

“Assessment of risk for non-communicable diseases among middle-aged adults in selected rural areas of Lucknow.”

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Abstract

Background: In India, non-communicable diseases accounted for about 65% of all deaths in 2019. Over the 26 years from 1990 to 2016, a clear shift occurred in the disease pattern, from communicable to non-communicable conditions. During this time, the share of disability-adjusted life years (DALYs) due to NCDs increased significantly, rising from 30.5% in 1990 to 55.4% in 2016. Lifestyle-related risk factors have played a major role in this increase, with smoking contributing to 15.5% of cardiovascular disease cases and 39.8% of cancer cases, while overweight and obesity were responsible for approximately 72.8% of diabetes cases.¹

Aim: To find out the association between the risk score regarding non-communicable diseases and their selected socio-demographic variables.

Methods: The study used a cross-sectional research design and a quantitative research methodology. Convenience sampling was used to identify 400 middle-aged persons between the ages of 45 and 59 for the study. A systematic sociodemographic questionnaire and the Community-Based Assessment Checklist (CBAC), created by the Indian government, were used to gather data.

Result: According to the study's findings, 34.75% of respondents were at a low risk of non-communicable diseases, while 65.25% were at a high risk. According to the study's findings, 34.75% of respondents were at low risk of non-communicable diseases, whereas 65.25% were at high risk. With a standard deviation of 1.30, the average risk score was 5.04. Additionally, the study discovered that other sociodemographic factors like religion, occupation, education, family type, income, gender, and body mass index did not significantly correlate with the risk of non-communicable illnesses.

Conclusion: According to the study's findings, a significant percentage of middle-aged persons living in rural areas are very susceptible to non-communicable diseases. To lessen the burden of NCDs, early screening, health education, lifestyle adjustment, and community-based preventative initiatives are crucial. The results of this study could aid policymakers and medical practitioners in creating efficient strategies for the prevention and management of non-communicable illnesses in rural communities.

Keywords: CBAC (Community Based Assessment Checklist), middle-aged adults, non-communicable illnesses, risk assessment, rural population, and prevention.

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I. Introduction

Non-communicable diseases are long-lasting health conditions that do not spread from one person to another. Based on this definition, NCDs overlay a wide variety of fitness troubles and disorders; These conditions, including cancers, diabetes, high blood pressure, heart diseases, stroke, chronic kidney disease, chronic obstructive pulmonary disease, allergies, and non-alcoholic fatty liver disease, along with many other health-related issues, may develop over time and affect an individual's overall well-being.^[1]

According to the **Arena Health Company**, non-communicable diseases (NCDs) also referred to as chronic illnesses, develop due to a combination of genetic, physiological, environmental, and lifestyle-related factors. The WHO created a plan to prevent and manage non-communicable diseases worldwide. The foremost modifiable danger elements are well established tobacco chewing, dangerous use of alcohol, poor diet, lack of no activity, obesity, increased blood pressure, raised blood sugar, and abnormal serum lipids.^[2]

According to the Global Burden of Disease study, non-communicable diseases (NCDs) represent a significant portion of the global health burden. They contribute to over 50% of the total disease burden and are responsible for approximately 74% of deaths worldwide. This highlights the critical need for effective

prevention, management, and policy strategies to address NCDs such as cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes.^[3]

India is also undergoing rapid demographic and epidemiological transitions marked by a significant increase in lifestyle-related chronic NCDs. Due to this rapid epidemiological transition and the resulting increase in disability-adjusted life years (DALYs) and mortality, there is an urgent need to strengthen prevention and control strategies to reduce the burden of non-communicable diseases in India.^[4]

Chronic non-communicable diseases (NCDs) are long-term conditions that lead to deterioration of health due to a combination of non-infectious causative factors. They are among the leading causes of mortality worldwide and require urgent attention at both national and global levels. NCDs are responsible for approximately 70% of deaths globally, with an estimated 75% of these deaths occurring in low-and middle-income countries. The major contributors to the global NCD burden include diabetes, cardiovascular diseases, and cancer.^[5]

Objective of the study:

To assess the risk of non-communicable diseases among middle-aged adults residing in selected rural areas.

