Journal of Monno Medical College
December, 2025; 11(2):96-101

Original Article

Knowledge on Diabetes Mellitus among the Rural People in a Selected Area of Manikganj District of Bangladesh

Afsana Mahjabin[1], Khondoker Mohammad Ali[2], Mushreen Islam[3], Md. Salahuddin Emdad[4], Raziya Sultana Niha[5], Hasan Toufik Imam[6], Shahima Sultana[7], Sk Md Muktadir Hasan[8], Mitali Hossain[9], Md. Mostafizur Rahman[10], ABM Maqsudul Haque[11]

[1]Ass ociate Professor, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [2]Ex-Professor, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [3]Assistant Professor, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [4] Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [5]Lecurer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [6]Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [7]Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [8]Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [9]Senior Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [10]Lecturer, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh; [11]Professor, Department of Community Medicine & Public Health, Monno Medical College, Manikganj, Bangladesh

Abstract

Background: Diabetes Mellitus (DM) is a disorder in which the body does not produce enough or respond normally to insulin causing blood sugar levels to be abnormally high. ***Objective:*** This study intends to assess the status of knowledge on Diabetes Mellitus of the people in a rural area of Manikganj district. ***Methodology:*** This was a descriptive type of cross-sectional study carried out in Andharmanik village, Boyra union, Harirampur upazila of Manikganj district during the period of May to October, 2025 in the Department of Community Medicine and Public Health, Monno Medical College, Manikganj with a view to assessing knowledge on Diabetes Mellitus among the rural people. ***Results:*** Among the 408 respondents, majority (144, 35.3%) belonged to the age group (36-50) years; most of them (210, 51.5%) were male. Most of the respondents (372, 91.2%) said that Diabetes Mellitus was a non-communicable disease. About one-third of the respondents (150, 36.7%) mentioned that less physical activities were the main risk factor, majority (156, 38.2%) agreed that frequent urination was the main symptoms and one fourth of the respondents (102, 25.0%) answered that Gangrene was one of the complications of Diabetes Mellitus. Majority of the respondents mentioned increase physical activity (207, 50.7%) and less carbohydrate intake (321, 78.70%) as control measures of Diabetes Mellitus. More than half of the respondents (300, 73.5%) mentioned that Diabetes Mellitus was controllable and majority (171, 41.9%) identified health worker as the leading source of information about the disease. ***Conclusion:*** It can be concluded that majority of the people had heard the name of Diabetes Mellitus but have insufficient knowledge about its risk factors, sign-symptoms, complications and control measures.

Keywords: : Diabetes Mellitus, Rural people, Manikganj, Bangladesh
Received: 02 April 2025; **Accepted:** 20 May 2025; **Published:** 1 December 2025
DOI: https://doi.org/10.3329/jmomc.v11i2.90941

Correspondence: Dr. Afsana Mahjabin, Associate Professor, Department of Community Medicine & Public Health, Monno Medical College, Monno City, Gilondo, Manikganj, Bangladesh. E-mail: afsana.aqsa@gmail.com, Cell: +880 1768-677154. ORCID: 0000-0001-9717-6085.
How to cite this article: Mahjabin A, Ali KM, Islam M, Emdad MS, Niha RS, Imam HK, Sultana S, Hasan SMM, Hossain M, Rahman MM, Haque ABMM. Knowledge on Diabetes Mellitus among the Rural People in a Selected Area of Manikganj. J Monno Med Coll. 2025 December;11(2):96-101

Introduction

Chronic hyperglycemia is a metabolic disorder caused by either a lack of insulin secretion, impaired insulin action, or both. Notably, insulin plays an important role as an anabolic hormone, affecting the metabolism of carbohydrates, lipids and proteins. The metabolic abnormalities associated with diabetes mainly affect tissues such as adipose tissue, skeletal muscles and the liver due to insulin resistance. The severity of symptoms can vary depending on the duration and type of diabetes. Individuals with high blood sugar levels, particularly those with a complete lack of insulin, such as children, may experience symptoms such as increased appetite, polydipsia, dysuria, weight loss and vision problems. Some people with diabetes may not experience any symptoms, especially type 2 diabetic patients in their early stages[1]. Diabetes may result in a wide range of physiological as well as psychological problems including sexual disorder. The lower sexual functions or dysfunctions termed as loss of libido may be observed in both females and males as a consequence of DM[2].

