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Comparative Analysis of Type 2 Diabetes Prevalence between Diabetic and Non-Diabetic Women

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Abstract

Diabetes mellitus is a diverse set of illnesses distinguished by hyperglycemia caused by an absolute or relative deficiency in insulin synthesis or function. Diabetes mellitus' persistent hyperglycemia causes damage, malfunction, and failure of end organs such as the retina, kidney, neurological system, heart, and blood vessels. Due to physiological, hormonal, and lifestyle variables, this metabolic condition has become much more common over the past few decades, especially in women. The purpose of this study is to compare the prevalence of Type 2 Diabetes in women with and without the disease, as well as to look at related lifestyle and demographic factors. Women from various age groups participated in a cross-sectional study design. Structured questionnaires, clinical evaluations, and biochemical measurement of blood glucose levels were used to gather data. To assess the differences between the two groups, comparative statistical techniques were used. The data showed that diabetic women had a higher prevalence of risk factors such as obesity, sedentary lifestyle, and family history than their non-diabetic counterparts. Furthermore, there were significant relationships found between glycaemic status and characteristics such as age, eating preferences, and physical activity levels. The study highlights the growing burden of Type 2 Diabetes among women and underscores the importance of early screening, lifestyle modification, and targeted interventions to reduce disease prevalence and associated complications.

Keywords: Diabetes mellitus, Biochemical measurement, Diabetic women

1. Introduction:

One of the most common non-communicable diseases in the world, type 2 diabetes mellitus (T2DM) presents significant health and financial difficulties. Insulin resistance, decreased insulin secretion, and chronic hyperglycemia are its main characteristics. These conditions can result in serious consequences such retinopathy, neuropathy, nephropathy, and cardiovascular illnesses. Rapid urbanisation, sedentary lifestyles, poor eating habits, and rising obesity rates have all been linked to the growth in T2DM prevalence worldwide (Alam et al., 2014). Insulin replacement therapy is the primary treatment for individuals with type 1 diabetes mellitus, whereas dietary changes and lifestyle adjustments are fundamental for managing type 2 diabetes mellitus (Bastaki, S., 2005). Women are especially vulnerable due to distinct physiological and hormonal circumstances, such as gestational diabetes, menopause, and changes in fat distribution. Women are more likely to acquire type 2 diabetes due to these variables as well as sociocultural factors such nutritional inequities and restricted access to healthcare (Blair, M (2016).

Recognizing the prevalence of T2DM and its related factors among women is essential for creating effective strategies for prevention and management. Comparative analyses between women with diabetes and those without offer important information regarding the risk factors, lifestyle habits, and clinical characteristics linked to the condition. These evaluations assist in pinpointing high-risk groups and developing focused interventions.

Consequently, this study seeks to perform a comparative examination of the prevalence of Type 2 Diabetes among diabetic and non-diabetic women, emphasizing the identification of significant demographic, lifestyle, and clinical factors that impact the occurrence of the disease. The results of this research are anticipated to aid public health initiatives aimed at decreasing the incidence of T2DM in women.

2. Literature reviews

i. **International Diabetes Federation (2021) revels** that Type 2 diabetes mellitus (T2DM) has emerged as one of the world's most serious noncommunicable diseases, with a fast-growing prevalence, particularly in low- and middle-income nations. The International Diabetes Federation estimates that 537 million adults worldwide have diabetes, and by 2030, that figure is expected to increase to 643 million. Gender-specific biological and sociocultural factors influence disease susceptibility and progression, and women make up a significant component of this population.

ii. Several studies have looked into the incidence of Type 2 diabetes in women and identified major risk factors such as age, obesity, physical inactivity, and genetic predisposition. According to the **World Health Organization (WHO, 2022),** overweight and obesity are among the primary risk factors contributing to the rising prevalence of T2DM, particularly in urban populations.

iii. **Kautzky-Willer et al., (2016)** observe that Women's central adiposity and hormonal changes, particularly after menopause, have been associated to increased insulin resistance.

iv. Studies comparing diabetic and non-diabetic women have revealed significant disparities in lifestyle and metabolic characteristics. For example, **Hu (2011)** found that sedentary behaviour and bad eating habits greatly enhance the chance of acquiring T2DM. Similarly, a study conducted in India by **Mohan et al. (2018)** found that urban women had a greater prevalence of T2DM than rural women, owing to lifestyle and nutritional changes.

v. Biochemical and clinical factors differ significantly between diabetes and non-diabetic women. According to research conducted by the American Diabetes Association (2023), diabetics have higher levels of fasting plasma glucose, glycated haemoglobin (HbA1c), and lipid abnormalities. Insulin resistance and β-cell dysfunction are major pathophysiological mechanisms that differentiate diabetics from non-diabetics **(DeFronzo et al., 2015).**

vi. Socioeconomic and behavioural factors also contribute to disparities in T2DM prevalence. Women in impoverished countries frequently encounter challenges such as restricted access to healthcare, inadequate health literacy, and cultural restraints, which can delay diagnosis and treatment **(Joshi et al., 2014)**. Furthermore, gestational diabetes mellitus (GDM) has been identified as a strong

predictor of future type 2 diabetes in women, emphasising the necessity of early detection and care **(Bellamy et al., 2009).**

Despite substantial study, there are still gaps in understanding the comparative prevalence and associated factors of T2DM, particularly among diabetic and non-diabetic women. Instead of offering a full comparison framework, the majority of studies focus on general populations or specific risk variables. As a result, additional study is required to close this gap and aid in the development of gender-specific prevention and management measures**.**

3. Objectives

The present study aims to investigate the comparative aspects of Type 2 Diabetes among women. The specific objectives of the study are as follows:

- To examine the relationship and differences between diabetic and non-diabetic women with respect to health and lifestyle parameters.
- To identify the major risk factors contributing to the development of Type 2 Diabetes in women.
- To assess the prevalence of Type 2 Diabetes among women in Shyampur, Howrah district.