Method Research design

It is a community-based cross-sectional study. The study was conducted in the Mati area, which comes under the field practice area of the Department of Community Medicine, King George's Medical University, Lucknow. In the present study, the population were all middle-aged adults in the rural area of Lucknow.

Convenience sampling was chosen for its practical advantages, including ease of access and time efficiency. It facilitates the efficient recruitment of participants within the logical constraints of the study, allowing timely data collection from the target population. In the present study, the sample consists of men and women aged 45 to 59 years residing in selected rural areas of Lucknow.

Ethical clearance

Ethical approval was obtained from the institutional ethical committee of KGMU, Lucknow, U.P., for conducting the research study (reference code - 36th PGTSC-IIC-NUR/P18 and reference number - 553/Ethics/2025). The pilot study was carried out from 6th October 2025 to 18th October 2025. Formal permission was obtained from the Head of the Department of Community Medicine, KGMU, before conducting the research.

Tool

Part II: Community-Based Assessment Checklist

Personal information- Name, age, gender, any disability, any identifier.

Part A- Risk assessment: Age, smoking or consuming smokeless products, consuming alcohol daily, measurement of waist, physical activities, and family history of non-communicable diseases.

Data Analysis

Data analysis was carried out in accordance with the study objectives and for testing the hypothesis. Once the information was gathered, it was organized into digital codes and uploaded into Microsoft Excel Office 16 and IBM SPSS Statistics for Window, Version 27 for statistical processing. Both descriptive statistics (frequency, percentage, mean and SD) and inferential statistics (Chi-square test) were used to arrange, analyse, and interpret the gathered information.

II. Result

Table 1: Association between non-communicable disease risk scores and selected socio-demographic variables among middle-aged adults.

The results show a significant association between age and the level of risk score ($p = 0.00002$). No significant associations were observed for other variables, including gender ($\chi^2 = 0.1479$), religion ($\chi^2 = 0.9424$), occupation ($\chi^2 = 0.9065$), type of family ($\chi^2 = 0.9664$), educational qualification ($\chi^2 = 0.6995$), monthly income ($\chi^2 = 0.1686$), BMI ($\chi^2 = 0.2208$), past medical history ($\chi^2 = 0.6626$), and past surgical history ($\chi^2 = 0.1299$).

n = 400					
S. No.	Variable	Risk level		χ^2	df p value
		Low	High		
1	Age (in years)				
	45-50	103	132		
	51-55	23	74	21.08*	2 0.00002
	56-59	13	55		
9	Gender				
	Female	68	108		
	Male	71	153	2.09**	1 0.1479
2	Religion				
	Hindu	120	226		
	Muslim	19	35	0.005**	1 0.9424
3	Occupation				
	Private Job	30	61	0.55**	3 0.9065
	Govt. Job	14	23		
	Homemaker	61	108		
	Others	34	69		
4	Type of family				
	Nuclear	34	65		
	Joint	103	193	0.06**	2 0.9664
	Extended	2	3		
5	Educational Qualification				
	Illiterate	22	46		
	Primary Educated	62	100		
	Secondary Educated	38	63	1.42**	3 0.6995
	Graduate & above	17	22		
6	Monthly Income (INR)				
	<15,000	11	38		
	15,001-30,000	47	90	5.04**	3 0.1686

