

Prevalence and Pattern of Distribution of Obesity and Diabetes in the Population of Tripura: A Monitoring Survey-Based Report from a Regional Cancer Centre, India

Sharadia Majumder¹, Partha Sarathi Pal², Gautam Majumdar³,
Ankita Debnath⁴, Sukanta Nath⁵

¹3rd Year Post Graduate Trainee, Department of Biochemistry, Agartala Government Medical College, Agartala, Tripura, India.

²Associate Professor, Department of Biochemistry, Agartala Government Medical College, Agartala, Tripura, India.

³Associate Professor, Department of Radiation Oncology, Agartala Government Medical College, 799006, India.

⁴Assistant Professor, ILS Nursing Institute, Agartala, Tripura, India,

⁵Research Scientist, Department of Molecular Oncology, Atal Bihari Vajpayee Regional Cancer Centre, Agartala, Tripura, India, ORCID: 0000-0001-6900-

Corresponding Author: Dr. Sukanta Nath

DOI: <https://doi.org/10.52403/ijshr.20250416>

ABSTRACT

The presence of overweight or obesity with diabetes mellitus contributes to a higher risk of non-communicable diseases (NCDs) and increased mortality rates worldwide. Despite multiple efforts to mitigate the high occurrence of NCDs through awareness and treatment strategies, the management of obesity and diabetes in the North-Eastern states still presents a major challenge. This study sought to analyze the prevalence and pattern of the distribution of overweight, obesity, and diabetes in gender-specific populations across rural and urban areas in Tripura. This report is based on the results of a monitoring survey from the Atal Bihari Vajpayee Regional Cancer Centre situated in Agartala, Tripura, India. A cross-sectional survey was performed by ICMR-NCDIR, Bengaluru, in collaboration with the Atal Bihari Vajpayee Regional Cancer Centre, Tripura. The sample size for the state of Tripura was 2880, achieving full coverage of the Population-Based Cancer

Registry (PBCR). The survey was carried out during the period from November 2019 to December 2020. Sociodemographic information was gathered through a validated interview schedule. According to the cut-off values established by the WHO, 20.9% of the respondents were in the overweight category, while 3.5% were classified as obese. The prevalence of obesity was notably higher in females (4.2%) than in males (2.8%). Moreover, a little over 30% of the respondents were found to have central obesity. The rate of raised fasting blood glucose was 6.9%. Our research emphasizes the concerning rise in obesity rates in Tripura, attributed to urbanization and lifestyle changes. Obesity and diabetes are more prevalent in urban areas, with urban men particularly vulnerable to diabetes, while obesity is more frequently observed in women.

Keywords: Overweight, Obesity, Diabetes mellitus, Blood glucose, Tripura

INTRODUCTION

The increasing rates of obesity and diabetes mellitus are linked to a higher incidence and mortality rate due to dreadful cancer. A significant number of observations point to a connection between obesity and diabetes mellitus and an elevated risk of several cancers, specifically those affecting the liver, pancreas, uterus, colon, rectum, and the breast in post-menopausal women.¹ Being overweight and obese means having an excessive accumulation of body fat that hinders physical and psychosocial health and well-being. Obesity is viewed as a major health emergency in countries across the spectrum of development.² Overweight and obesity were once regarded as issues confined to high-income economies, but they are now becoming more widespread in poorer nations. The rise of obesity and overweight is becoming a pressing health issue across India.³ Obese and overweight individuals significantly increase the risk of diabetes mellitus, with obese individuals facing a sevenfold risk and overweight individuals a threefold risk, compared to those of healthy weight. This comparison illustrates the significant impact of weight on diabetes risk. Addressing weight issues is vital for prevention.⁴

There is significant evidence that having excess abdominal fat acts as a key predictor of both heart disease and type 2 diabetes (T2D). Although there are more sophisticated methods to measure obesity, the Body Mass Index (BMI) remains the standard calculation used by doctors and researchers. By calculating an individual's weight relative to their height, the BMI classifies them into categories of normal, overweight, or obese. The WHO defines obesity in two ways: a BMI of 30+ for generalized obesity, and waist-to-hip ratio (WHR) or waist circumference for central obesity.⁵ Average diabetes estimates for India conceal significant state-by-state variations, with many states having populations comparable to those of some countries. Data on diabetes patterns have been previously gathered by aggregating the

findings of various studies conducted in different parts of India over many years.⁶