4. Methodology

- **Population and sample:** Population of study were five diabetic women of Howrah district in West Bengal.
- **Data & Sources Data:** The primary data is collected in the form of questionnaire for the research project. An anonymous survey was taken by 5 Diabetic Women. All of the participants were adults (ages 45-55). Secondary data is collected from books, journals & online resources. Various reports & govt. statistics are used.

5. Study Design and Study Population

A cross-sectional study using survey method was conducted in Howrah district of west Bengal in the month of December, 2025. Participants aged between 45-55 years. The inclusion criteria for this study specified that only women diagnosed with Type 2 Diabetes were selected as participants and were considered eligible to complete the survey.

6. Sampling Strategy

Questionnaire method techniques are used. 10 questions were written on a form & give it randomly to 5 diabetic women in Howrah district of West Bengal. Study aims and objectives were clearly explained at the beginning of the questionnaire of the survey.

7. Questionnaire Tool

This study adapted and used a previously validated questionnaire. To achieve the study's aim, a 10-item questionnaire was distributed. This section (10 questions) explored the amount of food consumption per day or in a week.

8. Sample Questionnaire

1. Social information:
    I. Name

II. Address
III. Age
IV. Monthly family income
V. Profession

2. Nutritional information:
   I. Which food does she take in breakfast / lunch/ afternoon snacks /evening snacks /dinner?
   II. Types of food item.
   III. Quantity of food item intake by the person/day.

Nutritional assessment involves measuring population's health by using ABCD method.

- **Anthropometric measurement:**
  Diet and nutrition have a significant impact on the body's physical state and growth pattern, which are genetically defined. Thus, anthropometric measurements are useful criterion for determining nutritional status.

  To assess the physical status of each participant during the survey, the following instruments and apparatus were utilized -
  I. Anthropometric rod
  II. Human weighing machine
  III. Measuring tape.

Body Mass Index (BMI) has been calculated using the following formula -

BMI = Height in kg/ weight in m2

The calculated BMI is then compared with the standard classification of BMI chart.

Table 1: Classification of BMI

BMI(kg/m2)	STATUS
<18.5	Under weight
18.5-24.99	Normal
25-29.99	Grade I over weight
30-39.99	Grade II over weight
>40	Grade II obesity

- **Biochemical Measurements:** The blood pressure of the patients was measured using a sphygmomanometer.
- **Clinical Methods:** Blood glucose level (fasting and post prandial) is collected from the laboratory test report of the patient.

Dietary intake measurement: Dietary intake data were collected over a period of seven consecutive days, including one Sunday to account for variations during weekly holidays. Participants were instructed to maintain their usual dietary habits throughout the study period. Information on food consumption was

obtained from subjects residing in the selected study area, with observations conducted at their homes during meal times.

The dietary intake of each participant was recorded using the food record method, wherein all food items and beverages consumed were documented. Subjects were guided to accurately report portion sizes using standard household measures, which were subsequently verified and recorded during follow-up visits on the same day.

The recorded food items were coded and converted into their respective weights (in grams) using the standardized food composition tables and coding system provided by the Indian Council of Medical Research (ICMR).

The average daily energy and nutrient intake were then calculated using a computerized version of the food composition database developed by ICMR. The mean intake values were derived based on the seven-day dietary records for each participant.

Findings is reached after analysing the data.

9. Data Analysis

Case study-1

Table 2.1: Personal Information

Name	Gayatri Bera
Age	53 years
Address	Shyampur,Howrah
Monthly family income	70,000/-(approx)
Profession	Housewife

Table 2.2: Anthropometric Information

Height	152.4 cm
Weight	50 kg
BMI	21.53 kg/m2

Table 2.3: Clinical Information

Blood glucose	**Fasting**	**PP**
Level	128 mg/dl	142 mg/dl

Table 2.4: Physiological Information

Pulse rate	75 beats/min
Respiratory rate	18 breaths/min

Blood pressure	130/80 mmHg

Dietary Analysis

Consumption of food by subject in 7 days

Food Stuffs	Day-1	Day-2	Day-3	Day-4	Day-5	Day-6	Day-7	Total (gm)	Average (gm)
Rice	50	50	50	50	50	50	50	350	50
Rice puffed	50	50	50		50	50	100	350	58.00
Rice flakes	50		50		50	50		200	28.57
Wheat whole	60	60	60	110	60	60	60	470	67.14
Bengal gram			25				25	50	7.14
Lentil	25		25	25	25	25	25	150	21.43
Soyabean		25		50				75	10.71
Peas							25	25	3.57
Potato		25		10			25	60	8.57
Onion	100	100	100		100	100	100	600	85.71
Beans	25			25			25	75	10.71
Green papaya	50		25	50		25	25	175	25
Par war	25		25				25	75	10.71
Bitter gourd	25		25		25		25	100	14.29
Snake gourd		25			25	25		75	10.71
Apple	100						100	200	28.57
Guava		100		100		100		300	42.85
Musambi			100					100	14.28
Bata	50					50		100	14.28
Rohu		50			50			100	14.28
Egg, hen			50					50	7.14
Chicken							60	60	8.57
Cow's milk		50						50	7.14
Channa	100			100		100		300	42.85

