

Impact of Hypertension and Diabetes on The Patients of Local Areas of Durg City

Tarun Kumar Sahu¹, Saurabh Shrivastava¹, Swarnali Das Paul¹

¹Shri Shankaracharya College of Pharmaceutical Sciences, Bhilai, Chhattisgarh, 490023, India

*Corresponding Email: tarun.ph94@gmail.com

Abstract

This study examines the impact of hypertension and diabetes on patients in the local areas of Durg City, Chhattisgarh. A cross-sectional survey was conducted among patients in Durg City diagnosed with hypertension, diabetes, or both, across different age groups and socioeconomic backgrounds. Data were collected through interviews, medical records, and health check-ups at local clinics. The study assessed prevalence, awareness, treatment patterns, lifestyle factors, and complications. Results showed a high incidence of both conditions, often coexisting, with poor awareness and disease management in certain groups. Unhealthy diets, physical inactivity, and stress were major contributing factors. The study highlights the need for stronger public health efforts, awareness programs, and accessible healthcare services. It provides a foundation for future research and local health policies to improve prevention and management of these chronic diseases.

Key Words:

Hypertension, Diabetes, Durg City, Chronic Diseases, Public Health, Disease Awareness, Lifestyle Factors, Health management, Disease prevention.

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1. INTRODUCTION:

In India and many Asian countries, hypertension and diabetes are the leading lifestyle-related diseases contributing to high morbidity and mortality. The growing prevalence is primarily due to unhealthy diets, physical inactivity, obesity, stress, tobacco, and alcohol consumption. With rapid urbanization, aging, and rising living standards, the burden of these non-communicable diseases (NCDs) is expected to increase. India has the second-largest number of adults with diabetes, following China. The dual rise in diabetes and hypertension significantly increases the risk of cardiovascular disease (CVD), stroke, and kidney failure.

Tackling these conditions requires a holistic approach—strengthening primary healthcare, promoting preventive strategies, and ensuring access to affordable treatment¹.

1.1 Hypertension

Globally, hypertension affects around 1.13 billion people. It is a major risk factor for heart attacks, strokes, and kidney disease. Approximately 9.4 million deaths annually are attributed to high blood pressure. Around 80% of these deaths occur in low- and middle-income countries (LMICs) like India, where access to early diagnosis and treatment is limited. Hypertension is not just a disease—it is a progressive cardiovascular syndrome involving structural and functional damage to the heart, kidneys, and brain ².

Definition and Classification:

Hypertension is defined as a chronic condition with elevated blood pressure. Normal BP is <120/80 mmHg. It is classified as:

Table 1: Classification of Hypertension

Category	Systolic (mmHg)	Diastolic (mmHg)
Normal	< 120	< 80
Pre hypertension	120-139	80-89
Hypertension Stage 1	140-159	90-99
Hypertension Stage 2	≥ 160	> 100

Hypertension staging gives a snapshot of disease progression, while cardiovascular (CV) risk assessment predicts the likelihood of future CV events like stroke or myocardial infarction ².

Epidemiology:

In traditional societies, average BP levels were around 115/75 mmHg and remained stable with age. In contrast, modern populations show increasing BP with age due to lifestyle factors like poor diet, sedentary habits, alcohol, and obesity.

India, as an LMIC, has a high prevalence of hypertension, which contributes significantly to deaths due to stroke (55.7%), heart disease (53.8%), and kidney disease (54.3%). In response, the government launched the NPCDCS (2010) to reduce premature deaths from hypertension by 25% by 2025 ².

Mechanisms:

BP regulation involves the RAAS (Renin-Angiotensin-Aldosterone System), sympathetic nervous system, natriuretic peptides, and vascular endothelium. Imbalances in these systems can cause sustained high BP or sudden fluctuations, leading to organ damage and complications like malignant hypertension or stroke ³.

Diagnosis and Treatment:

As per global guidelines (AHA/ACC 2018 & ISH 2020):

- **Normal BP:** <120/80 mmHg
- **Elevated BP:** 120–129/<80 mmHg
- **Stage 1 HT:** 130–139 or 80–89 mmHg
- **Stage 2 HT:** ≥140 or ≥90 mmHg
- **Diagnosis:** Two readings at two visits are needed.