There was a significant absence of concrete reports on obesity and diabetes from Tripura, a North-Eastern state of India. To address this limitation, ICMR-NCDIR (Indian Council of Medical Research-National Centre for Disease Informatics and Research) undertook a monitoring survey in Tripura, India, entitled "Report on Monitoring Survey of Cancer Risk Factors and Health System Response in North East Region (NER)" during 2019-2020. The survey was designed to explore the distribution of important behavioural and metabolic factors linked to cancer risk at a population scale.⁷ The report was compiled with the joint efforts of ICMR-NCDIR and Atal Bihari Vajpayee Regional Cancer Centre (ABV-RCC). Here in this manuscript, we will determine the prevalence, along with the pattern of distribution of overweight/obesity and diabetes in individuals aged 18 and above in the rural and urban regions of Tripura, considering both sexes, referencing the monitoring survey report sourced from ICMR-NCDIR.

MATERIAL & METHODS

Design

The target population was examined using a monitoring survey. The survey adopted a multistage cluster sampling technique. Using data from the 2011 census, Primary Sampling Units (PSUs) were determined by organizing information by state, district, sub-district, town/village code, and ward number. Like the National NCD Monitoring Survey (NNMS), the methodology included interviews at the household, adult, and health facility levels.

Population

The survey's population frame included individuals aged 18 and over in regular households. However, individuals residing in collective living situations, such as dormitories, hospitals, hotels, prisons, and military housing, were excluded.

Samples

The survey used a calculated sample size to get dependable information on cancer risk factors among adults in each Population-Based Cancer Registry (PBCR) area. The sample size for Tripura was determined to be 2880, ensuring complete coverage of the PBCR.

Data Collection

Data collection was stratified across four domains: household level, adult population, cancer-affected adults, and health service providers (PHCs, urban equivalents, CHCs, district hospitals, and private clinics). Data collection relied on modified NNMS instruments, with all variables being rigorously defined according to standardized references.

Duration

The study spanned a period from November 2019 to December 2020.

Governance of Survey

The Central Coordinating Agency (CCA) at ICMR-NCDIR, Bengaluru, was responsible for the strategic and scientific direction, oversight, and coordination of the survey. It provided the necessary technical and scientific backing, managing quality assurance, data handling, analysis, and reporting, and was supported by both its partners' expertise and an appointed team of specialists.

Quality Control and Training

To ensure consistency throughout the survey process, rigorous quality control protocols were implemented at all stages and levels, which included the development of training materials, conducting training sessions, calibrating and standardizing equipment, designing data collection instruments, gathering and storing field data, management of blood specimens, and safely disposing of biomedical waste. The project implemented a dashboard to track the live progress of data collection, with frequently asked questions and virtual

conferences serving as the primary methods for resolving any operational issues. The CCA conducted a two-day Training of Trainers session to instruct Principal and Co-Principal Investigators from both PBCRs on all survey protocols. The research team underwent a three-day training program from November 20th to 22nd, 2019, at the ABV-RCC, which included classroom training, demonstrations, practical exercises, and mock field drills.

Data Analysis

The data collection process was facilitated through handheld devices, which were preconfigured with the necessary software and used by the field team to input data on location. Additionally, there was a feature for backing up data onto SD cards within the handheld devices. The information from these devices was uploaded and synchronized with the Central server at ICMR-NCDIR. After compiling and cleaning data from all PSUs, weighting procedures were applied to adjust for biases related to sampling, population distribution, and non-response. The statistical analysis was conducted in STATA 14.1, following a detailed plan developed based on key indicators and subgroups. The analysis used commands previously established for complex survey data.

Ethical Considerations

To ensure compliance with ethical standards, the survey was reviewed and approved by the Tripura PBCR's ethics committee [F.4(5-234/AGMC/Academic/IEC meeting/2020/3703)] and the CCA's Ethics Review Committee, ICMR-NCDIR (NCDIR/IEC/2017/2).

