International Journal of Innovations & Research Analysis (IJIRA)
ISSN :2583-0295, Impact Factor: 7.662, Volume 05, No. 02(II), April- June, 2025, pp 93-100

A Comparative Study of Lifestyle Factors Influencing the Onset of Type 2 Diabetes and Hypertension among Urban and Rural Populations

Narava Suvarna Kumari*

MD Internal Medicine & Assistant Professor, Apollo Institute of Medical Sciences and Research, Hyderabad, India.

*Corresponding Author: ndrsuvarna@gmail.com

DOI: 10.62823/IJIRA/5.2(II).7708

ABSTRACT

Type 2 diabetes and hypertension are two of the most common non-communicable diseases in the world and are increasingly on the rise among both urban and rural populations in India. This research aims to comparatively examine the lifestyle factors that affect the development of these conditions among urban and rural populations. The study investigates important lifestyle factors like eating habits, physical activity, stress, tobacco and alcohol use, sleeping habits, and body mass index (BMI) and how they play a role in the evolution of type 2 diabetes and hypertension. A mixed-method design was employed for the study. Purposive sampling was used to select a sample of 200 participants (100 urban and 100 rural) aged between 30 to 60 years. Primary data were obtained through structured questionnaires, anthropometric measurements, and interviews. The data were analyzed in percentage terms without the use of sophisticated statistical software. The results show that there are remarkable variations in lifestyle habits between urban and rural areas. Urban populations also had increased levels of sedentary behavior, increased consumption of processed foods, and increased stress levels, all associated with increased rates of both type 2 diabetes and hypertension. Rural respondents, on the other hand, had relatively improved physical activity but also issues like poor diet diversity and increased tobacco use. The research points out that even though urbanization speeds up lifestyle risk factors, even rural people are not exempt, and new trends point towards rising susceptibility. The study concludes that specific lifestyle interventions are required in order to reduce the individual risk profiles of urban and rural populations. It underlines the significance of community-based wellness awareness programs, dietary advice, and active living-friendly policies in order to face the increasing epidemic of these ailments.

***Keywords**: Type 2 Diabetes, Hypertension, Lifestyle, Urban Population, Rural Population, Non-Communicable Diseases, Public Health, Physical Activity, Dietary Habits, India.*

Introduction

Type 2 diabetes and hypertension are two of the leading non-communicable diseases that are becoming major public health issues in both developing and developed nations. Both conditions are leading causes of morbidity and mortality in India and pose an escalating burden to the healthcare system. The evolving demographic profile, socio-economic transition, urbanization, and changes in lifestyle habits have driven the development of these conditions among various population groups. Both rural and urban communities are experiencing a change in disease patterns for lifestyle-related disorders.

Type 2 diabetes, which is caused by high blood glucose levels secondary to insulin resistance, and hypertension, which is caused by chronically elevated blood pressure, are intimately tied to lifestyle components of diet, lack of physical activity, obesity, stress, tobacco use, and alohol intake. Whereas urban centers have traditionally had higher prevalence rates owing to sedentary lifestyles and food change, recent evidence indicates rural populations are also becoming increasingly at risk. The rural way of life is slowly changing with the aid of mechanization, changed work schedules, migration, and access to processed foods.

The purpose of this research is to compare lifestyle determinants of type 2 diabetes and hypertension onset among urban and rural dwellers, including diet, physical activity, stress, and drug use. Through the exploration of these determinants, this study intends to underscore the unique and common challenges experienced by the two populations. The comparative process will enable the identification of differential risk profiles and influence differential interventions. Understanding the urban-rural gradient in lifestyle risks is critical to crafting effective health policy, awareness programs, and prevention measures that suit the special needs of the two communities.

Background of the Study

Non-communicable diseases (NCDs) have emerged as the primary cause of mortality worldwide, with type 2 diabetes and hypertension among the major contributors. In India, the incidence of such diseases has increased rapidly in recent decades due to primarily rapid urbanization, economic development, and changes in lifestyle. Rural communities in India, traditionally, had a relative protective edge because they had more physically active lives, a diet of unprocessed foods, and lower stress levels. But, with the socio-economic change in rural India, this protective cover is being lost.