Diagnosis requires at least two elevated BP readings on separate visits. Treatment includes:

- **Lifestyle Changes:** DASH diet, weight loss, quitting smoking, reducing alcohol, and regular exercise.
- **Pharmacological Therapy:** Thiazide diuretics, ACE inhibitors, ARBs, beta-blockers, calcium channel blockers, and aldosterone antagonists.
- **Resistant HTN:** Defined when BP remains uncontrolled despite using three or more antihypertensives. Secondary causes and adherence should be assessed⁴.

1.2 Diabetes Mellitus (DM)

Diabetes is a chronic metabolic disorder characterized by high blood sugar due to defective insulin secretion or action. Globally, over 440 million people are expected to be affected by 2030. India has the second-highest diabetic population, with projected global cases expected to reach 700 million by 2045. Risk factors include age, obesity, sedentary lifestyle, hypertension, genetics, and unhealthy diets⁵.

Types of Diabetes:

- **Type 1 DM:** Autoimmune destruction of pancreatic beta cells, requiring lifelong insulin.
- **Type 2 DM:** Linked to insulin resistance and obesity; managed with lifestyle changes and oral medications.
- **Gestational DM:** Develops during pregnancy and usually resolves after childbirth⁶.

Epidemiology:

The application of epidemiology to the study of DM has provided valuable information on several aspects of this disease, such as its natural history, prevalence, incidence, morbidity, and mortality in diverse populations around the world. Identification of the cause of the disease and the possible preventive measures that could be instituted to arrest or delay the onset of this disease, which has reached epidemic proportions in both the developed and the developing nations⁶.

Projections indicate that the number of diabetes cases worldwide will continue to rise, reaching 592 million by 2035 and 700 million by 2045⁷.

Diagnosis:

- **Fasting Blood Glucose** ≥126 mg/dl (after 8-hour fast)
- **Random Plasma Glucose** ≥200 mg/dl with symptoms

- **Oral Glucose Tolerance Test (OGTT):** ≥ 200 mg/dl after 2 hours
- **HbA1c** $\geq 6.5\%$ (standard for long-term glucose control) ⁸.

Symptoms:

It includes frequent urination, excessive thirst, weight loss, fatigue, blurred vision, and recurrent infections. In young children and infants, symptoms may escalate within a single day ⁷.

Treatment:

- **Type 1 DM:** Insulin therapy via injections or insulin pump.
- **Type 2 DM:** Lifestyle changes, oral antidiabetics (e.g., metformin), and sometimes insulin.

Prevention:

Lifestyle interventions can delay or prevent Type 2 diabetes but not Type 1. Type 2 can be delayed through healthy diet, physical activity, weight control, avoiding tobacco and excessive alcohol ⁷.

1.3 Coexistence of Hypertension and Diabetes

Both conditions often coexist and amplify risks of cardiovascular disease, kidney failure, stroke, and retinopathy. Common underlying mechanisms include:

- Insulin resistance
- Endothelial dysfunction
- Chronic inflammation
- Activation of the RAAS ⁹

Obesity and sedentary behavior are shared risk factors. Managing both conditions simultaneously is crucial:

- **Lifestyle Modifications:** Diet, exercise, and weight control
- **Medications:** ACE inhibitors and ARBs are particularly effective in diabetic patients with HTN
- **Monitoring:** Regular BP and glucose checks, especially in older adults and those with comorbidities.

Clinical management:

- ACEIs and ARBs are preferred in diabetic patients with HT due to kidney-protective effects.
- Regular BP monitoring is vital—target: $<140/90$ mmHg
- Lifestyle changes and strict glycemic control are essential.
- Younger patients (especially with type 1 DM) may benefit from tighter BP control.

Target BP in diabetics should be maintained below 140/90 mmHg (or 130/80 mmHg for some populations), and early treatment of both conditions significantly reduces morbidity and mortality¹⁰.

