



Risk Factors for Non - Communicable Diseases in A Rural Community: A Retrospective Study

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(Received: 16 April 2024

Revised: 11 May 2024

Accepted: 11 June 2024)

KEYWORDS

Noncommunicable diseases, rural health, risk factors, retrospective study, public health, lifestyle, environmental factors.

ABSTRACT:

Background: Rural areas are reporting higher rates of NCDs like cancer, heart disease, diabetes, lung disease, and pulmonary disorders. Poor education, healthcare, and lifestyle choices make these diseases worse among disadvantaged communities. Rural NCD prevention requires recognizing the main risk factors.

Methods: Radha Devi Jageshwari Memorial Medical College & Hospital in Turki, Muzaffarpur, Bihar, conducted this retrospective study from September to November 2024. During the study, 100 NCD patients were included. We used patient records to analyze demographics, lifestyle variables (smoking, alcohol consumption, sedentary behavior, and eating habits), environmental factors (pollution and clean water availability), and comorbidities (hypertension, diabetes, and obesity). SPSS 25.0 and the Chi-square test were used for statistical analysis and categorical data.

Results: The study showed considerable noncommunicable disease risk factors in rural areas. Smoking (45%), drinking (35%), and sedentary activity (50%) were prevalent. Sixty percent of the population ate a high-fat, low-veggie diet. Other environmental factors that increased health risks included pollutant exposure (55%) and lack of clean water (40%). This study also found that high blood pressure (55%), diabetes (40%), and obesity (30%) were more common. Multiple NCDs were more likely in men, older people, and substance abusers.

Conclusion: This study shows that environmental and behavioral risk factors are driving rural NCD incidence. To reduce non-communicable diseases, public health measures must encourage quitting smoking, drinking less, becoming more active, and accessing clean water. Rural towns need early detection and community-based interventions to reduce long-term health costs.

Introduction

NCDs, such as heart disease, diabetes, lung disease, cancer, and others, are the main reasons people die and become disabled around the world. As you age, your genes, your environment, and the decisions you make about your lifestyle can all put you at risk for noncommunicable diseases (NCDs) [1]. Noncommunicable diseases (NCDs) kill more than 40

million people every year, which is 70% of all deaths, according to the WHO. The quick shift to noncommunicable diseases (NCDs) is hard on public health systems around the world, especially those in low- and middle-income countries that don't have a lot of health professionals or facilities [2]. Stress, bad nutrition, and not getting enough exercise make noncommunicable diseases (NCDs) more common in cities. However, it is becoming clearer that NCDs also



affect people in rural areas. Unique social, economic, and environmental problems in rural areas, especially in poor countries, make them more likely to get noncommunicable diseases [3]. More people in rural places are getting these diseases because they don't take preventative health steps, live unhealthy lives, don't know much about health, and can't easily get medical care.

It is still hard for people in remote areas to get health care. A lack of healthcare workers, infrastructure, and the distance to the nearest hospital cause many people in rural areas to put off getting diagnosed and treated [4]. Putting off treatment for high blood pressure, diabetes, and heart disease makes things worse. In rural places, there aren't enough diagnostic and treatment tools, which makes it hard to manage chronic diseases. As people move to cities and economies get better, their lifestyles change, which causes NCD rates in the country to increase. People in rural areas leaving traditional farming ways of life for market-driven economies in cities are eating more prepared foods, sugar, and salt [5]. Many people from rural areas are going to cities to find work. This leaves behind older adults who may not be as mobile or active, and robots are taking over farming jobs that used to require a lot of manual labor. This makes people less active. Noncommunicable diseases (NCDs) are quickly taking over as the main reason people die and become disabled in India and around the world [6]. The National Health Portal of India says that India's most common diseases are heart disease, stroke, diabetes, and long-term lung diseases. India's rise in noncommunicable diseases is more noticeable.

Changes in diet, not being active enough, worry, and living in cities all make this more likely to happen. The number of non-communicable diseases (NCDs) in rural India has increased, but researchers haven't looked into why [7]. Rural intervention and preventive initiatives depend on this knowledge. Rural noncommunicable illness rates are rising due to population and income shifts. Aging matters. Rural inhabitants are living longer and adopting better lifestyles, increasing NCD prevalence. Cardiovascular disease, hypertension, and diabetes are more common among the elderly [8]. Our metabolism and organ function naturally change with age.