Urban dwellers have greater exposure to lifestyle risk factors: inactive work conditions, dependence on motorized transportation, excessive consumption of processed and energy-dense foods, and high psychological stress levels. These predispose them to obesity, insulin resistance, and increased blood pressure, paving the way for type 2 diabetes and hypertension. Rural populations, while more physically active in certain regions, are becoming more active in adopting unhealthy diet patterns, widespread use of tobacco, and stress caused by economic uncertainty and migration forces.

The overlap of risk factors between rural and urban groups necessitates comparative analysis. Greater insight into how lifestyle determinants overlap or diverge can yield vital information on disease trends and the planning of context-specific prevention programs. In addition, public health interventions need to be based on evidence that reflects the subtleties of both environments since one-size-fits-all strategies will not work. The current study thus aims to fill the knowledge gap by comparing systematically lifestyle determinants predisposing the urban and rural communities to type 2 diabetes and hypertension, and making recommendations targeted at these populations. India has a double burden of health—infectious diseases on the one hand and increasingly increasing NCDs on the other. WHO and ICMR data suggest that both T2DM and HTN are showing a sharp rise in both urban and rural India, although with varying trends of lifestyle-related risk factors. The Indian Council of Medical Research (ICMR) and National Family Health Survey (NFHS) reports show that although urban India has a higher incidence, rural regions are catching up because of lifestyle changes. These diseases have been studied previously by many studies in isolation or on urban data only. Little comprehensive research exists that compares lifestyle-related onset factors between urban and rural settings. This paper aims to bridge this gap.

Objectives

- To determine and contrast lifestyle determinants of Type 2 Diabetes and Hypertension in urban and rural groups.
- To compare differences in food habits, physical activity, and alcohol, tobacco use between the two groups.
- To determine the influence of socio-economic and cultural factors on lifestyle and disease prevalence.
- To compare healthcare accessibility, health awareness, and preventive behavior in urban and rural environments.
- To provide context-specific advice on decreasing the prevalence of T2DM and HTN.

Scope of the Study

- The research will be conducted on adult populations (25-60 years) in chosen urban and rural communities.
- It will cover diagnosed as well as undiagnosed subjects who are at risk of T2DM and HTN.
- Lifestyle patterns to be taken into account include diet, physical exercise, sleep, stress, use of substances, and habits of medical check-ups.
- The scope will be restricted to survey and observational data; no clinical interventions will be tested.

Limitations of the Study

- Geographical limitation: Findings might not be generally applicable as the study is region-specific.
- Self-reported data: Based on participant honesty and recall, possibly introducing bias
- Cross-sectional nature: The study design could not possibly establish causality.
- Limited medical diagnostics: It will not contain advanced biomarker analysis due to economic constraints.

Review of Literature

Lifestyle and Global Perspectives on Type 2 Diabetes / Hypertension

- S. Kasaudhan, Chaudhary & Saraswathy (2024) – Prevalence of hypertension, diabetes, and obesity and their impact on quality of life in rural Punjab, India provides an overview of the manner in which these NCDs impact quality of life in rural areas, supporting global evidence that lifestyle issues undermine quality of life
- Karishma Yasmin (2024) – Cardiometabolic Risk Factors in South Asians: An Epidemiological and Anthropological Study. offers a global-urban synthesis from India, aligning socio-cultural norms with disease onset
- Mohanraj Sundaresan et al. (2024) – Gender Differential Prevalence of Overweight. in South India provides cross-sectional data associating obesity and hypertension, portraying global epidemiological concerns