Oil	25	25	25	25	25	25	25	175	25

Nutrient Analysis

Food Stuffs	Amount (gm/ml)	Energy (Kcal)	Carbohy-drate(gm)	Protein(gm)	Fat(gm)
Rice	50	173	39.5	3.2	0.2
Rice puffed	58.33	189.57	42.93	4.37	0.06
Rice flakes	28.57	98.85	22.08	1.89	0.34
Wheat whole	67.14	228.95	46.59	8.12	1.14
Bengal gram	7.14	25.70	4.35	1.22	0.38
Lentil	21.43	73.50	12.64	5.38	0.15
Soyabean	10.71	46.27	2.24	4.63	2.09
Peas	3.57	11.25	2.02	0.70	0.04
Potato	8.57	8.31	1.94	0.14	0.019
Onion	100	50	11.1	1.2	0.1
Beans	10.71	16.92	3.19	0.79	0.10
Papaya green	25	6.75	1.43	0.16	0.05
Parwar	10.71	2.14	0.24	0.21	0.03
Bitter gourd	14.29	3.57	0.60	0.23	0.03
Snake gourd	10.71	1.93	0.35	0.05	0.03
Apple	28.57	16.86	3.83	0.06	0.14
Guava	42.85	21.85	4.79	0.39	0.13
Musambi	14.28	6.14	1.33	0.11	0.04
Bata	14.28	12.70	0.31	2.04	0.36
Rohu	14.28	13.85	0.36	2.37	0.19
Egg, hen	7.14	12.35		0.95	0.93
Chicken	8.57	9.34		2.22	0.05
Cows' milk	7.14	4.78	0.31	0.23	0.29
Channa	42.85	113.55	0.51	7.84	0.29
Oil	25	225			25
TOTAL		1373.13	202.91	48.5	40.79

Case Study-2

Table 2.1: Personal Information:

Name	Nilima Patra
Age	46 years
Address	Shyampur,Howrah

Monthly family income	50,000/-(approx)
Profession	Housewife

Table 2.2: Anthropometric Information

Height	157.48 cm
Weight	50 kg
BMI	20.16 kg/m2

Table 2.3: Clinical Information

Blood glucose	**Fasting**	**PP**
Level	145 mg/dl	205 mg/dl

Table 2.4: Physiological Information

Pulse rate	75 beats/min
Respiratory rate	16 breaths/min
Blood pressure	120/75 mmHg

Dietary Analysis

Consumption of food by subject in 7 days

Food Stuffs	**Day-1**	**Day-2**	**Day-3**	**Day-4**	**Day-5**	**Day-6**	**Day-7**	**Total (gm)**	**Average (gm)**
Rice	50	50	50	50	50	50	50	350	50
Rice puffed	50	25		50	50	25		200	28.57
Rice flakes	50		25		50		25	150	21.43
Dalia							100	100	14.29
Oats			100				100	200	28.57
Wheat whole	60	110	60	110	60	110	10	520	74.29
Bengal gram	25		10		25		10	70	10
Lentil	25	50		50	25	50	25	225	32.14
Soyabean				25		25		50	7.14
Susni sag	50		50		50		50	200	28.57
Amaranth		50		50		50		150	21.43
Potato	10		10			10	10	40	5.71
Onion	50	50	50	50	50	50	50	350	50
Beans	25		25		25		25	100	14.28
Bitter gourd		50		50		50		150	21.42
Brinjal		25	25	25		25	25	125	17.86

Cucumber	100	100		100	100	100		500	71.42
Drumstick				25				25	3.57
Snake gourd			25		25		25	75	10.71
Papaya green	25	25	25	25	25	25	25	175	25
Parwar	25	25	25		25	25		125	17.86
Apple	100				100			200	28.57
Musambi		100			100			200	28.57
Papaya ripe			100					100	14.29
Guava				100				100	14.29
Bata	50							50	7.14
Rohu					50			50	7.14
Egg, hen		50	50			50		150	21.42
Chicken			40				40	80	11.43
Channa	100	100		50	100	100		450	64.29
Oil	25	25	30	25	25	25	25	180	25.71

Nutrient Analysis

Food Stuffs	**Amount (gm/ml)**	**Energy (kcal)**	**Carbohydrate (gm)**	**Protein (gm)**	**Fat(gm)**
Rice	50	173	39.5	3.2	0.2
Rice puffed	28.57	92.85	21.03	2.14	0.029
Rice flakes	21.43	74.15	16.57	1.41	0.26
Dalia	14.29	52.15	10.91	1.72	0.09
Oats	28.57	110.28	19.08	3.59	1.51
Wheat whole	74.29	253.33	51.56	8.99	1.26
Bengal gram	10	36	6.09	1.71	0.53
Lentil	32.14	110.24	18.96	8.07	0.22
Soyabean	7.14	30.84	1.49	3.08	1.39
Amaranth	21.43	85.07	9.64	0.86	0.107
Susni sag	28.57	13.14	1.31	1.06	0.39
Potato	5.71	5.54	1.29	0.09	0.0050
Beans	14.28	22.56	4.26	1.06	0.14
Bitter gourd	21.42	5.36	0.89	0.34	0.04
Brinjal	17.86	4.29	0.71	0.25	0.053
Cucumber	71.42	9.28	1.79	0.29	0.07
Drumstick	3.57	0.93	0.13	0.09	0.0030
Papaya green	25	6.75	2.85	0.35	0.1
Parwar	17.86	3.57	0.39	0.36	0.05