Awareness and effective management of HT and DM are of paramount importance for prevention of serious morbidities and mortality. Both conditions share common risk factors and can be modified through lifestyle modifications and medications. The objectives of this survey were to determine the prevalence of uncontrolled BP among patients with diabetes¹¹.

2. METHODS:

A randomized cross-sectional survey-based study was conducted to evaluate the prevalence, awareness, and lifestyle impact of hypertension and diabetes among the adult population of Durg city, Chhattisgarh. The study focused on both urban and semi-urban areas, including localities such as Risali, Umarpoti, Dhanora, Ganjpara, and Adarsh Nagar. The target population comprised individuals aged 25 years and above, who were either previously diagnosed with hypertension, diabetes, or both, as well as those at risk due to lifestyle factors or family history. A randomized sampling technique was employed to minimize selection bias and ensure adequate representation across various socio-economic backgrounds. Data collection was carried out through structured survey forms distributed at local pharmacies, community households, outpatient departments, and primary health centers. Participants were included voluntarily after explaining the purpose of the study and obtaining informed consent.

The survey questionnaire was developed based on validated tools and included multiple sections:

- (1) socio-demographic details such as age, gender, occupation, and education level.
- (2) Clinical history, including diagnosis of hypertension and/or diabetes, duration of illness, current treatment status, and medication adherence.
- (3) Lifestyle behaviors, such as dietary habits, physical activity levels, tobacco and alcohol use, sleep quality, stress levels, and family history of NCDs.

Data was collected digitally (via Google Forms). The responses were cross-verified and compiled into a Microsoft Excel spreadsheet for analysis. Descriptive statistics, including frequencies, percentages, and means, were used to summarize the data. The results were visually represented using bar graphs, pie charts, and tables to identify patterns in disease prevalence, treatment adherence, and lifestyle risk factors.

Additionally, data was stratified based on gender, age groups, locality (urban vs. semi-urban), and disease status (hypertension only, diabetes only, or both) to identify specific trends and high-risk groups. The study also recorded participants' awareness levels about hypertension and diabetes, including knowledge of symptoms, complications, and preventive strategies, to assess the need for health education interventions.

FORMAT OF SURVEY FORM

Name: _____ Phone No. _____ Gender: _____
Date of Birth: _____ Email ID: _____

Questions: Tick/Fill the answers—

Q.no.1:- Which disease do you have?

Hypertension

Diabetes

Both

Q.no.2:- At what age were you been detected with your first high B.P.?

Below 25

Between 25 and 35

Between 35 and 45

More than 45

Other: _____

Q.no.3:- What is your body weight?

Q.no.4:- What is your age?

Q.no.5:- Which medicine was prescribed by your physician at that time for your high B.P. and diabetes?

Q.no.6:- What was your initial dose prescribed for your B.P. and diabetes?

Q.no.7:- What were the symptoms when your B.P. and diabetes were detected?

Q.no.8:- Are you taking a prescribed medicine presently for your B.P.?

Yes

No

Don't know

Q.no.9:- For how many years have you been taking your B.P. medicine?

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Less than 1 year

1-2 years

2-5 years

More than 5 years

Other: _____

Q.no.10:- Adverse effects (if any) of your B.P. drugs?

Q.no.11:- Any bad habits, such as

Smoking

Drinking alcohol

Tobacco

Nothing

Q.no.12:- Are you taking medicines in combination for both B.P. and diabetes?

Yes

No

Q.no.13:- Adverse effects (if any) of your diabetes drugs?

Q.no.14:- Are you taking a prescribed medicine presently for diabetes?

Yes

No

Don't know

Q.no.15: - Are you taking diabetic pills or insulin for diabetes?

Diabetes pills

Insulin

Both

Nothing

Q.no.16:- Are your doctor prescribing generic medicine or branded medicine for both diseases?

Generic

Branded

Don't know

Q.no.17:- Are you regularly checking your BP and sugar or not?

Once a day

Once a week

Once a month

Didn't check

Q.no.18:- What did you do to control your B.P. and diabetes?

Taking healthy food

Exercise Regularly

Taking the B.P. and Diabetes medicines regularly as prescribed by your doctor

All of the above

Q.no.19:- Any other drugs taken other than B.P. and diabetes?

