International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 10, October 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.10.2024.164

Original Research

An Epidemiological study of prevalence, diagnosis, treatment & control of Diabetes among elderly persons in Bihar

[1]Dr. Arunkumar Rameshwarprasad Varun, [2]Dr. Randhir Kumar, [3]Dr. AlokPritam, [4]Dr. Nipendra Anand

[1]Associate Professor Department of Community Medicine , M.M. Institute of Medical Sciences & Research, Mullana-Ambala,Haryana(India)
[2]Professor & Head, Department of Community Medicine, LBKMCH Saharsha Bihar
[3]Assistant Professor (Statistics), Department of Community Medicine, Govt. Medical College, Raigarh
[4]Professor & Head, Department of Community Medicine, NMCH Sasaram Bihar

Correspondences Author
Dr. Arun kumar Rameshwarprasad Varun
Associate Professor, Department of Community Medicine , M.M. Institute of Medical Sciences & Research
Mullana-Ambala,Haryana(India)
Email- arvarun82@gmail.com

Received Date: 28 August, 2024 Accepted Date: 25 September, 2024

Abstract
Background: The prevalence of health problems among elderly persons is influenced by various socio-economic, environmental, and lifestyle factors. Common health conditions such as hypertension, diabetes, cardiovascular diseases, arthritis, respiratory disorders, and mental illnesses
Objective: To estimate the prevalence of diabetes in elderly persons in Bihar and to assess their awareness, treatment and control of this condition.
Materials and Methods: All persons aged 60 years and above, residing in District Patna Bihar, were included in this cross-sectional community- based study. Data were collected on sociodemographic variables. The participants' awareness and treatment of diabetes was recorded. Their fasting blood sugar was estimated using an automated glucometer. Diabetes was diagnosed if fasting blood glucose was ≥126 mg/dL, or if the participant was taking treatment for diabetes. Impaired fasting blood glucose was diagnosed if fasting blood glucose was 110–125 mg/dL.
Results: Among the 600 participants studied, the prevalence of diabetes was estimated to be 18.8% (95% CI 15.3–21.5). It decreased with increasing age, and was higher among women. The prevalence of impaired fasting blood glucose was 19.8% (95% CI 16.3–23.7). It was higher among women. One-third of the diabetic participants were aware of their condition; two-thirds of these were on treatment and three-fourths of those on treatment had controlled fasting blood sugar level. The awareness, treatment and control were better among women.
Conclusions: Diabetes is common among elderly persons in Bihar. Its magnitude and low awareness warrant effective public health interventions for their treatment and control.
Keywords: Awareness, diabetes, elderly, older persons

Introduction

Aging is a natural and inevitable process that brings various physiological, psychological, and social changes. With an increasing life expectancy and demographic transition, the elderly population in India, particularly in Bihar, is growing significantly(1). According to recent census data, Bihar has a considerable proportion of elderly individuals who often face multiple health challenges, including chronic diseases, mobility issues, cognitive decline, and mental health disorders. However, there remains a gap in awareness, accessibility, and affordability of healthcare services for this vulnerable section of society(2).

The prevalence of health problems among elderly persons is influenced by various socio-economic, environmental, and lifestyle factors. Common health conditions such as hypertension, diabetes, cardiovascular diseases, arthritis, respiratory disorders,

DOI: 10.69605/ijlbpr_13.10.2024.164

and mental illnesses like depression and dementia are widespread among the aging population. Despite the increasing burden of these diseases, awareness about preventive healthcare and early diagnosis remains inadequate, leading to late-stage complications and increased morbidity.(3,4)

Treatment-seeking behavior among elderly individuals in Bihar is often hindered by financial constraints, lack of specialized geriatric care, and dependency on family members. While government initiatives and public health schemes aim to provide healthcare support to the elderly, there is a significant gap in their effective implementation. Traditional and home-based treatments are often preferred due to cultural beliefs and limited access to healthcare facilities, leading to underreporting of health issues(5).