Apple	28.57	16.86	3.83	0.06	0.14
Papaya ripe	14.29	4.57	2.66	0.09	0.014
Guava	14.29	7.29	1.60	0.13	0.04
Bata	7.14	6.35	0.16	1.02	0.18
Rohu	7.14	6.93	0.31	1.19	0.09
Egg, hen	21.42	37.06		2.85	2.85
Chicken	11.43	12.46		2.96	0.07
Channa	64.29	170.37	0.77	11.77	13.37
Oil	25.71	231.39			25.71
TOTAL		1621.83	224.70	59.61	49.03

Case Study-3

Table 3.1: Personal information

Name	Aparna Mondal
Age	48 years
Address	Sasati,Howrah
Monthly family income	10,000/-(approx)
Profession	Housewife

Table 3.2: Anthropometric information

Height	165.1 cm
Weight	50 kg
BMI	18.34 kg/m2

Table 3.3: Clinical information

Blood glucose	**Fasting**	**PP**
Level	130 mg/dl	160 mg/dl

Table 3.4: Physiological information

Pulse rate	72 beats/min
Respiratory rate	16 breaths/min
Blood pressure	120/70 mmHg

Dietary Analysis

Consumption of food by subject in 7 days

Food Stuffs	Day-1	Day-2	Day-3	Day-4	Day-5	Day-6	Day-7	Total (gm)	Average (gm)
Rice	100	100	100	100	100	100	100	700	100
Rice puffed	50	100	100	50	50		50	400	57.14
Rice flakes	50			50	50		50	200	28.57
Wheat whole	60	60	60	60	60	110	60	470	67.14
Bengal gram	25	25	25	25		25		125	17.85
Lentil	50	25	50	25	25	25	50	250	35.71
Soyabean	25			25			25	75	10.71
Potato	10	10	10	10	10	10	10	70	10
Onion	50	50	50	50	50	50	50	350	50
Beans	25		25			25		75	10.71
Bitter gourd	25	25		25	25		25	125	17.86
Parwar			25	25		25		75	10.71
Cucumber	50		100	50	50	50	50	350	50
Ladies finger		25		25	25			75	10.71
Pumpkin		25	25					50	7.14
Papaya green		25	25	25		25		100	14.29
Guava	100			100		100		300	42.86
Apple		100						100	14.29
Bhola	50							50	7.14
Rohu			50			50		100	14.29
Egg, hen		50			50			100	14.29
Chicken							80	80	11.43
Channa					100				14.29
Oil	25	25	25	25	25	25	25	175	25

Nutrient Analysis

Food Stuffs	Amount (gm/ml)	Energy (kcal)	Carbohydrate (gm)	Protein (gm)	Fat(gm)
Rice	100	346	79.0	6.4	0.4

Rice puffed	57.14	185.70	42.05	4.29	0.06
Rice flakes	28.57	98.85	22.08	1.89	0.34
Wheat whole	67.14	228.95	46.59	8.12	1.14
Bengal gram	17.85	64.26	10.87	3.05	0.95
Lentil	35.71	122.49	21.07	8.96	0.25
Soyabean	10.71	46.27	2.24	4.63	2.09
Amaranth	28.57	113.42	12.86	1.14	0.14
Potato	10	9.7	2.26	0.16	0.01
Onion	50	25	5.55	0.6	0.05
Beans	10.71	16.92	3.19	0.79	0.10
Bitter gourd	17.86	4.47	0.75	0.29	0.04
Parwar	10.71	2.14	0.24	0.21	0.032
Cucumber	50	6.5	1.25	0.2	0.05
Ladies finger	10.71	3.75	0.69	0.20	0.02
Pumpkin	7.14	1.79	0.33	0.09	0.0016
Papaya green	14.29	3.86	0.81	0.10	0.03
Guava	42.86	21.86	4.80	0.39	0.13
Apple	14.29	8.43	1.91	0.03	0.07
Bhola	7.14	6.14	0.26	1.09	0.08
Rohu	14.29	13.86	0.63	2.37	0.20
Egg, hen	100	173		13.3	13.3
Chicken	80	87.2		20.72	0.48
Channa	25	66.25	0.3	4.58	5.2
Oil	25	225			25
TOTAL		1881.81	259.73	84.6	50.16

Case Study-4

Table 4.1: Personal Information

Name	Nilima Maity
Age	54 years
Address	Sasati,Howrah
Monthly family income	30,000/-(approx)
Profession	Housewife

Table 4.2: Anthropometric Information

Height	157.48 cm
Weight	48 kg
BMI	20.16 kg/m2

Table 4.3: Clinical Information

Blood glucose	**Fasting**	**PP**
Level	135 mg/dl	150 mg/dl

Table 4.4: Physiological Information

Pulse rate	72 beats/min
Respiratory rate	16 breaths/min
Blood pressure	115/70 mmHg