Bangladesh, like many other countries, is transitioning from communicable to non-communicable diseases due to improved socioeconomic status and unplanned but rapid urbanization. In 2024 approximately13.9 million people in Bangladesh have Diabetes Mellitus, 43% of whom is undiagnosed. The number is projected to increase to 22.3 million by 2045, making Bangladesh one of the countries with the highest number of people living with diabetes. Bangladesh is currently ranked 8th in the world for the total number of people with diabetes and is projected to be 7th by 2045[3].

Diabetes is a rapidly growing health challenge, contributing to high mortality and morbidity as well as potential epidemic across the nearby country India. This is primarily driven by dietary transitions and insufficient or lack of physical activity altering the physiological milieu leading to overweight or obesity and diabetes. Care for chronic diseases like diabetes poses challenges characterized by the need for sustained compliance to treatment, prevention or management of associated complications[4]. Over the years, the diabetes prevalence has also been increasing in India. The age-adjusted prevalence of diabetes is expected to increase from 9% in 2011 to 10.8% by 2045. Moreover, more than half of the diabetic individuals in India are undiagnosed. A recent study reported that there are 101 million individuals with diabetes and 136 million individuals with prediabetes in India. In 2019, India had an age-standardized incidence of diabetes at 317.02 per 100,000 population and a mortality of 27.35 deaths per 100,000 population[5]. Globally, the prevalence of diabetes mellitus is steadily increasing. Diabetes mellitus or type 2 diabetes is one of the most common chronic and preventable diseases affecting 463 million individuals worldwide in 2019. By 2045, the International Diabetes Federation predicts 700 million people will have diabetes worldwide, a 51% increase from 2019[6]. Diabetes mellitus was responsible for 6.7 million deaths in 2021. Moreover, diabetes management is associated with some 12% of global health expenditure. The costs associated with this healthcare effectively reduce access to diabetes services for much of the population[7]. In this study it was expected to explore the knowledge of Diabetes Mellitus among the rural adult people of a selected area of Manikganj district in Bangladesh.

Methodology

Study Settings and Population: This descriptive cross-sectional study was directed to assess the knowledges about Diabetes Mellitus among the rural people of Manikganj from May to October, 2025. This study was carried out in the department of Community Medicine & Public Health of Monno Medical College. Participants were selected from Andharmanik village, Boyra union and Harirampur upazila of Manikganj. district, Bangladesh. Participants in the study were purposively selected and included 408 rural people. The inclusion criteria specified that participants must be at least 18 years old and above, both male and female and able to offer informed written consent. The participants who didn't give informed written consent, who didn't know about Diabetes Mellitus and psychologically ill person were excluded from the study.

Study Procedures: Participants in the study were interviewed face-to-face using a pretested, semi-structured questionnaire. This questionnaire included socio-demographic characteristics of the participants, as well as their knowledge on risk factors, sign-symptoms and complications of Diabetes Mellitus. Knowledge about common age, restricted food and control measures of Diabetes Mellitus were also included in this questionnaire. The pre-testing was conducted in Ghior upazilla of Manikganj district, Bangladesh.

Statistical Analysis: Findings were recorded and analyzed. Collected data were checked and edited first and processed with the help of the software Statistical Package for Social Sciences (SPSS) version 23.0 and analyzed. Statistical analyses were done by using appropriate statistical tools. Statistical significance was assessed at the 0.05 level for all analyses.