Control and prevention of health problems in the elderly require a multifaceted approach, including community-based interventions, regular health screenings, lifestyle modifications, and improved healthcare infrastructure. Awareness campaigns, geriatric healthcare policies, and the integration of elderly care into primary healthcare services are crucial for addressing the healthcare needs of the aging population in Bihar(6.7).

This epidemiological study aims to assess the prevalence of health problems among elderly individuals in Bihar, evaluate their awareness levels regarding common health conditions, analyze treatment-seeking behavior, and explore possible strategies for prevention and control. The findings of this research will contribute to policy recommendations for better geriatric care in the region.

Material and Methods

Study Design:-This study is a cross-sectional epidemiological study conducted to assess the prevalence of Diabetes among elderly individuals in Bihar. The study aims to evaluate awareness, treatment-seeking behavior, and control measures related to Diabetes affecting the elderly population.

Study Area:-The study was conducted in district Patna Bihar, ensuring representation from different socio-economic backgrounds. The selection of study sites was based on demographic characteristics, accessibility, and healthcare facility availability.

Study Population

The study population included elderly individuals aged 60 years and above residing in Bihar. Participants were selected from various communities, including both urban and rural settings, to obtain a comprehensive understanding of elderly health issues.

Sample Size and Sampling Technique:-The sample size was determined using statistical formulae considering the expected prevalence of health problems among the elderly in Bihar. A multistage random sampling technique was used to ensure adequate representation of different districts, socio-economic groups, and healthcare access levels.

Inclusion Criteria

- Elderly individuals aged 60 years and above.
- Residents of Bihar for at least one year.
- Individuals willing to participate in the study and provide informed consent.

Exclusion Criteria

- Individuals with severe cognitive impairment who were unable to respond.
- Terminally ill patients.
- Those unwilling to participate in the study.

Data Collection Methods:-A structured questionnaire was used to collect data through face-to-face interviews with the participants. The questionnaire included: Demographic details, Health problems, Awareness ,Treatment-seeking behavior and Control

Ethical Considerations:-Ethical approval was obtained from the Institutional Ethics Committee prior to data collection. Written informed consent was obtained from all participants, ensuring confidentiality and voluntary participation. The study adhered to ethical guidelines outlined by the Indian Council of Medical Research (ICMR).

Data Analysis:-The collected data was entered into Microsoft Excel and analyzed using SPSS (Statistical Package for the Social Sciences) version 27. Descriptive statistics (frequencies, percentages, means, standard deviations) were used to summarize the data. Inferential statistical tests (Chi-square test, t-test, logistic regression) were applied to identify associations between health problems and demographic variables. A p-value <0.05 was considered statistically significant

Results

A total of 600 eligible elderly persons were enumerated in the study area, of which 496 (91.0%) were interviewed for the study. The remaining 104 participants could not be contacted despite three visits to their homes.

Of the 496 participants who were interviewed, 22 (4.4%) refused for fasting blood sugar estimation. None of these 22 persons had any prescription for anti-diabetic medicines. Hence, fasting blood sugar testing was done in 474 (95.6%) of the 496 participants. Fifty-two percent of the participants were male. About four-fifths of the participants were aged less than 70 years [Table 1]. The mean age was 65.0 years.

The prevalence of diabetes in elderly persons was estimated to be 18.8% (95% CI 15.3–21.5). It was

DOI: 10.69605/ijlbpr_13.10.2024.164

15.9% (95% CI 12.7–19.4) and 21.8% (95% CI 18.1–25.7) among men and women, respectively. The prevalence decreased with increasing age [Table 2].

The prevalence of impaired blood glucose was estimated to be 19.8% (95% CI 16.3–23.7). It was 19.2% (95% CI 14.4–24.7) and 20.5% (95% CI 15.5–26.3) among men and women, respectively [Table 2].