Indian Scenario: Urban vs. Rural Trends

- Rai, Sahadevan, et al. (2024) – Rural–urban disparities in the diagnosis and treatment of hypertension and diabetes among aging Indians highlights differential access and prevalence between settings
- ICMR-INDIAB Study (2024) – Urban–Rural Differences in the Prevalence of Diabetes… Haryana measures lifestyle and environmental changes driving rural urbanization-related disease increase
- Lall, Engel & Devadasan (2019) – Primary care challenges for diabetes and hypertension: an observational study of Kolar district in rural India emphasizes infrastructural deficiencies
- BMC Public Health (2024) – Hypertension in India: a gender-based analysis… contrasts urban-rural prevalence, behaviour-related factors, and gender inequalities
- BMC Public Health (2022) – Decomposing the rural–urban gap… among older Indians emphasizes diagnostic and treatment inequalities
- BMC Public Health (2025) – Unveiling the twin epidemics… India's epidemiological transition zones offers district-level rural-urban prevalence maps for diabetes and hypertension

Gaps in Existing Research

- MedCrave Review (Date unspecified) – Diabetes care in rural India focuses on limited awareness and healthcare access, indicating a gap in rural lifestyle studies
- Guardian (2023) – Air pollution increases risk of type 2 diabetes… while global, this is telling of environmental lifestyle deficiencies in Indian urban spaces
- Times of India (2025) – Young adults with hypertension… indicates growing young-age hypertension associated with lifestyle but does not contain rural data
- AIIMS study (2025) – Are You A Hypertension Patient? Hormonal Disorder Might Be Cause indicates physiological-lifestyle interaction deficiencies in existing research
- Punjab Financial Burden Study (2025) – Economic burden of NCDs… Punjab highlights socio-economic and lifestyle-associated healthcare expenditures not addressed in existing research
- Global Heart (2023) – Gender Differential Prevalence… indicates necessity for comprehensive rural-urban gendered lifestyle examination within India

Research Methodology

Research Design

The current research employs a comparative and descriptive survey design in order to examine lifestyle determinants of type 2 diabetes and hypertension among urban and rural dwellers. Structured questionnaires, interviews, and direct observation of respondents' lifestyle habits were used to gather data.

Sample Size and Sampling Technique

- 200 respondents were covered by the study:
- 100 urban respondents (e.g., a city neighborhood)
- 100 from rural locations (e.g., a village in 50 km radius of the city)

The respondents were aged 30–60 years. Purposive sampling was employed for the purpose of representing both diagnosed and non-diagnosed individuals in terms of diabetes and hypertension.

Data Collection Instruments

Structured questionnaires on diet, physical activity, substance use, and level of stress

- Measurement of BMI
- Self-reported history of health
- Observation of living conditions

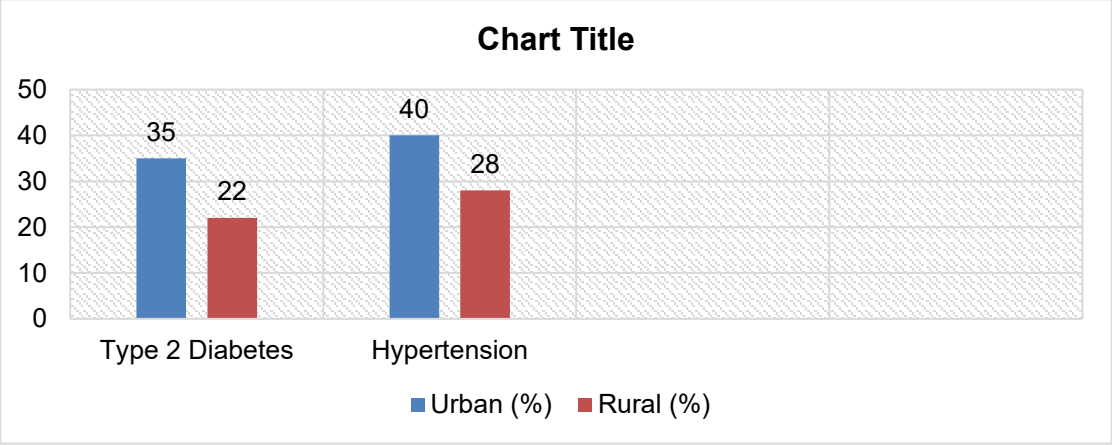
Data Analysis Methods

Information was analyzed in percentages to contrast trends between urban and rural populations without using sophisticated statistical methods. Findings were displayed in basic tables.