Ethical Clearance: Participation was voluntary, confidentiality was ensured and informed written consent was obtained from all participants. Ethical approval for the study was approved by the Institutional Review Board

(IRB) of the Monno Medical College, Manikganj, Bangladesh.

Results

In this study, among 408 respondents, majority (144, 35.3%) belonged to the age group (36-50) years with the mean age + standard deviation (SD) of 45.32±13.6143 years. A total of 210(51.5%) were male and 66(16.2%) were literate. Among the literate people, majority (111, 27.1%) had Secondary level of education. Most of the cases were Muslims (297, 72.8%). Monthly family income of majority of the respondents (240, 58.8%) was (>15,000) Bangladeshi taka (Table 1).

Table 1: Socio-demographic characteristics of the respondents (n=408)

Socio-Demographic Characteristics	Frequency	Percent
Age Group		
• 18 to 35 Years	114	27.9
• 36 to 50 Years	144	35.3
• 51 to 65 Years	123	30.3
• Above 65 Years	27	6.7
Mean±SD= 45.32±13.6143 years		
Gender		
• Male	210	51.5
• Female	198	48.5
Education		
• Illiterate	66	16.2
• Primary education	81	19.8
• Secondary (up to SSC*) education	111	27.1
• HSC** and above	144	18.4
Religion		
• Islam	297	72.8
• Hinduism	111	27.2
Occupation		
• Business	69	16.9
• Service	27	6.6
• Farmer	60	14.7
• Housewife	120	29.4
• Day laborer	81	19.8
• Unemployment	30	7.4
• Retired	21	5.1
Family Income		
• Less Than 5,000 BDT	48	11.8
• 5,001 to 10,000 BDT	42	10.3
• 10,001 to 15,000 BDT	78	19.1
• More Than 15,000 BDT	240	58.8

*SSC - Secondary School Certificate, **HSC -Higher Secondary School Certificate

The study reflected that majority (372, 91.2%) respondents agreed to the fact that Diabetes Mellitus was a non-communicable disease, On the other hand, 36(8.8%) respondents believed Diabetes Mellitus was a communicable disease (Figure I).

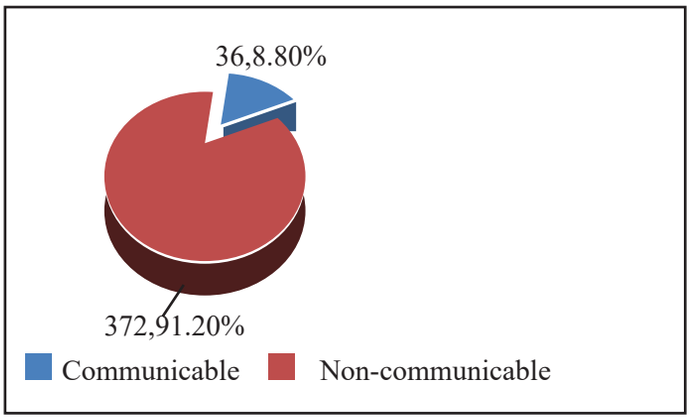

Figure I: Knowledge of the respondents about the communicability of the disease (n=408)

In connection with the knowledge about common age of Diabetes Mellitus, most of the (144, 35.3%) respondents said that common age groups of Diabetes Mellitus were (46-60) years and (61 & above) years followed by 105(25.7%) respondents mentioned (31-45) years age group (Fig II).