About one-third (36.0%) of the 89 diabetics were aware of their condition. The awareness, treatment and control were better among women; however, this was not statistically significant. Of those participants who were aware, more than half were on treatment. Of those on treatment, three- fourth had controlled fasting blood sugar [Table 3].

Table 1:- Demographic characteristics of participants

Variable	Men n=245 (51.7)	Women n=229 (48.3)	Total n=474 (100.0)
Age (years)			
60-64	144 (58.8)	127 (55.5)	271 (57.2)
65-69	59 (24.1)	47 (20.5)	106 (22.4)
≥70	42 (17.1)	55 (24.0)	97 (20.5)
Mean age±SD	64.5±5.8	65.0±8.4	65.0±7.2

Table 2:- Prevalence of diabetes and impaired fasting blood glucose in the participants

	Normal BG	impaird fasting glucose		Diabetes	
		Crude %	Adjusted %	Crude %	Adjusted %
Total (n=474)	61.4	19.8	-	18.8	-
Gender					
Men (n=245)	64.9	19.2	20.0	15.9	15.7
Women (n=229)	57.6	20.5	20.6	21.8	22.0
Chi-square test		P=0.80		P=0.13	
Age					
60-64 years (n=271)	58.7	21.0	21.1	20.3	20.4
65-69 years (n=106)	64.2	17.0	19.0	18.9	18.9
≥70 years (n=97)	66.0	19.6	19.5	14.4	14.1
Chi-square test for trend		P=0.62		P=0.22	

Table 3:- Participants with diabetes who were aware, treated and controlled

	Aware	Treated	Controlled
Total (n=89)	32 (36.0)	20 (22.5)	15 (16.9)
Gender			
Men (n=39)	13 (33.3)	7 (17.9)	5 (12.8)
Women (n=50)	19 (38.0)	13 (26.0)	10 (20.0)
Chi-square test	P=0.82	P=0.52	P=0.54
Age			
60-64 years (n=55)	17 (30.9)	9 (16.4)	8 (14.5)
65-69 years (n=20)	12 (60.0)	9 (45.0)	6 (30.0)
≥70 years (n=14)	3 (21.4)	2 (14.2)	1 (7.1)
Chi-square test for trend	P=0.83	P=0.64	P=0.97

Discussion

The ageing population in India is likely to contribute to an increased prevalence of diabetes. In the present study, the prevalence of diabetes was estimated to be 18.8%. Previous studies from India have reported prevalence rates ranging from 13% to 25%, which are comparable to our findings.(9,11,12) In contrast, studies from other Asian nations, such as Thailand and Hong Kong, have reported slightly lower prevalence rates of 14% and 15%, respectively.(13,14) The observed decline in diabetes prevalence with increasing age in our study could be attributed to survival bias.

On average, every fifth elderly person in our study was identified as having impaired fasting blood glucose, a pre-diabetic condition. Early detection of pre-diabetes allows for timely dietary and lifestyle interventions, along with periodic blood glucose monitoring. Such

DOI: 10.69605/ijlbpr_13.10.2024.164

measures can help prevent or delay the progression to diabetes in this population.

A notable finding of our study was the low level of awareness about diabetes among participants. Only 36% of individuals were aware of their diabetic status, which is significantly lower than the 66% reported in Hong Kong but comparable to the one-third awareness rate reported in Nepal.(14,15) Among those aware of their condition, 62.5% were undergoing treatment. Additionally, awareness, treatment adherence, and control of diabetes were better among women.

Among the elderly, diabetes prevalence was consistent with previously reported estimates; however, awareness regarding the condition remained low. There is an urgent need for improved screening, diagnosis, and management of diabetes in older adults. Given that many elderly individuals may have limited mobility and depend on family members for healthcare access, domiciliary visits by health workers could be an effective strategy for increasing awareness and screening. Since diabetes screening is relatively simple, training health workers in screening procedures and appropriate referral mechanisms is a feasible and practical approach.