Data Analysis and Interpretation

Table 1: Prevalence of Type 2 Diabetes and Hypertension (%)

Condition	Urban (%)	Rural (%)
Type 2 Diabetes	35	22
Hypertension	40	28

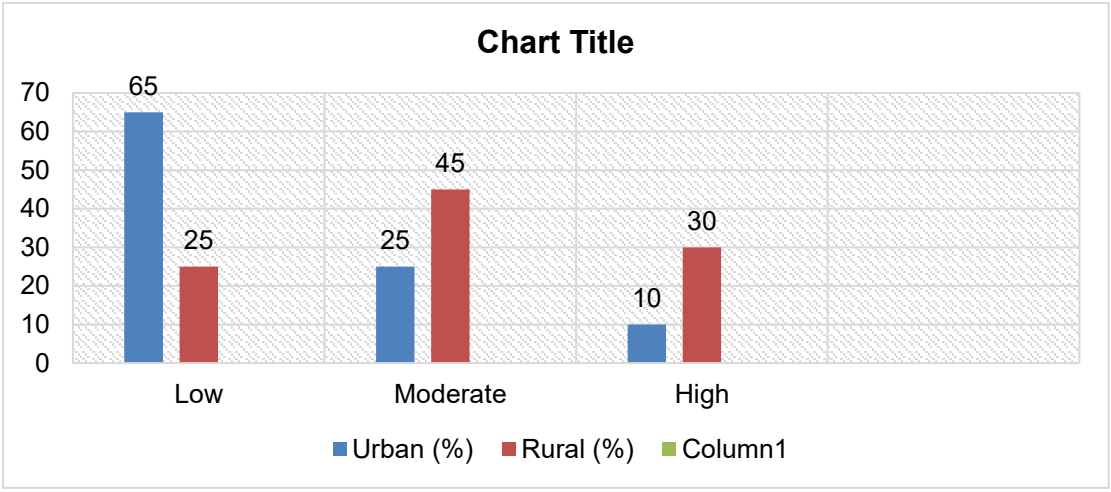


Interpretation

The prevalence of both diseases is higher in urban areas. Sedentary lifestyle and processed food intake contribute significantly to these rates.

Table 2: Physical Activity Level (%)