Yes

No

Q.no.20:- Are you aware of the risk factors associated with your B.P. and diabetes?

Yes

No

Don't know

Q.no.21: - Do you have a family history of your high B.P. and diabetes?

Only B.P.

Only Diabetes

Both

Don't know

Q.no.22:- Has your doctor given you any advice regarding your BP and diabetes?

Yes

No

Don't know

Q.no.23:- Do you use any mobile apps or digital tools to track your BP and diabetes?

Yes

No

Q.no.24:- Have you experienced any changes in your mental health as a result of managing your B.P. and diabetes?

Yes

No

Don't know

3. RESULTS:

1. Gender Distribution

- Male: 77%
- Female: 23%

2. Disease Prevalence

- Hypertension: 74%
- Diabetes: 9%

- Both: 17%

3. Age of BP Detection

- >45 years: 63%
- 35–45 years: 28%
- <35 years: 6%
- No BP: 3%

4. Body Weight

- Avg. weight: ~67.2 kg
- 60–75 kg range: 70%
- >80 kg: 10%

5. Age Distribution

- Avg. age: 49.4 years
- 36–55 years: 70.7%
- <35 years: 8%
- >65 years: 5.3%

6. Most Prescribed Medicines

- For BP: Amlodipine, Telmisartan
- For Diabetes: Metformin, Glimepiride
- Combo drugs: Often used when both conditions co-exist

7. Initial Medication Dosage

- BP: Amlodipine 5 mg most common
- Diabetes: Metformin 500 mg & Glimepiride 1–2 mg
- Combos: Amlodipine + Metformin frequently used

8. Common Symptoms at Detection

- Top symptoms: Dizziness, headache, stress
- Others: Nausea, chest pain, tiredness
- Some: No symptoms or don't recall

9. Current BP Medication Use

- Yes: 89%
- No: 6%
- Unaware: 5%

10. Duration of BP Medication Use

- 1–2 years: 29%
- 2–5 years: 24%
- >5 years: 17%
- No BP meds: 4%

11. Adverse Effects of BP Medicines

- Mostly mild: Dry mouth, constipation, ulcers
- No major side effects reported

12. Bad Habits

- No bad habits: 68%
- Alcohol: 14%
- Smoking: 11%
- Tobacco: 7%

13. Combined BP & Diabetes Medicines

- Yes: 16%
- No: 84%

14. Side Effects of Diabetes Medicines

- None: 60%
- Constipation: Most reported
- Others: Retinopathy, gas issues

15. Current Diabetes Medicines Use

- Not taking medicines: 39%
- Yes: 25%
- Don't know: 36%

16. Type of Diabetes Treatment

- No medicines/only lifestyle: 76%
- Pills only: 22%
- Insulin + pills: 2%
- Insulin only: 0%

17. Type of Medication (Generic vs Branded)

- Branded: 86%
- Generic: 2%
- Don't know: 12%

18. BP/Sugar Monitoring Frequency

- Monthly: 64%
- Less frequent or not at all: 30%
- Frequent monitoring lacking

19. Control Strategies Used

- Medication + diet + exercise: 60%
- Only meds: 36%
- Only exercise/diet: 4%

20. Other Medicines

- No: 80–85%
- Yes: 15–20%

21. Family History

- Not aware: 81.3%
- BP history: 8%
- Diabetes history: 5.3%

22. Doctor's Advice

- Received advice: 70%
- No advice: 19.3%
- Unclear: 11.3%

23. Use of Digital Tools

- No: 98%
- Yes: 2%

24. Mental Health Impact

- Yes (affected): 35.6%
- No: 50%
- Not sure: 14.4%

4. DISCUSSION:

This survey aimed to assess the prevalence, risk factors, treatment patterns, and awareness levels related to hypertension and diabetes among selected localities of Durg city. The data collected from 150 respondents paints a clear picture of the growing burden of non-communicable diseases (NCDs) in semi-urban and urban populations. Hypertension was found to be the most prevalent condition, affecting 74% of participants, while 9% had diabetes, and

17% were diagnosed with both diseases. This dual burden indicates a serious public health concern, especially considering the comorbid nature of these illnesses and their long-term impact on cardiovascular and renal health.