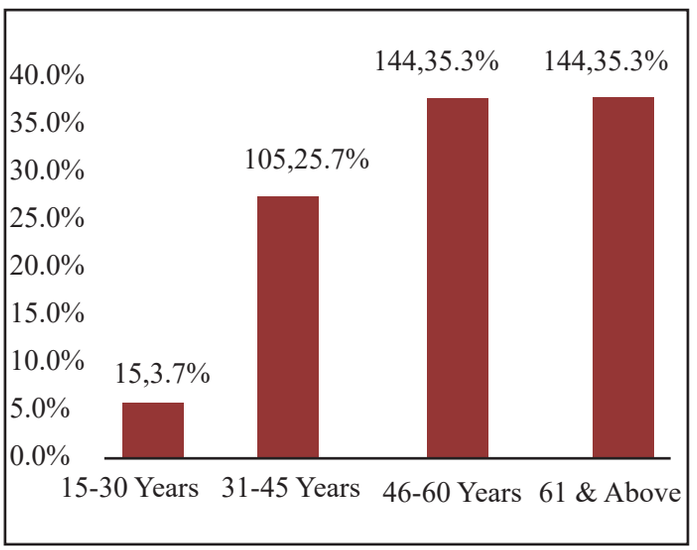

Figure II: Multiple Response of the Respondents According to Knowledge of Common Age of Diabetes Mellitus

In this study, considering risk factors of the disease, majority (150, 66.33%) said that that less physical activity was the main cause of Diabetes Mellitus followed by 117(28.6%) respondents agreed obesity, 111(27.2%) accepted genetic cause. Only 36(8.8%) respondents mentioned smoking and 9(2.2%) respondents told alcohol were the risk factors of Diabetes Mellitus (Table 2).

Table 2: Multiple Response of the Participants Regarding Knowledge About the Risk Factors of the Disease

Risk factors	Frequency	Percent
Genetic	111	27.2
Obesity	117	28.6
Alcohol	9	2.2
Cigarette smoking	36	8.8
Less Physical Activity	150	36.7
Others	72	17.6

Regarding common signs & symptoms of Diabetes Mellitus, majority (156, 38.2.00%) of the respondents answered frequent urination followed by 66(16.1%) participants mentioned excessive thirst, 63(15.4%) respondents agreed weight loss. Only 60(14.7%) respondents told fatigue and 15(3.6%) respondents answered slow healing sores (Table 3).

Table 3: Multiple Response of the Participants Regarding Conception About Common Signs-Symptoms of Diabetes Mellitus

Signs-symptoms	Frequency	Percent
Frequent Urination	156	38.2
Excessive Thirst	66	16.1
Weight Loss	63	15.4
Increased Hunger	36	8.8
Fatigue	60	14.7
Slow Healing Sores	15	3.6
Others	33	8.1

Regarding the knowledge of the respondents about the complications of Diabetes Mellitus most of the respondents (168, 41.2%) answered cataract followed by 102(25.0%) mentioned gangrene and heart disease. On the other hand, 78(19.1%) respondents mentioned diabetic nephropathy and only 30(7.4%) said diabetic neuropathy as complications of Diabetes Mellitus (Table 4).

Table 4: Multiple Responses of the Respondents Regarding Knowledge About Complications of Diabetes Mellitus

Complications	Frequency	Percent
Cataract	168	41.2
Gangrene	102	25.0
Heart disease	102	25.0
Diabetic Nephropathy	78	19.1
Diabetic Neuropathy	30	7.4
Others	93	22.8

The study showed that majority (207, 50.7%) mentioned increase physical activity as control measures of Diabetes Mellitus and 189(46.3%) agreed diet. Only 93(22.8%) accepted drugs as control measures (Table 5).

Table 5: Multiple Response of the Participants Regarding Knowledge About the Control Measures of Diabetes Mellitus

Control measures of DM	Frequency	Percent
Increasing Physical Activity	207	50.7
Diet	189	46.3
Drugs	93	22.8
Others	6	0.01

In connection with the knowledge about the types of food should be avoided majority (321, 78.7%) respondents mentioned Carbohydrate followed by 93(22.8%) respondents said fat. Only 15 (0.04%) respondents told about Protein (Figure III)