Dietary Analysis

Consumption of food by subject in 7 days

Food Stuffs	**Day-1**	**Day-2**	**Day-3**	**Day-4**	**Day-5**	**Day-6**	**Day-7**	**Total (gm)**	**Average (gm)**
Rice	100	100	100	100	100	100	100	700	100
Rice puffed	50	50	50	50		50	50	300	42.86
Rice flakes		50			50	50		150	21.43
Wheat whole	100	70	70	100	100	70	100	610	87.14
Bengal gram			25		25			50	7.14
Soyabean	50						50	100	14.29
Amaranth	50			50			50	150	21.43
Cabbage		50			50		50	150	21.43
Susni sag			50			50		100	14.29
Potato	10	10	10	10	10	10	10	70	10
Beans	25		25	25		25		100	14.29
Bitter gourd			50		50		50	150	21.43
Bottle gourd		25					50	75	10.71
Brinjal			50		25			75	10.71
Cauliflower	25				25			50	7.14
Cucumber	100	100	100	100		100	100	600	85.71
Drumstick			25					25	3.57
Papaya green	25	25	25	25		25	50	175	25
Parwar	25	25	25		25	25		125	17.86
Plantain green			25					25	3.57

Pumpkin		25		25			25	75	10.71
Snake gourd				25		25		50	7.14
Guava	100				100			200	28.57
Pears		100					100	200	28.57
Musambi				100				100	14.29
Channa	100	100	100	100	100	100	200	800	114.29
Oil	25	25	25	25	25	25	25	175	25

Nutrient Analysis

Food Stuffs	Amount (gm/ml)	Energy (kcal)	Carbohydrate (gm)	Protein(gm)	Fat(gm)
Rice	100	346	79.0	6.4	0.4
Rice puffed	42.86	139.29	31.54	3.21	0.04
Rice flakes	21.43	74.15	16.57	1.41	0.26
Wheat whole	87.14	297.15	60.48	10.54	1.48
Bengal gram	7.14	25.70	4.35	1.22	0.38
Mugh dal	25	85.75	14.75	6.28	0.18
Soyabean	14.29	61.73	2.99	6.17	2.79
Amaranth	21.43	9.64	1.30	0.86	0.107
Cabbage	14.29	3.86	0.66	0.26	0.014
Susni sag	14.29	6.57	0.66	0.53	0.20
Potato	10	9.7	2.26	0.16	0.01
Beans	14.29	22.58	4.26	1.06	0.14
Bitter gourd	21.43	5.36	0.90	0.34	0.04
Bottle gourd	10.71	1.29	0.27	0.02	0.01
Brinjal	10.71	2.57	0.43	0.15	0.03
Cauliflower	7.14	2.14	0.29	0.19	0.03
Cucumber	85.71	11.14	2.14	0.34	0.09
Drumstick	3.57	0.93	0.13	0.09	0.0030
Papaya green	25	6.75	1.43	0.18	0.05
Parwar	17.86	3.57	0.39	0.36	0.05
Plantain green	3.57	2.28	0.49	0.05	0.020
Pumpkin	10.71	2.68	0.49	0.15	0.01
Snake gourd	7.14	1.29	0.24	0.04	0.021
Guava	28.57	14.57	3.19	0.26	0.09
Pears	28.57	14.86	3.39	0.17	0.06
Musambi	14.29	6.14	1.33	0.11	0.04
Channa	114.29	302.87	1.37	20.92	23.77
Oil	25	225			25

TOTAL		1685.56	253.3	61.47	55.32

Case Study-5

Table 5.1: Personal Information

Name	Malati Das
Age	55 years
Address	Sasati,Howrah
Monthly family income	30,000/-(approx)
Profession	Housewife

Table 5.2: Anthropometric Information

Height	154 cm
Weight	59 kg
BMI	24.89 kg/m2

Table 5.3: Clinical Information

Blood glucose	**Fasting**	**PP**
Level	145 mg/dl	162 mg/dl

Table 5.4: Physiological Information

Pulse rate	72 beats/min
Respiratory rate	18 breaths/min
Blood pressure	120/75 mmHg

Dietary Analysis

Consumption of food by subject in 7 days

Food Stuffs	Day-1	Day-2	Day-3	Day-4	Day-5	Day-6	Day-7	Total (gm)	Average (gm)
Rice	50	50		50			50	200	28.57
Rice puffed	50		50		50		50	200	28.57
Rice flakes				50				50	7.14
Dalia		100		100		100		300	42.86
Wheat whole	90	100	160	70	170	120	120	830	118.57
Bengal gram	25			25	25			75	10.71
Lentil		25		25			25	75	10.71
Soyabean	50			50				100	14.29
Amaranth	50		50		50		50	200	28.57

Susni sag		50		50		50		150	21.43
Onion	50	100	50	50	100	100	100	550	78.57
Beans		25				25		50	7.14
Bitter gourd	50	50	50	50		50	50	300	42.86
Brinjal				50				50	7.14
Cucumber	100		100		100		100	400	57.14
Ladies finger			50				50	100	14.29
Papaya green	50					50	25	125	17.86
Pumpkin	25	50		50		50		175	25
Bottle gourd				50				50	7.14
Snake gourd		25					25	50	7.14
Guava	100				100			200	28.57
Pomegranate		100						100	14.29
Pears			100					100	14.29
Musambi							100	100	14.29
Bata	50					50		100	14.29
Rohu			50					50	7.14
Prawn							100	100	14.29
Egg, hen		50						50	7.14
Chicken					80			80	11.43
Channa		100	100		100	100	100	500	71.43
Oil	25	25	25	25	25	25	25	175	25