A notable finding was the significant gender disparity, with 77% of respondents being male. This may reflect either a higher prevalence in men or a greater likelihood of men participating in health surveys, accessing healthcare, or being diagnosed. Age emerged as a strong risk factor—most patients were diagnosed with high blood pressure or diabetes after the age of 45. This aligns with existing epidemiological trends showing that lifestyle-related diseases tend to emerge or worsen in middle age due to cumulative effects of unhealthy habits and physiological aging. Furthermore, body weight, another key factor, showed that most respondents fell within the 60–75 kg range, although around 10% reported weights above 80 kg—an indicator of potential obesity-related risks.

5. CONCLUSION:

This study was conducted with the purpose of understanding the prevalence, impact, and management of hypertension and diabetes among the residents of Durg city. The survey findings have shed light on the multiple dimensions of these two non-communicable diseases (NCDs), highlighting not just their medical burden but also the social, emotional, and economic implications for affected individuals. Overall, the results reflect an urgent need for improved public health strategies, early detection, better disease education, and patient-centered care in the region.

It was found that hypertension is highly prevalent among the respondents, affecting nearly 69% of participants. This condition, often dubbed the “silent killer,” goes unnoticed until complications arise, which makes its impact even more serious. Respondents reported that hypertension affected not only their physical health but also their financial and emotional well-being. Despite being medically managed, the condition still posed a considerable burden due to irregular treatment adherence and limited awareness about its risks. The data emphasizes the need for routine health screenings, improved awareness, and accessible care to manage hypertension proactively and prevent its long-term complications. In comparison, diabetes was found to affect a smaller portion of the population, with fewer than 10% of respondents diagnosed solely with diabetes, and 17% managing both conditions. However, despite its lower prevalence, diabetes had equally significant consequences. Patients reported symptoms such as fatigue, weakness, and poor vision, which affected their daily lives. The financial implications were also notable, as ongoing treatment requires regular medication, dietary changes, and repeated diagnostic testing. The burden was even heavier for those with limited income or poor access to affordable care. This suggests that improving diabetes education, promoting early testing, and ensuring cost-effective treatment options can greatly ease the personal and societal impact of this chronic disease.

A significant correlation between hypertension and diabetes was also evident. The coexistence of both diseases in 17% of respondents reflects a common clinical scenario and illustrates how these conditions often reinforce each other. Managing both simultaneously proved challenging

for many individuals, especially due to the added complexities of medication adherence, lifestyle restrictions, and frequent medical consultations. The dual burden placed a heavy strain on patients' physical and financial capacities. These findings point toward the need for integrated care systems, multidisciplinary support, and stronger health literacy to ensure patients can manage both conditions effectively. Another major component of the study focused on evaluating treatment adherence, awareness levels, and lifestyle changes among the diagnosed individuals. While many patients were aware of their condition, awareness alone did not guarantee proper disease management. Several individuals were not consistent in taking their prescribed medications—some discontinued treatment due to cost, while others stopped because they felt symptom-free. Similarly, many patients had not fully adopted the necessary lifestyle changes, such as regular exercise or dietary adjustments, despite understanding their importance. The survey indicates that awareness must be supported with consistent patient education and behavioral support strategies to ensure lasting change.

Risk factors for hypertension and diabetes were clearly identified in the survey, aligning with global findings. Age was a dominant factor, with the majority of cases diagnosed after the age of 45. Gender differences were also present, as men showed a higher prevalence of hypertension than women. In terms of lifestyle, factors such as alcohol use, tobacco consumption, physical inactivity, high-stress levels, and unhealthy diets were commonly observed among patients. Furthermore, individuals with a family history of diabetes or hypertension were more likely to be affected themselves. These risk factors emphasize the importance of preventive healthcare strategies, regular screening for high-risk individuals, and early intervention programs, especially in vulnerable populations. While medical guidance was available to most respondents, gaps in monitoring and self-care still persist. For instance, very few individuals used mobile apps or digital tools to track their health, and monitoring of blood pressure or sugar levels was infrequent. This indicates an underutilization of available technology that could significantly improve self-management. The survey also brought to light the mental health challenges associated with managing chronic illnesses. Over one-third of respondents reported emotional stress or psychological strain resulting from their condition. This aspect of chronic disease is often overlooked, but it is crucial to include mental health support as part of a comprehensive treatment plan.