Health education programs focused on raising community awareness about the prevention of chronic conditions, particularly lifestyle modifications, are crucial. With the growing population in urban slums, special attention should be given to elderly individuals residing in these areas. Strengthening primary healthcare services in urban slums with a focus on vulnerable populations, such as the elderly, is essential. Given the significant burden of noncommunicable diseases in this age group, policymakers and program managers must prioritize comprehensive healthcare strategies to address this pressing public health issue.

Conclusion and Recommendations

This study highlights the high prevalence of diabetes among the elderly in Bihar, Low awareness, financial constraints, and inadequate healthcare services contribute to delayed diagnosis and poor health outcomes. Many elderly individuals rely on home remedies due to limited access to medical care.

A multi-sectoral approach involving healthcare providers, policymakers, and community organizations is necessary to improve healthcare access and quality of life for the elderly in Bihar. This study provides valuable insights for designing effective geriatric healthcare programs

Bibliography

1. Government of India. (2021). Elderly in India: Profile and Programmes 2021. Ministry of Statistics and Programme Implementation. Retrieved from www.mospi.gov.in
2. WHO. (2020). Ageing and Health. World Health Organization. Retrieved from www.who.int/news-room/fact-sheets/detail/ageing-and-health
3. Tiwari, S. C., Pandey, N. M. (2012). The Aging Population in India: A Clarion Call for Geriatric Care. Journal of the Indian Academy of Geriatrics, 8(1), 1-5.
4. Arokiasamy, P. (2018). India's Ageing Challenge: Vulnerabilities, Opportunities, and Policy Responses. Asia Pacific Population Journal, 33(2), 23-40.
5. National Health Mission. (2022). National Programme for Health Care of the Elderly (NPHCE). Ministry of Health and Family Welfare, Government of India. Retrieved from www.nhm.gov.in
6. Verma, R., Khanna, P., &Chawla, S. (2012). Epidemiology of Hypertension in Elderly in India: A Review. International Journal of Advanced Medical Research, 1(2), 10-16.
7. Bhatia, S., Kumar, M., Dixit, S., &Chaudhary, H. (2020). Mental Health Issues and Challenges in Elderly: A Review Article. Journal of Geriatric Mental Health, 7(1), 18-25.
8. Anand K, Shah B, Yadav K, Singh R, Mathur P, Paul E, et al. Are the urban poor vulnerable to non-communicable diseases? A survey of risk factors for non-communicable diseases in urban slums of Faridabad. Natl Med J India 2007;20:115-20.
9. Srivastava RK. Multicentric study to establish epidemiological data on health problems in elderly. A Government of India and WHO Collaborative Programme Ministry of Health and Family Welfare, Government of India 2007.
10. Definition and diagnosis of diabetes mellitus and intermediate hyperglycemia. Report of a WHO/IDF consultation. 2006. Available from: http://whqlibdoc.who.int/publications/2006/9241594934 _ eng.pdf [Last accessed on 2009 Oct 10].
11. Puri S, Kalia M, Swami HM, Singh A, Abhimanyu, Mangat C, et al. Profile of diabetes mellitus in elderly of Chandigarh, India. The Internet Journal of Endocrinology 2007;4.
12. Gupta HL, Yadav M, Sundarka MK, Talwar V, Saini M, Garg P. A study of prevalence of health problems in asymptomatic elderly individuals in Delhi. J Assoc Physicians India 2002;50:792-5.
13. Porapakkham Y, Pattaraarchachai J, Aekplakorn W. Prevalence, awareness, treatment and control of hypertension and diabetes mellitus among the elderly: The 2004 National
14. Health Examination Survey III, Thailand. Singapore Med J 2008;49:868-73.
15. Kung AW, Janus ED, Lau CP. The prevalence of diabetes mellitus and its effect in elderly subjects in Hong Kong. Hong Kong Med J 1996;2:26-33. 15. Chhetri MR, Chapman RS. Prevalence and determinants of diabetes among the elderly population in the Kathmandu Valley of Nepal. Nepal Med Coll J 2009;11:34-8.