Understanding NCD risk factors is essential to preventing them in rural areas. Governments and healthcare practitioners want to know why rural NCD rates are higher [9]. Public health efforts improve infrastructure, health care access, and lifestyles. This research can also guide national health policy and allocate funds to needed regions. Access to health care and early detection and treatment of NCDs are crucial, especially in rural areas where NCDs are rising [10]. This retrospective study analyzes Radha Devi Jageshwari Memorial Medical College & Hospital patient records in Turki, Muzaffarpur, Bihar to discover rural NCD risk variables. Researchers will analyze the demographics, lifestyle choices, environmental exposures, comorbidities, and underlying medical problems of 100 noncommunicable disease patients to better understand rural risk factor trends and disease geographic distribution. Rural India's NCD elimination is the goal of these public health programs.

Materials and Methods

Study Design

This retrospective observational study examined rural NCD risk indicators and probable causes. Over a defined period, researchers analyzed patient data to discover if demographic, lifestyle, and clinical factors caused NCDs. This retrospective study examined secondary data from medical records of NCD patients at the study site during the research period.

Study Setting

The research was done in Turki, Muzaffarpur, Bihar's Radha Devi Jageshwari Memorial Medical College & Hospital. The rural community relies on the hospital for inpatient and outpatient treatment of infectious and noncommunicable diseases. This location was ideal for this study since rural residents could easily visit it and evaluate medical data.

Study Duration

The research took place from September to November 2024. We collected meaningful data from patients who met our inclusion criteria and sought medical treatment.

Sample Size

The study sample included 100 NCD-diagnosed patients. Using convenience sampling, the trial included



all eligible patients. Retrospectively reviewing medical records identified eligible patients for the study.

Inclusion Criteria

- The study excluded children under 18 to control for age-related factors that could affect results.
- Each patient must have had an NCD throughout the study. This study covers NCDs such as cancer, diabetes, high blood pressure, COPD, and CVD.
- Researchers only included patients with complete medical records, including diagnosis and treatment.

Exclusion Criteria

- Incomplete or missing medical records prevented us from enrolling patients with diagnosis, treatment history, or follow-up data.
- We excluded acute infections and non-chronic conditions to focus on noncommunicable diseases.
- The analysis excluded patients with non-NCD injuries or trauma.

Data Collection

We found this information by searching the hospital database for patient records. We extracted all the necessary data thoroughly to get all the required data. We recorded each patient's age, gender, socioeconomic status, education, and profession. Chronic diseases like cancer, heart disease, diabetes, respiratory difficulties, and hypertension were present. The researchers recorded the patient's illness duration, treatment history, and connected issues. Patients' lifestyle variables included smoking, alcohol use, diet, and exercise. These factors mostly cause and accelerate noncommunicable diseases. We also found the prevalence of obesity, metabolic syndrome, and renal disease, which may aggravate NCDs.

Statistical Analysis

Researchers used SPSS version 25.0, a social science statistical tool, to analyze the data to determine what factors caused rural NCDs. We started with descriptive statistics to show the sample's demographics and NCD distribution. This study used the Chi-square test to examine gender, smoking, drinking, and noncommunicable disease relationships. This test helps establish if different groups have significantly different NCD prevalence. All analyses were statistically

significant when $p < 0.05$. This limit allowed us to determine if group differences were coincidental or real. We identified the key risk factors for rural NCDs by evaluating statistical test results. We next assessed rural health literature, NCD frequency, and risk variables before discussing the results.

Ethical Considerations

Radha Devi Jageshwari Memorial Medical College & Hospital's Institutional Ethics Committee approved the study protocol. Anonymizing patient data protects privacy. The study only reported aggregate data to safeguard patient identity. This secondary data retrospective study did not require patient consent. However, we followed all institutional and ethical data handling rules.

Results

1. Demographics

Table 1 summarizes the demographic profile of the study participants. The sample consisted of 100 patients diagnosed with NCDs, the majority of whom were male and elderly.