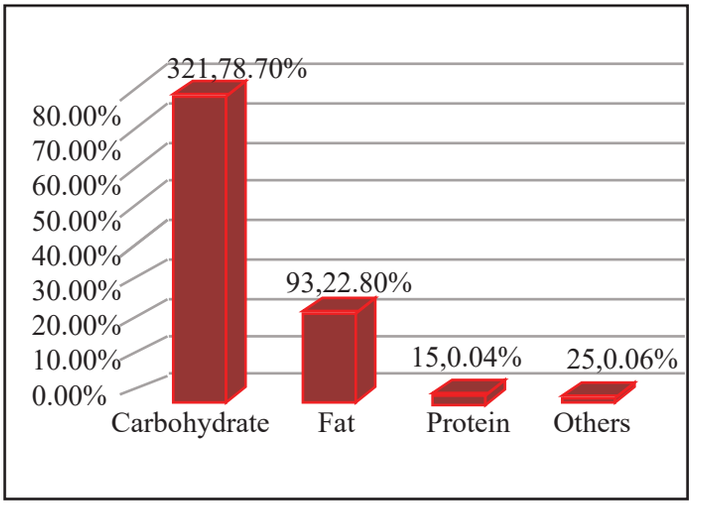

Figure III: Multiple response of the respondents regarding knowledge about the types of food should be avoided

Regarding knowledge about prognosis of disease, majority of the respondents (300, 73.5%) mentioned Diabetes Mellitus is controllable followed by 48(11.8%) respondents told patient will suffer for long time and only 24(5.9%) participants told Diabetes Mellitus is curable (Table 6).

Table 6: Multiple responses of the respondents regarding knowledge about the prognosis of the Diabetes Mellitus

Prognosis of Diabetes Mellitus	Frequency	Percent
Curable	24	5.9
Controllable	300	73.5
Patient will suffer for long time	48	11.8
Do not know	36	8.8

The study reflected that most of the respondents (171, 41.9%) identified health worker as the leading source of information about Diabetes Mellitus followed by 150(36.8%) mentioned social media and 57(14.0%) stated Television. Only 9(2.2%) respondents told about Newspaper and 3(0.7%) people agreed about radio as the source of information regarding Diabetes Mellitus (Table 7).

Table 7: Multiple responses of the respondents on the basis of knowledge about the sources of information regarding Diabetes Mellitusd

Sources of information	Frequency	Percent
Health worker	171	41.9
Radio	3	0.7
Television	57	14.0
Newspaper	9	2.2
Social Media	150	36.8
Others	39	09.6

Discussion

According to the survey, out of 408 respondents, the majority (35.3%) belong to the age group (36-50) years, the highest number of respondents (51.5%) are male, most of the respondents (19.8%) completed primary level of education. A similar cross-sectional study which has been conducted in India[8] shows that majority of study participants (37.26%) were from age group of 21 to 40 years, most of the study participants (54.43%) are male and 13.76% respondents completed primary level of education which are nearly consistent with the result of this study. This resemblance may be due to the geographical similarity between the two countries being both situated in South East Asian region.

The study reflected that majority of the respondents (91.2%) have agreed to the fact that Diabetes Mellitus is a non-communicable disease, On the other hand, 8.8% respondents have believed Diabetes Mellitus is a communicable disease. A similar study which has been conducted in Bengaluru[9] reveals that most of the respondents (80.3%) have mentioned to the fact that Diabetes Mellitus is a communicable disease followed by 19.7% respondents have answered Diabetes Mellitus is a non-communicable disease which is inconsistent with the result of this study.

In connection with the knowledge about common age of Diabetes Mellitus, most of the (35.3%) respondents have said that common age groups of Diabetes Mellitus were (46-60) years and (61 & above) years followed by 25.7% respondents have mentioned (31 to 45) years age group. In contrast to the findings of this study, a comparable study carried out in India[10] reveals that majority of the respondents (45.0%) have mentioned that common age groups of Diabetes Mellitus were (46 to 60) years followed by 20.0% respondents have said (31 to 45) years age group which is almost consistent with the result of this study.