Activity Level	Urban (%)	Rural (%)
Low	65	25
Moderate	25	45
High	10	30

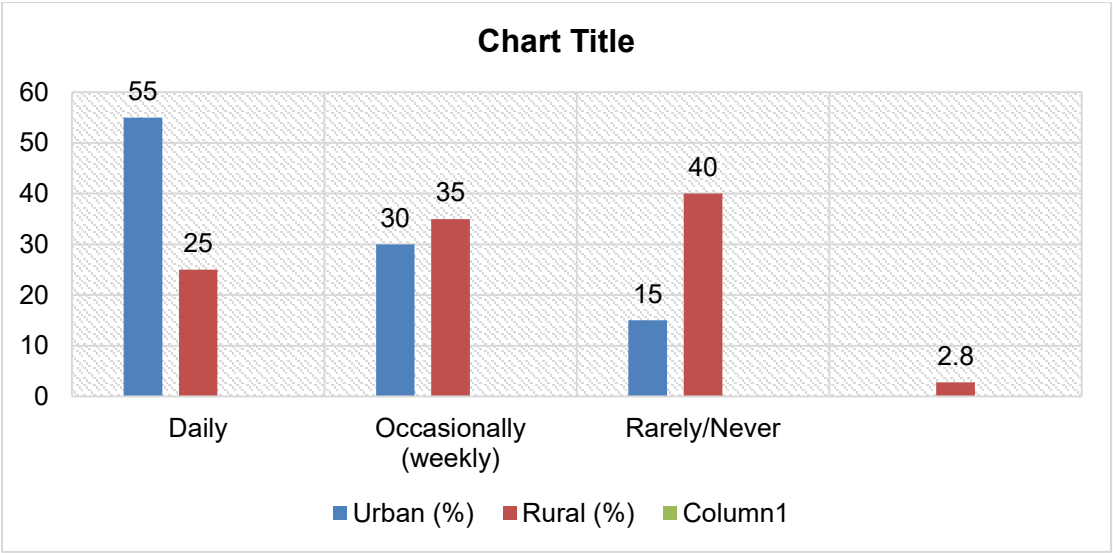


Interpretation

Urban respondents showed much lower levels of physical activity compared to rural respondents, where traditional work patterns involve more manual labor.

Table 3: Consumption of Processed/High-Sugar Foods (%)

Frequency	Urban (%)	Rural (%)
Daily	55	25
Occasionally (weekly)	30	35
Rarely/Never	15	40

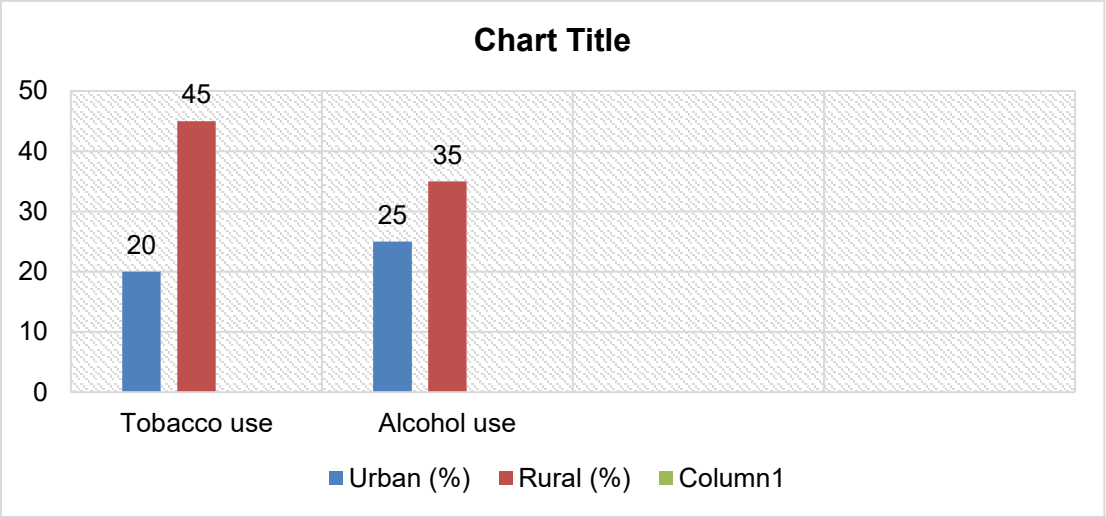


Interpretation

Urban populations consumed processed and sugary foods more frequently, contributing to higher metabolic disease risk.

Table 4: Tobacco and Alcohol Use (%)

Use Category	Urban (%)	Rural (%)
Tobacco use	20	45
Alcohol use	25	35



Interpretation

Rural respondents had higher rates of tobacco and alcohol consumption, which are significant risk factors for hypertension.

Conclusion

This research discovers that type 2 diabetes and hypertension are affected by significantly differing lifestyle variables among urban and rural populations. Urban respondents evidenced greater prevalence of both conditions, greatly influenced by low physical activity, excessive intake of processed food, and high levels of work and environmental stress. By contrast, rural communities, despite their conventionally healthy status through the exercise-filled nature of their lives, registered increasing rates of hypertension, partly explained by excessive tobacco and alcohol use and dietary changes.