Nutrient Analysis

Food Stuffs	**Amount (gm/ml)**	**Energy (kcal)**	**Carbohydrate (gm)**	**Protein (gm)**	**Fat(gm)**
Rice	28.57	98.85	22.57	18.28	0.11
Rice puffed	28.57	92.85	21.03	2.14	0.03
Rice flakes	7.14	24.70	5.52	0.47	0.09
Dalia	42.86	156.41	32.72	5.15	0.27
Wheat whole	118.57	404.32	82.29	14.35	2.02
Bengal gram	10.71	38.56	6.52	1.83	0.57
Lentil	10.71	36.74	6.32	2.69	0.07
Soyabean	14.29	61.73	2.98	6.17	2.79
Amaranth	28.57	12.86	1.74	1.14	0.14
Susni sag	21.43	9.86	0.99	0.79	0.30
Onion	78.57	39.29	8.72	0.94	0.07
Beans	7.14	11.28	2.12	0.53	0.07
Bitter gourd	42.86	10.72	1.80	0.69	0.09

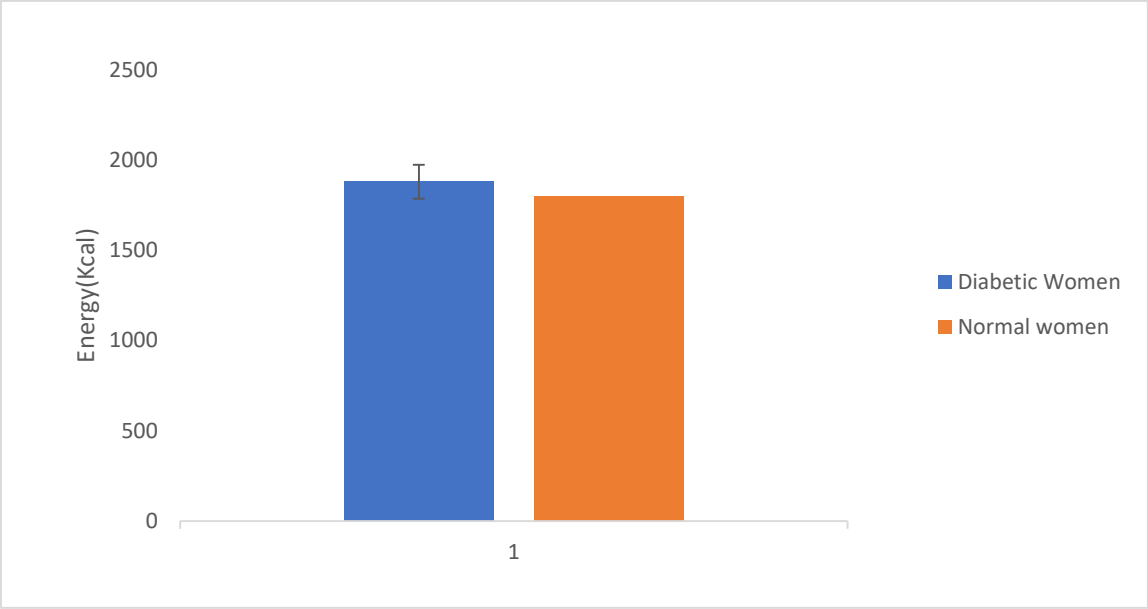
Brinjal	7.14	1.71	0.29	0.09	0.02
Cucumber	57.14	7.43	1.43	0.23	0.06
Ladies finger	14.29	5.00	0.91	0.27	0.03
Papaya green	17.86	4.82	1.02	0.13	0.04
Pumpkin	25	6.25	1.15	0.35	0.025
Bottle gourd	7.14	0.86	0.18	0.01	0.007
Snake gourd	7.14	1.29	0.24	0.03	0.02
Guava	28.57	14.57	3.19	0.26	0.09
Pomegranate	14.29	9.29	2.07	0.23	0.029
Pears	14.29	7.43	1.70	0.09	0.03
Musambi	14.29	6.14	1.33	0.11	0.04
Bata	14.29	12.72	0.31	2.04	0.36
Rohu	7.14	6.92	0.31	1.18	0.09
Prawn	14.29	12.71	0.11	2.72	0.14
Egg, hen	7.14	12.35		0.94	0.94
Chicken	11.43	12.46		2.96	0.06
Channa	71.43	189.29	0.86	13.07	14.86
Oil	25	225			25
TOTAL		1534.41	210.42	79.88	46.461