In this study, considering risk factors of the disease, majority (66.33%) have said that that less physical activity was the main cause of Diabetes Mellitus followed by 28.6% respondents have agreed obesity, 27.2% have accepted genetic cause. A similar study which has been conducted in Nepal[11] reflects that most of the respondents (30.5%) have mentioned that that obesity is the main cause of Diabetes Mellitus followed by 39.0% respondents have agreed genetic cause and 13.0% have accepted less physical activity which is inconsistent with the result of this study.

Regarding common signs & symptoms of Diabetes Mellitus, majority (38.2.0%) of the respondents answered frequent urination followed by 16.1% participants mentioned excessive thirst. Only 14.7% respondents told fatigue and 3.6% respondents answered slow healing sores. A similar cross-sectional study which has been conducted in India[12] reveals that majority (42.3%) of the respondents mentioned frequent urination followed by 22.1% participants agreed excessive thirst, 15.5% respondents said fatigue and 5.6% respondents answered slow healing sores which is consistent with the result of this study.

Regarding the knowledge of the respondents about the complications of Diabetes Mellitus majority of the respondents (41.2%) have answered cataract followed by 25.0% have mentioned gangrene and heart disease. On the other hand, 19.1% respondents have mentioned diabetic nephropathy and only 7.4% have said diabetic neuropathy as complications of Diabetes Mellitus. A similar study which has been conducted by Koley, et. al. in India[12] shows that, majority i.e. 38.7% respondents mentioned cataract followed by 19.6% said gangrene and heart disease. On the other hand, 30.9% respondents answered diabetic nephropathy and only 3.2% mentioned diabetic neuropathy as complications of Diabetes Mellitus which is almost consistent with the result of this study.

In connection with the knowledge about the types of food should be avoided majority of the respondents (78.7%) have mentioned Carbohydrate followed by 22.8% respondents have said fat and only 0.04% respondents told about Protein. A similar cross-sectional study which has been conducted in a rural area of Bangladesh[13] reveals that majority of the respondents (53.0%) have answered Diabetes could be controlled by avoiding sugar which is similar with the result of this study.

Regarding knowledge about prognosis of disease, majority of the respondents (73.5%) have mentioned Diabetes Mellitus is controllable followed by 5.9% participants have told Diabetes Mellitus is curable. A study conducted in Haryana[14] where the study finding shows that majority (66.82%) of study participants have answered that Diabetes Mellitus is curable followed by 33.18% participants have said Diabetes Mellitus is controllable. The findings are inconsistent with the result of this study. This is a little study carried out in a conveniently chosen limited location. Additionally, the sample size was limited, thus it might not accurately represent Bangladesh.

Conclusion

In this study majority of the respondents belonged to the age group, most of them were male, majority studied up to HSC and above, most of them were housewives and more than half of the respondents had monthly family income above 15000 taka. Most of the respondents said that Diabetes Mellitus was a non-communicable disease. About one-third of the respondents mentioned that less physical activities were the main risk factor, majority agreed that frequent urination was the main symptoms and one fourth of the respondents answered that Gangrene was one of the complication of Diabetes Mellitus. Majority of the respondents mentioned increase physical activity and less carbohydrate intake as control measures of Diabetes Mellitus. More than half of the respondents mentioned that Diabetes Mellitus was controllable and majority identified health worker as the leading source of information about the disease. Educational interventions are urgently needed to create awareness among the rural people and further studies are warranted to find out the real situation in this context.

Authorship contribution: Mahjabin A, Ali KM, Islam M, Emdad MS, Niha RS, Imam HK, Sultana S, Hasan SMM were involved in conceptualization, data collection and literature collection. Data analysis and manuscript writing were done by Mahjabin A, Ali KM, Islam M, Emdad MS, Niha RS, Imam HK, Sultana S, Hasan SMM and Haque ABMM. Data analysis- Emdad MS, Niha RS, Imam HK, Sultana S and Hasan SMM. Manuscript revision done by Ali KM and Haque ABMM.