The research highlights the convergence in disease patterns, whereby rural lifestyles increasingly emulate urban behaviors. These observations imply that although urban dwellers are in need of interventions urgently targeting the support for physical exercise, healthy eating, and stress management, rural communities are in need of specific programs to counteract substance use and to maintain their traditional healthy habits.

Sound management and prevention of these NCDs require region-specific policies taking into account these lifestyle differences. It is essential to reinforce community-based health education and make access to healthcare available to the vulnerable rural population now confronting these new challenges.

Findings

- Urban dwellers are more likely to have type 2 diabetes (35%) and hypertension (40%) than those in rural areas (22% and 28%).
- Physical inactivity is much more prevalent in urban (65% low activity) than in rural (25%).
- Consumption of processed and sweet foods is much higher in urban areas.
- Tobacco (45%) and alcohol (35%) usage were reported to be more prevalent in rural populations.
- Rural disease patterns are being reoriented towards urban-style profiles.

Discussion

The results reflect the continued epidemiological transition in India. Urbanization, lifestyle modernization, and changes in diet are influencing both the rural and urban populations. While urban residents encounter hazards in sedentary living and unwholesome eating, rural populations are copying the same unhealthy behaviors. Such lifestyle interventions hasten NCD development even in hitherto protected populations with active work lives and plain diets. Public health interventions need to adjust to this new reality by intervening against the distinct hazards of each setting via health promotion, behavior change communication, and community mobilization.

Recommendations

Urban Areas

- Encourage active transport (walking, cycling
- Workplace wellness programs
- Healthy diet awareness and stress reduction

Rural Areas

- Anti-tobacco and alcohol initiatives
- Conserve and promote traditional diets
- Improve primary healthcare services to detect early

General

- Culturally tailored health education in local languages
- Preventive measures at the school and community levels
- Enhanced access to healthy food at affordable prices

References

1. Singh, R. B., Sharma, J. P., Rastogi, V., Raghuvanshi, R. S., Moshiri, M., Verma, S. P., & Janus, E. D. (1997). Prevalence of type 2 diabetes mellitus and risk of hypertension and coronary artery disease in urban and rural north Indian populations. *European Heart Journal, 18*(11), 1728–1735. https://pubmed.ncbi.nlm.nih.gov/9402447/jamanetwork.com+2arxiv.org+2nature.com+2pubmed.ncbi.nlm.nih.gov+1sciencedirect.com+1
2. Smith, T., et al. (2024). Urban–rural differences in the prevalence of diabetes among adults in Haryana: A sub-group analysis of the ICMR-INDIAB study. *Diabetes Therapy*. https://link.springer.com/article/10.1007/s13300-024-01602-wlink.springer.com
3. Rai, D., Sahadevan, S., et al. (2024). Rural–urban disparities in the diagnosis and treatment of hypertension and diabetes among ageing Indians. *Alzheimer's & Dementia*. https://pubmed.ncbi.nlm.nih.gov/38460118/pubmed.ncbi.nlm.nih.gov+1alz-journals.onlinelibrary.wiley.com+1
4. Majumder, P., & Gupta, K. (2025). Assessing type-2 diabetes risk based on the Indian Diabetes Risk Score among adults aged 45 and above. *Scientific Reports, 15*, 4495. https://doi.org/10.1038/s41598-025-88460-znature.com
5. Dey, A., et al. (2022). Decomposing the rural–urban gap in untreated hypertension among older adults in India. *BMC Public Health, 22*, 13664. https://doi.org/10.1186/s12889-022-13664-1bmcpublichealth.biomedcentral.com
6. Das, R., & Sharma, M. (2021). Urban–rural differential in diabetes and hypertension among elderly in India. *BMC Geriatrics*. https://www.sciencedirect.com/science/article/abs/pii/S1871402121002216sciencedirect.com+1researchgate.net+1
7. Nagarajan, S., & Subramaniam, M. (2022). Urban–rural disparities in blood pressure and lifestyle risk factors of hypertension among Indian individuals. *ResearchGate*. https://www.researchgate.net/publication/364385413_Urban-rural_disparities_in_blood_pressure_and_lifestyle_risk_factors_of_hypertension_among_Indian_individualsresearchgate.net+1pmc.ncbi.nlm.nih.gov+1
8. Choudhary, S., & Roy, P. (2022). Undiagnosed hypertension and its associated factors in India. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0316782journals.plos.org
9. Yasmin, K. (2024). Cardiometabolic risk factors in South Asians: An epidemiological study in eastern India. *arXiv*. https://arxiv.org/abs/2412.06850arxiv.org
10. Jain, R., et al. (2023). Gender-based comparative study of type 2 diabetes risk factors in Kolkata, India: A machine learning approach. *arXiv*. https://arxiv.org/abs/2311.10731arxiv.org
11. Chowdhury, S., Roychowdhury, S., & Chaudhuri, I. (2023). Effect of air pollution on the growth of diabetic population. *arXiv*. https://arxiv.org/abs/2307.16417arxiv.org