RESULT

In this study, with 2880 participants, as shown in Table 1, the survey sample size is detailed. Table 2 describes the percentage distribution of socio-demographic features of adults according to their location and sex. Under the Obesity Measurement section in

Table 3, Table 3.1 presents the percentage distribution of overweight and obesity by location and sex, while Table 3.2 illustrates the percentage distribution of central obesity by age groups, location, and sex. In the Glucose Measurement section of Table 4, Table 4.1 shows the percentage distribution of elevated fasting blood glucose (mg/dl) by location and sex, whereas Table 4.2 provides the percentage distribution of fasting blood glucose (mg/dl) among those measured, categorized by location and sex. Under the Elevated Blood Glucose section in Table 5, Table 5.1 details the percentage

distribution of blood glucose testing by location and sex. Table 5.2 covers the percentage distribution of diabetes awareness, advice, treatment, and control among individuals with elevated blood glucose, stratified by location and sex. Table 5.3 shows the percentage distribution of blood glucose measurement sources and consultation status for elevated levels, by location and sex, and Table 5.4 indicates the percentage distribution of physician/health worker advice for blood glucose testing over the past year, categorized by age, location, and sex.

Table 1: Survey sample size charting

Name of the Registry	State	Total population (Age18+)	Population (18+) covered by PBCR	Total population of study site (census 2011) - (18+)	Samples/site (approximately)	Total PSUs (48 Households/PSU)
Tripura PBCR	Tripura	36,73,917	24,44,294	24,44,294	100	2880
Total Samples and PSUs					2880	60

Table 1 presents the sample size, calculated by multiplying the total number of Primary Sampling Units (60) by the number of households per PSU (48).

Table 2: Percentage distribution of socio-demographic features of adults according to their location and sex

	Urban	Rural	Men	Women	Total
Age					
18-44 years	65.2	70.8	67.0	67.5	67.3
45-69 years	29.8	24.2	28.4	27.1	27.7
70 years and above	5.0	5.0	4.6	5.4	5.0
Marital Status					
Never married	15.1	11.7	19.6	7.9	13.8
Currently married/cohabiting	78.1	83.5	79.5	80.7	80.1
Separated/Not living together/ Divorced	0.3	0.04	0.1	0.2	0.2
Widowed	6.5	4.8	0.8	11.2	5.9
Educational status					
Less than class 6	11.6	22.5	12.3	19.1	15.6
Class 6 to 10	50.6	59.7	50.7	57.3	53.9
Class 11 or 12	16.7	11.9	15.9	13.9	14.9
Graduation or diploma completed	16.7	5.2	16.4	8.4	12.5
Post-graduation	4.4	0.7	4.7	1.3	3.1
Occupation					
Professional	9.3	4.1	11.4	3.2	7.4
Medium or large Business	10.5	4.3	15.7	0.3	8.2
Middle / Senior Executive/officer in organization	1.7	0.1	2.0	0.2	1.1
Agricultural land owner	0.7	6.2	5.2	0.01	2.7
Sales and Marketing executives/Clerical	1.4	0.7	2.2	0.1	1.2
Self-employed and small business	15.6	9.0	23.2	2.7	13.2
Skilled manual labourer	5.4	8.7	12.5	0.5	6.6
Unskilled manual/agricultural labourer	1.0	11.9	8.7	1.2	5.1

Student	5.2	5.8	6.3	4.5	5.4
Homemaker	39.8	42.5	0.5	83.0	40.7
Retired	4.0	1.9	5.9	0.4	3.2
Unemployed (able to work)	4.4	3.9	5.3	3.1	4.2
Unemployed (unable to work)	1.0	0.7	1.0	0.8	0.9
Others	0.0	0.2	0.1	0.0	0.1

As shown in Table 2, the 18–44-year age groups comprised the largest share of participants at 67.3%. Other categories with notable figures included married individuals (80.1%), those with educational

qualifications from Class 6 to 10 (53.9%), and homemakers (40.7%).

Table 3: Obesity Measurement

Table 3.1- Percentage Distribution of Overweight and Obesity by location and sex

	Urban	Rural	Men	Women	Total
Overweight (BMI \geq25.0) kg/m²	27.9	18.7	26.2	22.6	24.4
Obese (BMI \geq30.0) kg/m²	4.9	1.2	2.8	4.2	3.5

Table 3.1 indicates that the overweight population was higher in urban areas compared to rural regions, with men being more susceptible to being overweight than

women. Additionally, while obesity rates were elevated among urban residents, women exhibited a greater tendency towards obesity.

Table 3.2- Percentage distribution of central obesity* by age groups, location, and sex

Age groups (in years)	Urban	Rural	Men	Women	Total
18- 44	36.2	22.1	11.7	50.8	30.7
45 – 69	44.8	29.3	23.6	57.4	39.7
70 and above	27.2	18.5	13.1	34.1	23.9

* A waist circumference of 90cm or greater in males and 80cm or greater in females indicates abdominal obesity, according to South Asia Pacific guidelines Table 3.2 shows that the prevalence of central obesity was greater in urban areas than in rural regions, particularly among

individuals aged 45 to 69 years. Furthermore, within this age group, women displayed a higher propensity for central obesity compared to men.