10. Result

Table 1: Energy (kcal) consumption of diabetic women in compare to normal women

Value shows: Mean ±SE

Group	**Energy(kcal)**
Diebetic Patient	1879.528
Normal Women	1800±155.534



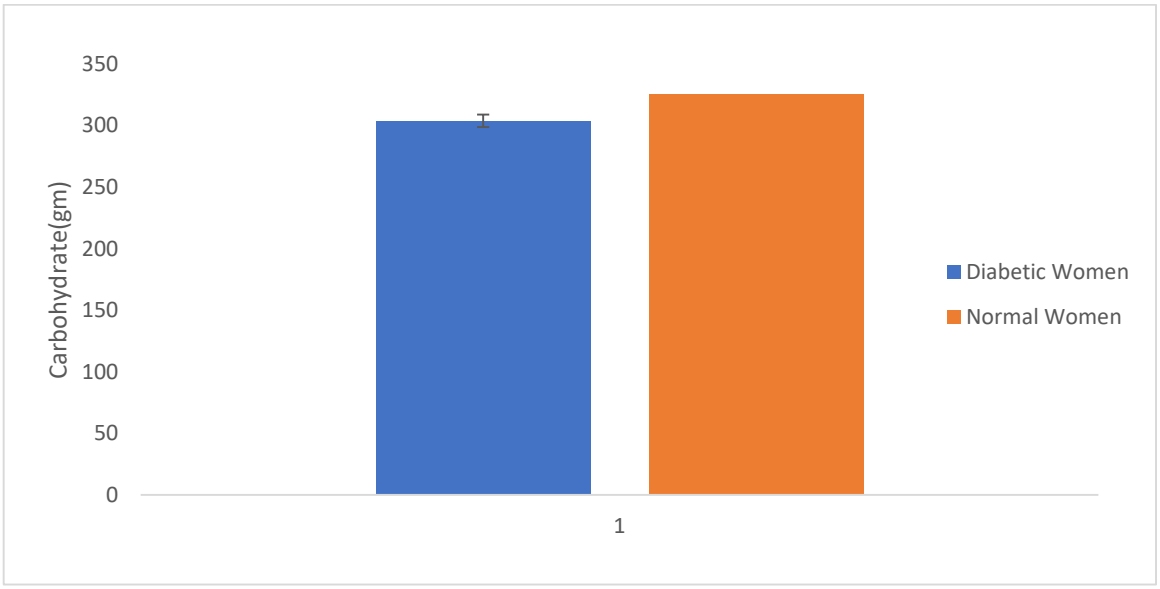
Value shows: Mean ±SE

Figure 1: Graphical representation of Energy(kcal) of Diebates women in compare to normal women

Table 2: Carbohydrate (gm) consumption of diabetic women in compare to normal women:

Value shows Mean ± SE

GROUP	CARBOHYDRATE (gm)
Diabetic women	303.79
Normal women	325 ± 16.98



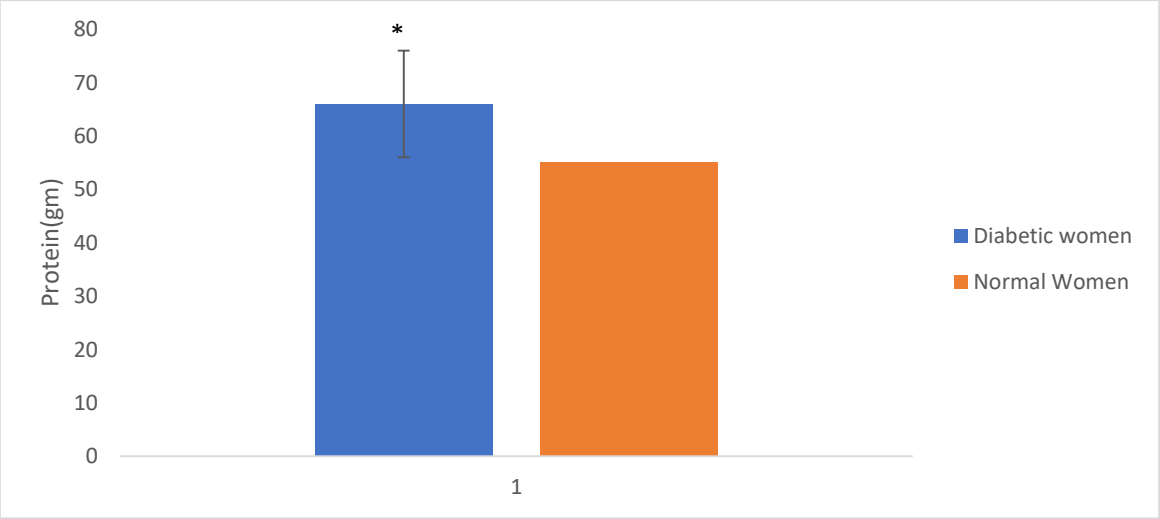
Value shows Mean ± SE

Figure-2: Graphical representation of Carbohydrate (gm) consumption of Diabetic women in compare to normal women.

Table 3: Protein (gm) of diabetic women in compare to normal women:

Value shows Mean ± SE

GROUP	PROTEIN(gm)
Diabetic women	66.03*
Normal women	55±5.395



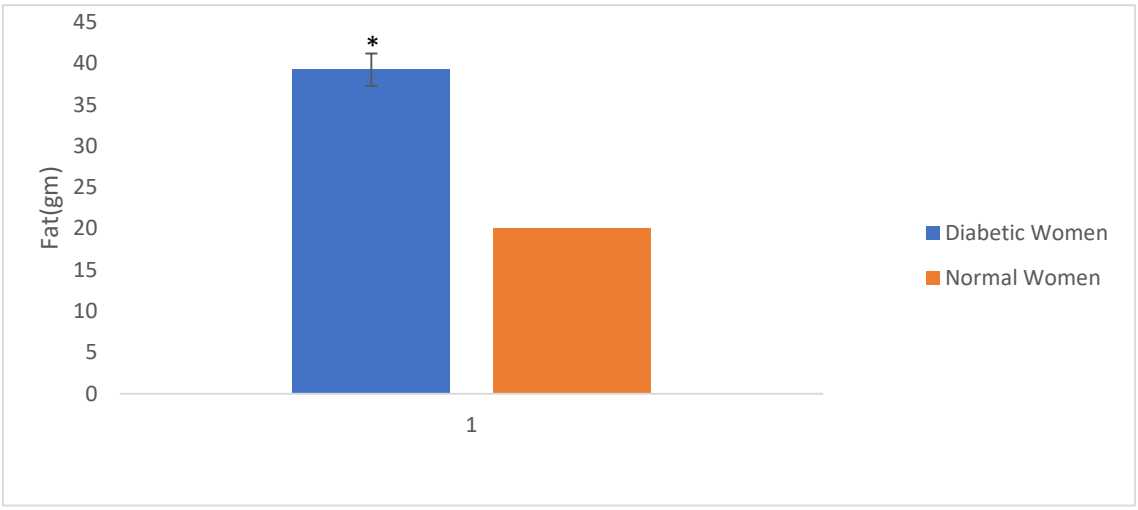
Value shows Mean ± SE

Figure-3: Graphical representation of Protein (gm) consumption of post Diabetic women in compare to Normal women.

