detection and prevention of cognitive impairment among older adults. Community health nurses can integrate routine cognitive screening, health education, risk factor modification, and caregiver counselling into primary healthcare services to facilitate early identification and timely referral of elderly individuals at risk of dementia.

Nursing Education

The study highlights the need to strengthen geriatric mental health education within nursing curricula. Greater emphasis should be placed on cognitive assessment, dementia prevention, and the use of standardized screening tools such as the Mini-Mental State Examination (MMSE). Regular continuing education programs can further enhance nurses' competence in evidence-based dementia care.

Nursing Administration

The findings provide evidence for nursing administrators to strengthen community-based geriatric mental health services by implementing routine cognitive screening programs, organizing capacity-building initiatives for healthcare professionals, and promoting public awareness regarding dementia prevention and healthy ageing, particularly in rural communities.

Nursing Research

The present study provides baseline evidence for future research on dementia among rural



elderly populations. Further multicenter studies with larger sample sizes and longitudinal or interventional designs are recommended to validate these findings and evaluate strategies for the prevention, early detection, and management of cognitive impairment.

Limitations

The present study has certain limitations. It was conducted among 100 elderly individuals from a single rural community using a non-probability purposive sampling technique, which may limit the generalizability of the findings. The cross-sectional design precluded the establishment of causal relationships between cognitive impairment and associated risk factors. In addition, cognitive function was assessed using the MMSE, a screening instrument, rather than comprehensive clinical or neuropsychological evaluation.

Recommendations

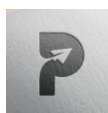
Future studies should include larger and more representative samples from multiple rural and urban settings to improve the generalizability of the findings. Longitudinal and interventional studies are recommended to examine the progression of cognitive impairment and evaluate the effectiveness of preventive strategies. Further research incorporating comprehensive neuropsychological assessment and community-based dementia prevention programs is also warranted.

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