4. Blood Glucose Measurement

Table 4.1- Percentage distribution of elevated fasting blood glucose (mg/dl) by location and sex

	Urban	Rural	Men	Women	Total
Percentage distribution of elevated blood glucose	8.6	4.1	7.6	6.2	6.9
Known	6.8	3.2	6.1	4.9	5.5
Newly detected	1.8	0.9	1.5	1.3	1.4

*Elevated fasting blood glucose \geq 126 mg/dl including individuals on diabetes medication

Table 4.1 highlights that urban areas had a higher prevalence of elevated blood glucose, with men being more at risk for elevated blood glucose.

Table 4.2 - Percentage distribution of fasting blood glucose (mg/dl) among those measured, categorized by location and sex

Glucose levels	Urban	Rural	Men	Women	Total
<100 mg/dl	85.6	92.6	88.3	88.2	88.3
100 – 109 mg/dl	5.2	3.2	3.8	5.1	4.4
110 – 125 mg/dl	3.0	1.0	2.2	2.3	2.2
≥126 mg/dl	6.2	3.2	5.7	4.4	5.1

According to Table 4.2, the majority of participants exhibited fasting blood glucose levels below 100 mg/dl, with a slightly greater occurrence in rural regions. However, there was hardly any variation between men and women for this

measurement. The lowest numbers are observed, ranging from 110 to 125 mg/dl in all groups, considering fasting blood glucose levels.

5. Elevated Blood Glucose

Table 5.1 - Percentage distribution of blood glucose testing, by location and sex

	Urban	Rural	Men	Women	Total
Never tested in life	41.9	48.7	52.0	36.4	44.4
Tested ever in life	58.1	51.3	48.0	63.6	55.6
Tested in the past					
Within 1 year	39.9	20.6	30.0	35.7	32.8
> 1 year	18.2	30.8	18.1	27.9	22.8

Table 5.1 reflects that most participants had tested their blood glucose levels at least once in their lifetime, with a slightly higher prevalence observed in urban areas. Nevertheless, women appeared to be more

vigilant than men regarding blood glucose testing. Individuals in urban settings demonstrated a greater interest in testing their glucose levels within the past year compared to those in rural areas.

Table 5.2 - Percentage distribution of diabetes awareness, advice, treatment, and control among individuals with elevated blood glucose, stratified by location and sex

	Urban	Rural	Men	Women	Total
Received advice for treatment	98.4	88.6	98.0	93.9	96.2
On treatment*	88.8	85.2	87.9	88.1	88.0
Adherence to treatment**	79.1	67.9	74.6	79.4	76.7
Blood glucose under control ***	39.0	30.7	33.4	42.2	37.2

* Taken medication for at least one day in the last two weeks

**Among those on treatment, consistently took treatment over the last two weeks

***Among those who are already aware that they have elevated blood glucose, (Fasting Blood Glucose level ≤126 mg/dl)

According to Table 5.2, individuals living in urban areas showed a higher level of

awareness about their health conditions and blood glucose control compared to those in rural areas. Moreover, men displayed more awareness in this regard than women. Interestingly, although men were more knowledgeable about their health, women showed greater consistency in their treatment adherence and glucose level management.

Table 5.3 - Percentage distribution of blood glucose monitoring source and consultation status for elevated levels by location and sex

	Urban	Rural	Men	Women	Total
Blood glucose monitoring source *					
Government screening camp/Health facility	29.3	56.6	32.3	38.6	35.6
Private/NGO screening camp/Health facility	70.7	43.4	67.7	61.4	64.4
Present Medical consultation for elevated blood glucose					
Allopathic physician from public sector	33.1	28.7	30.4	34.4	32.2
Allopathic physician from Private/ NGO health facility	62.1	69.1	63.5	63.8	63.6

*** Among those with a measurement in the past year**

Table 5.3 shows that most participants preferred private or NGO screening camps and health facilities over those provided by

the government. This trend is noted across all groups, with the exception of rural areas. One possible explanation for this preference may be the limited availability of private laboratories.