In light of the findings, it is clear that non-communicable diseases like hypertension and diabetes are growing challenges in urban and semi-urban areas like Durg. Despite some improvements in health education and medical access, many individuals still struggle with poor adherence, lack of routine health checks, and lifestyle changes. The financial burden of ongoing care, especially when reliant on branded medications, adds another layer of difficulty. Therefore, policies promoting the use of generic drugs, strengthening government health schemes, and ensuring affordable outpatient services are urgently needed. Durg city stands at a critical juncture in addressing the growing prevalence of NCDs. The findings from this study reveal both pressing health issues and encouraging opportunities for change. With strategic public health interventions, including preventive outreach, improved digital health literacy, mental health support, and more accessible treatment services, it is possible to reduce the long-term burden of these diseases. Community-based initiatives that emphasize lifestyle change, regular screenings, and the integration of technology can make a significant difference in managing hypertension and diabetes effectively.

In conclusion, the survey underlines the urgent need for a more robust and holistic approach to managing diabetes and hypertension in Durg. Effective disease management goes beyond prescribing medication—it requires continued education, emotional support, affordable access to care, and widespread lifestyle modification. As Durg continues to develop its healthcare infrastructure, adopting a proactive, patient-centered strategy will be essential in improving outcomes for individuals living with chronic conditions and preventing future cases from emerging.

6. REFERENCES:

1. Shafi ST, Shafi T: 2017, A survey of hypertension prevalence, awareness, treatment, and control in health screening camps of rural central Punjab, Pakistan. *J Epidemiol Glob Health*. 2017;7(2):135-140. doi:10.1016/j.jegh.2017.01.001
2. Giles TD, Materson BJ, Cohn JN, Kostis JB. Definition and classification of hypertension: An update. *J Clin Hypertens*. 2009;11(11):611-614. doi:10.1111/j.1751-7176.2009.00179.x
3. Oparil S, Acelajado MC, Bakris G, et al. *Hypertension 1.*; 2018.
4. Sapra A, Bhandari P. *Diabetes Mellitus.*; 2020. <https://www.researchgate.net/publication/339297854>
5. Karki L, Rana K, Shahi M, et al. Prevalence of type II diabetes mellitus among adult population in medical department of a tertiary care centre. *Journal of the Nepal Medical Association*. 2020;58(232):1028-1030. doi:10.31729/jnma.5647
6. 2. Diagnosis and Classification of Diabetes: Standards of Care in Diabetes—2025. *Diabetes Care*. 2025;48:S27-S49. doi:10.2337/dc25-S002
7. Baynest HW. Classification, Pathophysiology, Diagnosis and Management of Diabetes Mellitus. *J Diabetes Metab*. 2015;06(05). doi:10.4172/2155-6156.1000541
8. Gaurav K, Prasad G, Kumari P. *The Correlation between Hypertension and Type 2 Diabetes Mellitus*. Vol 17.; 2025. <http://www.budapestopenaccessinitiative.org/read>
9. Gunes Y. A brief approach to hypertension in type 2 diabetes mellitus. *Exploration of Endocrine and Metabolic Diseases*. Published online February 4, 2025. doi:10.37349/eemd.2025.101422
10. Hezam AAM, Shaghdar HBM, Chen L. The connection between hypertension and diabetes and their role in heart and kidney disease development. *Journal of Research in Medical Sciences*. 2024;29(1). doi:10.4103/jrms.jrms_470_23

11. Khobragade AW, Ruikar MM, Singh G, Jha A. The Burden of Hypertension and Diabetes Mellitus and Their Predictors in an Urban Slum of Chhattisgarh, India: A Retrospective Record-Based Study. *Cureus*. Published online March 21, 2025. doi:10.7759/cureus.80953