Ethical approval: Participation was voluntary, confidentiality was ensured and informed written consent was obtained from all participants. Ethical approval for the study was approved by the Institutional Review Board (IRB) of the Monno Medical College, Manikganj, Bangladesh.

Acknowledgment: None

Conflict of interest: There is no conflict of interest relevant to this paper to disclose.

Funding agency: This research project was not funded by any group or institution.

References

1.Antar SA, Ashour NA, Sharaky M, Khattab M, Ashour NA, Zaid RT, et al. Diabetes mellitus: Classification, mediators, and complications; A gate to identify potential targets for the development of new effective treatments. Biomedicine & Pharmacotherapy. 2023;168:115734

2.Talukder A, Hossain MZ. Prevalence of diabetes mellitus and its associated factors in Bangladesh: application of two-level logistic regression model. Scientific Reports. 2020 10(1):10237.

3.IDF Diabetes Atlas. Bangladesh-Diabetes country report 2000-2050. 2025. [Updated on: 2025, Viewed on: 19 October, 2025. Website: https://www.benthamdirect.com/content/journals/nemj/10.2174/0102506882338188241128182806]

4.Mathur P, Leburu S, Kulothungan V. Prevalence, awareness, treatment and control of diabetes in India from the countrywide national NCD monitoring survey. Frontiers in public health. 2022 ;10:748157.

5.Maniyara K, Kodali PB. Assessing type-2 diabetes risk based on the Indian diabetes risk score among adults aged 45 and above in India. Scientific Reports. 2025 ;15(1):4495.

6.Chowdhury MAB, Islam M, Rahman J, Uddin MJ, Haque MR. Diabetes among adults in Bangladesh: changes in prevalence and risk factors between two cross-sectional surveys. BMJ Open. 2022 ;12(8):e055044.

7.Khan, Nuruzzaman, Oldroyd, John C., Hossain, Mohammad Bellal, Islam, Rakibul M., Awareness, Treatment, and Control of Diabetes in Bangladesh: Evidence from the Bangladesh Demographic and Health Survey 2017/18, International Journal of Clinical Practice, 2022, 8349160, 9 pages, 2022.

8.S Multani H, Sinh Marod A, Pillai V, Gaware V. Spam detection in social media networks: a data mining approach. International Journal of Computer Applications. 2015 ;115(9):9-12.

9.Varghese M, Shanbhag DN, Martin ME, Mathew G. Perception about diabetes mellitus among college students aged between 18 and 25 years of Bengaluru city–A cross-sectional study. International Journal of Noncommunicable Diseases. 2025 ;10(2):77-82.

10.Chaudhary M, Sharma P. Abdominal obesity in India: analysis of the National Family Health Survey-5 (2019–2021) data. The Lancet Regional Health-Southeast Asia. 2023 ;14.

11.Bhandari GP, Dhimal M, Neupane S, et al. Diabetes prevalence and associated risk factors among women in a rural district of Nepal using HbA1c as a diagnostic tool: A population-based study. Int J Environ Res Public Health. 2022;19(13):7693.

12.Koley M, Saha S, Arya JS, et al. Knowledge, Attitude, and Practice Related to Diabetes Mellitus Among Diabetics and Nondiabetics Visiting Homeopathic Hospitals in West Bengal, India. Journal of Evidence-Based Complementary & Alternative Medicine. 2015;21(1):39-47.

13.Islam FM, Chakrabarti R, Dirani M, Islam MT, Ormsby G, Wahab M, et al. Knowledge, attitudes and practice of diabetes in rural Bangladesh: the Bangladesh Population based Diabetes and Eye Study (BPDES). PloS one. 2014 ;9(10):e110368.

14.Kumar L, Mittal R, Bhalla A, Kumar A, Madan H, Pandhi K,et al. Knowledge and Awareness About Diabetes Mellitus Among Urban and Rural Population Attending a Tertiary Care Hospital in Haryana. Cureus. 2023 ;15(4).