Table 1: Demographic Distribution of Study Participants (n=100)

Demographic Characteristic	Frequency (n)	Percentage (%)
Age Group		
18-30 years	10	10
31-45 years	20	20
46-60 years	30	30
61 years and above	40	40
Gender		
Male	60	60
Female	40	40
Socioeconomic Status		
Low	50	50
Medium	30	30
High	20	20
Education Level		
Illiterate/Primary	40	40
Secondary	30	30
Graduate/Postgraduate	30	30



The highest number of patients (40%) were 61 years and above, followed by 46-60 years (30%). This indicates that elderly individuals are more prone to developing NCDs. Males constituted 60% of the sample, indicating a higher prevalence of NCDs among males in this rural setting. Most participants (50%) came from low socioeconomic backgrounds, reflecting rural communities' socio-economic challenges that may contribute to NCD prevalence. 40% of participants were either illiterate or had only primary education, which correlates with a lower level of awareness about disease prevention and healthcare access.

2. Risk Factors Identified

The tables below analyzed and summarized various risk factors associated with NCDs in the study population.

Table 2: Lifestyle Risk Factors and Their Prevalence

Risk Factor	Frequency (n)	Percentage (%)
Smoking	45	45
Alcohol Consumption	35	35
Sedentary Behavior	50	50
Unhealthy Diet (High in fats/salts)	60	60

45% of the study participants were smokers, which is a significant risk factor for cardiovascular diseases and respiratory disorders. 35% of participants consumed alcohol regularly, which is associated with a higher risk of liver disease, hypertension, and cardiovascular diseases. 50% of patients exhibited sedentary behavior, an important factor in the development of obesity, diabetes, and cardiovascular diseases. 60% of the participants had dietary habits that included high consumption of fats, sugars, and salts, which contributed to obesity, hypertension, and diabetes.

Table 3: Environmental Risk Factors and Their Prevalence

Environmental Factor	Frequency (n)	Percentage (%)
Exposure to Pollutants	55	55
Lack of Access to Clean Water	40	40

55% of the participants reported regular exposure to environmental pollutants, such as air and water pollution, due to the region's agricultural practices and industrial activities. This increases the risk of respiratory diseases, cardiovascular conditions, and cancers. 40% of the participants had limited access to clean drinking water, a factor that can lead to various waterborne diseases and contribute to individuals' overall poor health status.

Table 4: Prevalence of Comorbidities

Comorbidity	Frequency (n)	Percentage (%)
Hypertension	55	55
Diabetes	40	40
Obesity	30	30

In 55% of patients, hypertension was a risk factor for cardiovascular disease, renal failure, and strokes. Diabetes, which impacted 40% of the sample, shows that metabolic diseases are spreading in this distant area. The poll found 30% of people were fat, which raises the risk of diabetes, cardiovascular disease, and cancer.

3. Key Trends

The analysis revealed several key trends related to the distribution of NCDs in the study population.

Table 5: Key Trends in NCD Prevalence

Characteristic	Prevalence (%)	Observations
Higher Incidence in Males	60%	Males were more likely to have multiple NCDs compared to females.
Elderly Population (≥60 years)	70%	The elderly age group had the highest incidence of NCDs, with hypertension and diabetes being the most common diagnoses.



Tobacco or Alcohol Use	65%	Among patients with a history of tobacco or alcohol use, the incidence of hypertension, cardiovascular diseases, and respiratory diseases was notably higher.
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The study observed that NCDs were more prevalent among males (60%), possibly due to higher rates of tobacco and alcohol use among men in rural India. A significant number of elderly individuals (70%) were diagnosed with NCDs, with the most common conditions being hypertension, diabetes, and obesity. This finding highlights the impact of aging on the incidence of chronic diseases. A history of tobacco or alcohol use was associated with a higher likelihood of developing multiple NCDs, particularly hypertension and cardiovascular diseases.