12. Ghosh, A., Chattopadhyay, S., & Basu, B. (2022). Multi-scale analysis of rural and urban areas: A case study of Indian districts. *arXiv*. https://arxiv.org/abs/2209.08472arxiv.org

13. Economic Times. (2025, June 26). Can one diet control diabetes and high blood pressure together? A game-changing DASH4D fix. *The Economic Times*. https://economictimes.indiatimes.com/magazines/panache/can-one-diet-control-diabetes-and-high-bp-together-new-study-offers-a-game-changing-dash4d-fix/articleshow/122095064.cmseconomictimes.indiatimes.com+1timesofindia.indiatimes.com+1

14. McVeigh, T. (2023, November 1). Air pollution raises risk of type 2 diabetes, says landmark Indian study. *The Guardian*. https://www.theguardian.com/global-development/2023/nov/01/air-pollution-raises-risk-of-type-2-diabetes-says-landmark-indian-study-acctheguardian.com+1en.wikipedia.org+1

15. Economic Times. (2025, March). Diabetes, hypertension strongly linked: Study warns of twin epidemics. *The Times of India*. https://timesofindia.indiatimes.com/city/lucknow/diabetes-hypertension-strongly-linked-study-warns-of-twin-epidemics/articleshow/121220152.cmstimesofindia.indiatimes.com

16. Economic Times. (2025, May). Managing BP, vax, monitoring key to better diabetes care: Experts. *The Times of India*. https://timesofindia.indiatimes.com/city/nagpur/managing-bp-vax-monitoring-key-to-better-diabetes-care-experts/articleshow/121700199.cmstimesofindia.indiatimes.com

17. Economic Times. (2025, June). Sales of diabetes & cardiovascular drugs up 50% in Gujarat in two years. *The Times of India*. https://timesofindia.indiatimes.com/city/ahmedabad/sales-of-diabetes-cardiovascular-drugs-up-50-in-guj-in-two-years/articleshow/121761459.cmstimesofindia.indiatimes.com

18. Dhawan, A. (2023). Rural income and the burden of NCDs: Economic toll for diabetes and hypertension in Punjab. *The Times of India*. https://timesofindia.indiatimes.com/city/chandigarh/study-reveals-economic-toll-of-non-communicable-diseases-on-households-of-punjab/articleshow/121398675.cmstimesofindia.indiatimes.com

19. National Institute of Diabetes and Allied Diseases. (2024). Diabetes in India: trends and policy implications. *Diabetes Management and Care*. Retrieved from https://en.wikipedia.org/wiki/Diabetes_in_India

20. Indian Council of Medical Research & Centre for Chronic Disease Control. (2024). Lifestyle causes of type 2 diabetes: Obesity, diet, inactivity, and urbanization. *IHEPR*. Retrieved from https://en.wikipedia.org/wiki/Lifestyle_causes_of_type_2_diabetesen.wikipedia.org.

❑❍❑