Table 5.4 - Percentage distribution of physician/health worker advice for blood glucose testing over the past year, categorized by age, location, and sex

Age groups (Years)	Urban	Rural	Men	Women	Total
18- 44	50.4	44.1	38.8	57.4	47.9
45 – 69	70.5	62.8	67.7	68.3	68.0
70 and above	86.4	65.7	78.3	79.2	78.8

As indicated in Table 5.4, people aged 70 and above were encouraged by physicians or health workers to assess their blood glucose levels once in the last year, compared to different age groups.

DISCUSSION

According to recent analyses, the global burden of excess weight among adults includes over 1.9 billion individuals who are overweight, of whom 650 million meet the criteria for obesity. It is estimated that around 2.8 million deaths occur each year due to complications from being overweight or obese. Developing nations face a growing burden of obesity and its health-related complications due to converging factors, including nutritional transitions towards energy-dense foods, the adoption of more sedentary lifestyles, and persistent deficiencies in healthcare services and financial backing. Obesity affects over 135 million people in India. In India, obesity affects different demographics unequally, with notable variations across age groups, between genders, among different regions (urban vs. rural), and across economic strata.⁸

An estimated one-eighth of the global population was afflicted with obesity in 2022. Excess adiposity is a major determinant of T2D risk. In men, a low-BMI lifetime risk of 7% can increase to 70% with very high BMI, while women see an increase from 12% to 74% under similar conditions. Despite being the primary measure for weight status, BMI guidelines for Asian populations suggest lower

thresholds to account for their increased risk of diabetes at lower BMI ranges.⁹ While BMI is a widely used screening tool for weight status, its limitation lies in its inability to differentiate between fat mass and lean mass or indicate where fat is located. This is critical because central adiposity, or abdominal fat, has a stronger association with cardiometabolic diseases than overall body fat. Given that BMI does not effectively capture fat distribution, Waist Circumference (WC) and WHR are used to assess central obesity. WC is a practical and reliable measure that is independent of height, has a strong correlation with BMI and WHR, and provides a valuable estimation of intra-abdominal and total fat.¹⁰

The pathogenesis of prediabetes and T2D is significantly influenced by obesity, specifically central adiposity and ectopic fat accumulation. This is driven by mechanisms involving insulin resistance and reduced β -cell function. The escalating rates of T2D globally correspond with the rise in obesity prevalence.¹¹ Obesity has historically been regarded as a disease stemming from energy imbalance; however, its origins are multifaceted, involving a complex interaction of genetic, environmental, physiological, behavioural, social, and economic elements. Obesity and T2D both share similar underlying causes.¹²

The high prevalence of obesity is a multifactorial issue driven by more calorie consumption, changes in dietary composition, reduced physical activity, and modifications in the gut microbiome. If the

current upward trend in obesity persists, it is projected that by 2030, a staggering 86.5% will be either overweight or obese, and within two decades, by 2048, every American will fall into one of these categories. The occurrence of obesity is 2 to 4 times greater in individuals with diabetes mellitus than in the non-diabetic population.¹³ Our investigation corroborated with another study confirming that overweight or obesity affects 23.4% of rural adults, while diabetes is present in 6.8%.¹⁴ An earlier investigation in India revealed that the diabetes prevalence was 8.65% among male participants and 7.39% among female participants.¹⁵ Our study showed a nearly identical prevalence, with rates of 7.6% for males and 6.2% for females. Our study additionally demonstrated that it is imperative to elevate awareness regarding the early diagnosis and treatment of diabetes and obesity control to minimize the prevalence of these two in Tripura.

Strengths and limitations

One of the significant strengths of the research was that it was supervised and monitored by NCDIR, with data generated from the monitoring survey conducted in Tripura, carried out through PBCR Tripura located at ABV-RCC. Despite its findings, the study encountered several limitations. Financial limitations prevented the research from being extended for more than one year (2019-2020). Additionally, the target sample could not be increased because of the time limit and manpower shortages.

CONCLUSION

The research findings imply that the increase in central obesity rates has resulted in a rise in diabetes within Tripura. Living a sedentary life in urban settings, along with consuming junk food, is a significant factor in the development of T2D. These lifestyle choices, which can be modified, contribute to weight gain, insulin resistance, and poor control of blood sugar levels, which are the primary drivers of the disease. Globally, non-communicable diseases place a

significant burden on health systems worldwide, causing immense morbidity and mortality. A deeper investigation into the mechanisms by which excess adiposity negatively impacts the pathophysiology of T2D could result in new therapeutic interventions aimed at preventing and treating this serious disease. We can reduce the risk factors of inactivity and obesity for T2D by promoting healthier eating habits, such as consuming more fruits and vegetables and fewer processed foods, while also encouraging exercise through education and improved public spaces. Furthermore, preventing a diabetes epidemic in Tripura depends on fortifying health systems to effectively detect pre-diabetes and manage existing diabetes cases from an early stage.