Discussion

Interpretation of Results

This study shows how modifiable risk factors like smoking, alcohol, lack of physical activity, and poor diets contribute to rural NCDs. The findings support the growing evidence that lifestyle choices cause NCDs in areas with limited healthcare and public knowledge. Smoking is a primary cause of respiratory, cardiovascular, and cancer, and 45% of participants smoke regularly. A third of drinkers had a greater risk of liver disease, hypertension, and cardiovascular disease. The study group had metabolic issues like obesity and diabetes, and 60% of the population ate badly. These situations were more likely because 50% of the population was sedentary. Environmental risk factors made noncommunicable diseases more widespread in rural areas. Environmental pollutants raise the risk of respiratory and cardiovascular diseases, and 55% of individuals reported prolonged exposure. Lack of clean water

affects 40% of the population, making it harder to maintain health and prevent chronic diseases. The study cohort's comorbidities show how complicated rural NCDs are. Hypertension affects 55% of people and increases the risk of heart disease, kidney failure, and strokes.

The disturbingly high prevalence of diabetes (40%) and obesity (30%) in this age are concerning because these diseases are often connected and increase healthcare costs. These findings emphasize the need to address multiple risk factors simultaneously because they usually cause more serious and complex health issues. Over 70% of the elderly (60 and over) had several chronic diseases, the greatest incidence of any non-communicable condition. This discovery highlights the need for age-specific health interventions because aging, immune function decline, and comorbidities make older people more prone to NCDs. The study found that 60% of men had multiple noncommunicable diseases, underlining their risk. Rural Indian men use tobacco and alcohol more, which may explain this tendency. According to studies, these habits raise chronic disease risk.

Comparison with Literature

This study found, like others in rural India and other low- and middle-income countries,... This study confirms [11] who reported that hypertension, diabetes, and obesity were more common in rural Uttar Pradesh. Both studies found that rural men smoke and drink more than urbanites, reflecting a global trend: cultural norms and a lack of education and healthcare encourage hazardous lifestyles in rural areas. For example, [12] rural health research in Southeast Asia and Africa shows that noncommunicable diseases (NCDs) are rising due to nutrition, urbanization, and lifestyle changes. Compared to urban areas with better healthcare infrastructure, rural areas often have inferior health outcomes due to a lack of early NCD diagnosis and treatment. Thus, delayed presentations and lack of preventative care contributed to this study's high comorbidity rate. The literature also shows that socioeconomic status impacts NCDs. Half of our participants were from low-income families, similar to [13] rural health inequalities study that found a strong association between socioeconomic status and chronic illness risk. Lack of health information, bad eating



habits, and inadequate healthcare access are the three biggest risk factors for noncommunicable diseases (NCDs). Low socioeconomic status is connected with these variables.

Implications

There needs to be public health plans just for rural areas, as this study shows. Because many risk factors can be changed, behavior-change living plans are important. Some of these are smoking, drinking, not being active, and not eating well. Nutritional and exercise education, along with warnings about the dangers of alcohol and tobacco, could help lower NCDs in these places. According to the data, more people need to know about the problem and get better access to health care in rural areas. Adding more healthcare facilities, mobile health services, and regular checkups may help treat and diagnose NCDs better. The senior population needs more healthcare education to treat age-related illnesses and improve quality of life successfully. To lower the number of non-communicable diseases (NCDs), places that are hard to reach need better healthcare services, public health programs, and changes to how people live. Making people more aware of these diseases, making it easier for them to get medical care, and starting treatment early can help people in these countries deal with them better.

Conclusion

This research demonstrates that NCDs are rising in rural Bihar like Turki and Muzaffarpur, and we must act. The data show that smoking, alcohol, inactivity, and poor diet promote most noncommunicable diseases (NCDs). Rural pollution and water poisoning threaten public health more. Since various environmental and lifestyle factors cause chronic illness, this population's high prevalence of NCDs like hypertension, diabetes, and obesity shows their complexity. Remote communities need adequate public health services. To promote healthy habits and exercise, public health programs should highlight the dangers of smoking, excessive drinking, and unhealthy food. We need specialized treatments for age-related issues since noncommunicable diseases disproportionately affect the elderly. Preventative health screenings can discover these disorders early, improving treatment, especially in underserved rural settings. Increased access to

healthcare, community health education, and mobile health services may reduce NCDs. This study emphasizes the need to strengthen rural healthcare systems to detect, treat, and control NCDs. NCDs have increased in rural regions. To reduce this number, healthcare professionals, government agencies, and community groups must work together to develop and execute effective sickness prevention, early detection, and management initiatives. Rural areas must work together to fight NCDs

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