Table 4: Fat (gm) of diabetic women in compare to normal women

Value shows Mean ± SE

GROUP	FAT(gm)
Diabetic women	29.2467*
Normal women	20± 6.963



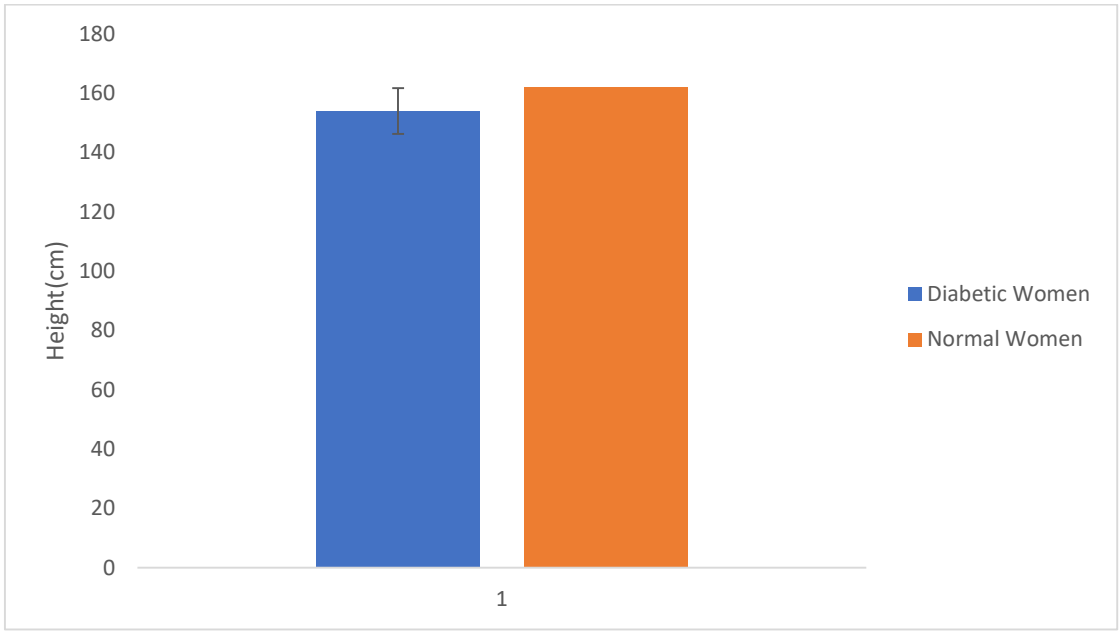
Value shows Mean ± SE

Figure-4: Graphical representstion of Fat (gm) of Diabetic women in compare to Normal women.

Table 5: Height (cm) of diabetic women in compare to normal women:

Value shows Mean ± SE

GROUP	HEIGHT(cm)
Diabetic women	153.984
normal women	162 ± 6.843



Value shows Mean±SE

Figure - 5: Graphical representation of Height (cm) of Diabetic women in compare to Normal women.

11. Findings and Limitations

The current study was conducted among women with Type 2 Diabetes in Shyampur village, Howrah district, West Bengal. The findings underscore the disease's significant cost on affected persons, emphasising the necessity for appropriate management plans. Patient education is critical for improving glycaemic management and avoiding long-term problems associated with diabetes. Several clinical and physiological parameters were found to be statistically significant, including protein and fat intake, body weight, body mass index (BMI), fasting blood glucose levels, postprandial (PP) blood glucose levels, pulse rate, respiratory rate, systolic blood pressure, and diastolic blood pressure. These data show that Type 2 Diabetes has a multifaceted impact on women's metabolic and cardiovascular health.

However, the study has certain drawbacks. The sample size was modest, with only five participants, and the survey was confined to seven days. A larger sample size and a longer study period are likely to produce more solid and generalisable findings. Future research with a larger population and a longer period are recommended to produce more complete and statistically significant results.

12. Conclusion

The study suggests that Type 2 Diabetes is very common in women, especially in connection to modifiable lifestyle and nutritional factors. The comparison of diabetic and non-diabetic women reveals that poor dietary habits, sedentary lifestyle, obesity, and hormonal changes all have a role in the disease's development and progression.

Early identification of at-risk persons, particularly among women in their middle and later years of life, is critical for effective prevention and management. The study emphasises the need of nutritional counselling, frequent physical activity, and lifestyle changes as critical methods for reducing the diabetes burden.

Furthermore, raising awareness, increasing routine screening, and improving access to healthcare services can all help with early disease detection and management. To address the growing burden of Type 2 Diabetes, public health initiatives focusing on women's particular risk factors are needed.

Finally, preventing and managing diabetes in women requires a comprehensive and integrated approach that includes dietary, behavioural, and therapeutic measures.

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