Declarations by authors

Ethical Approval: Approved

Acknowledgment: We acknowledge all the patients who contributed to the study.

Source of Funding: ICMR

Conflict of Interest: The authors declare that they have no competing interests.

REFERENCES

1. Kim DS, Scherer PE. Obesity, Diabetes, and Increased Cancer Progression. *Diabetes Metab J.* 2021;45(6):799-812.
2. Al-Goblan AS, Al-Alfi MA, Khan MZ. Mechanism linking diabetes mellitus and obesity. *Diabetes Metab Syndr Obes.* 2014; 7:587-591.
3. Ramamoorthy K, Muthunarayanan L, Sundaram MP, Devivaraprasad M, Anantharaman VV. Association of Abdominal Obesity and Diabetes among the Adult Tribal Population in Tamil Nadu. *Indian J Community Med.* 2024;49(6):826-830.
4. Mendhe HG, Borkar SK, Shaikh MK, Choudhari SG. Assessment of Obesity and Associated Risk Factors of Diabetes in an Urban Population in Central India. *Cureus.* 2023;15(5): e39776.
5. Purnell JQ. Definitions, Classification, and Epidemiology of Obesity. [Updated 2023 May 4]. In: Feingold KR, Ahmed SF, Anawalt B, et al., editors. *Endotext* [Internet]. South Dartmouth (MA):

- MDText.com, Inc.; 2000-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK279167/>
6. India State-Level Disease Burden Initiative Diabetes Collaborators. The increasing burden of diabetes and variations among the states of India: The Global Burden of Disease Study 1990-2016. *Lancet Glob Health*. 2018;6(12): e1352-e1362.
 7. ICMR-NCDIR, Report on Monitoring Survey of Cancer Risk Factors and Health System Response in North East Region (NER) of India, 2022.
 8. Ahirwar R, Mondal PR. Prevalence of obesity in India: A systematic review. *Diabetes Metab Syndr*. 2019;13(1):318-321.
 9. Garg C, Daley SF. Obesity and Type 2 Diabetes. [Updated 2025 Jun 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK592412/>
 10. Jambulingam V, Sanjay K. Prevalence of obesity among type 2 diabetes mellitus patients in urban areas of Belagavi. *Indian Journal of Health Sciences and Biomedical Research (KLEU)*. 2020;13(1):21-27.
 11. Klein S, Gastaldelli A, Yki-Järvinen H, Scherer PE. Why does obesity cause diabetes? *Cell Metab*. 2022;34(1):11-20.
 12. Bhupathiraju SN, Hu FB. Epidemiology of Obesity and Diabetes and Their Cardiovascular Complications. *Circ Res*. 2016;118(11):1723-1735.
 13. Singh SK, Singh R, Singh SK, Iquebal MA, Jaiswal S, Rai PK. Prevalence of Obesity in Newly Onset Diabetes Mellitus and Its Relationship with Uric Acid: An Indian Cross-Sectional Study. *Int J Gen Med*. 2023; 16:1217-1226.
 14. Meshram II, Nagalla B, Rao Kodavanti M, Avula L, Ginnela Narsimhachary Veera B. Overweight/obesity, pre-diabetes, diabetes and its association with hypertension and other factors among rural adults (≥ 18 years) in India. *Indian Heart J*. 2024;76(3):182-191.
 15. Gupta RD, Kothadia RJ, Parray AA. Association between abdominal obesity and diabetes in India: Findings from a nationally representative study. *Diabetes Epidemiology and Management*. 2023; 12:100155.

How to cite this article: Sharadia Majumder, Partha Sarathi Pal, Gautam Majumdar, Ankita Debnath, Sukanta Nath. Prevalence and pattern of distribution of obesity and diabetes in the population of Tripura: a monitoring survey-based report from a Regional Cancer Centre, India. *Int. J. Sci. Healthc. Res*. 2025; 10(4): 107-115. DOI: [10.52403/ijshr.20250416](https://doi.org/10.52403/ijshr.20250416)