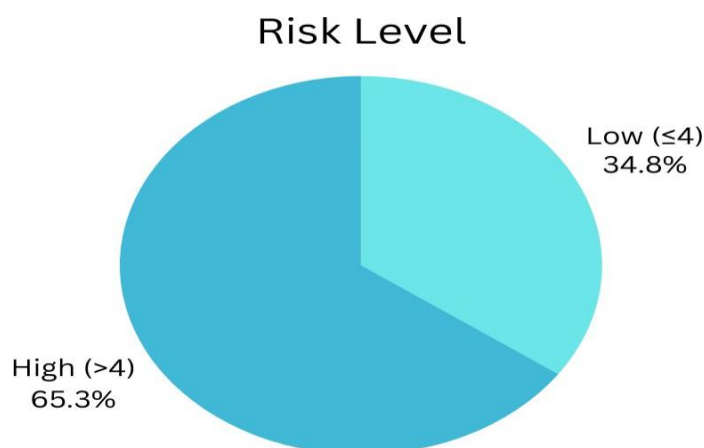
	30,001-45,000	67	116			
	>45,000	14	17			
7	Any past medical illness					
	No	130	241	0.19**	1	0.6626
	Yes	9	20			
8	Any past surgical illness					
	No	113	227	2.29**	1	0.1299
	Yes	26	34			
10	Body Mass Index					
	<18.5:					
	Underweight	68	111	1.49**	1	0.2208
	18.5-24.9:					
	Normal Weight	71	150			

Designation: *Significant: $p < 0.05$ **non-significant $q: p < 0.05$

Table 2: Distribution Of Risk Levels for Non-Communicable Diseases Among Middle-Aged Adults. n=400

Level of risk	Frequency (f)	Percentage (%)
Low (≤ 4)	139	34.75%
High (> 4)	261	65.25%

Most of the middle-aged adults (65.25%) were in high level of risk while remaining 34.75% were in low level of risk for non-communicable diseases.



III. Discussion

The present study focused on the assessment and analysis of non-communicable disease (NCD) risk among middle-aged adults residing in selected rural areas of Lucknow. This investigation provided valuable insights into the prevalence of risk factors associated with NCDs within this population segment and explored the relationship between these risk factors and socio-demographic characteristics. The findings contribute to a better understanding of the health challenges faced by middle-aged adults in rural settings, highlighting critical areas for public health intervention and preventive strategies.

Section I: Risk level assessment for non-communicable diseases.

The findings revealed that 65.25% of participants were classified as high risk for non-communicable diseases, while 34.75% fell into the low-risk category. The mean risk score among the study population was 5.04, with a

standard deviation of 1.30, a minimum score of 3, and a maximum score of 9. These results align closely with those of a recent study by Ipsita Debata et al. (2024), which reported an overall NCD risk prevalence of 57.25%.^[5]

Section II: Association between the risk score regarding non-communicable diseases and their selected socio-demographic variables.

In the current study, I found that on application of the χ^2 test, results revealed that only Age ($p=0.00002$) was associated with risk score, and the remaining demographic variables did not show any association. Thus, it can be inferred that variables were only partially associated, and there was no significant association between variables. Almost similar results were obtained in another study conducted by *Ipsita Debata et.al. (2024)*, which revealed that only a partial association was present.^[5]

The findings of this study are supported by a similar investigation conducted by Shubhanjali Roy et al. (2024) titled “Prevalence of Multiple Non-Communicable Disease Risk Factors Among Self-Reported Healthy Older Adults Living in Community Settings in India: Evidence from the Longitudinal Ageing Study in India.” Their study reported that 55.2% (95% CI: 54.1–56.29) of participants were at high risk for NCDs. Additionally, the findings indicated that male gender, widowhood, higher body mass index (BMI), and unemployment were independently associated with an increased likelihood of being at high risk for non-communicable diseases.^[6]

IV. Conclusion

Based on the analysis and statistical findings, it can be concluded that middle-aged adults in the selected rural areas are at a high risk for non-communicable diseases. Also, results revealed that there is a significantly high association of risk level with age ($p=0.00002$). Thus, this justifies our assumption that there will be clustering of risk, and the probability of non-communicable diseases increases with age.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethical Committee

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