



**EVALUATION OF KNOWLEDGE AND SELF- CARE PRACTICES IN
DIABETIC PATIENTS OF SHAHEED ZIAUR RAHMAN MEDICAL
COLLEGE HOSPITAL, BOGURA**

A PROJECT REPORT

BY

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Submitted to the Department of Nutrition and Food Engineering in the partial fulfilment of B.Sc
in Nutrition and Food Engineering.

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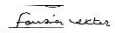
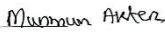
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APPROVAL

The project title is “**Evaluation of Knowledge and Self-Care Practices in Diabetic Patients of Shaheed Ziaur Rahman Medical College Hospital, Bogura**”, submitted by Sabirah Musfirat to the Daffodil International University Department of Nutrition and Food Engineering, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved as to its style and contents.

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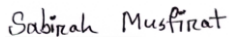
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ABSTRACT

Diabetes is a chronic condition brought on by either insufficient insulin production by the pancreas or inefficient insulin utilization by the body. Because high blood glucose levels disrupt metabolic processes, diabetes affects every system in the body, especially if proper diabetes care is not maintained for a set amount of time. The study aimed to assess the evaluation of knowledge and self-care practices in diabetic patients and their disease management. Diabetes patients who admitted the hospital during March to June, 2024 were the subjects of this cross sectional investigation. This study of revealed that the largest group was aged 36-55 years (60%), with a majority being male (76.1%) and having Type II diabetes (57.3%). Most participants had diabetes for 1–5 years and incomes between 16,000–25,000 Taka. Over half (59.2%) were overweight, and many had fasting blood glucose levels above 7 mmol/l. While 67.8% monitored their blood glucose regularly, 90% did not consistently do so, and 95.3% had never consulted a dietitian. Younger individuals and those with higher education demonstrated better self-care practices, including dietary adherence and medication use. Physical activity, primarily walking, was common but limited in duration. Challenges like inadequate education program attendance, poor sleep quality, and insufficient support systems indicate a need for targeted interventions, especially for older and lower-income groups. The study highlights significant gaps in diabetes self-care, with challenges in adherence to recommendations among participants. Many lack access to dietitians, educational programs, and adequate support systems. While some engage in monitoring and dietary practices, adherence to meal plans, physical activity, and medication routines remains inconsistent. Barriers include limited health literacy, restricted access to care, and socioeconomic challenges. Improving self-care requires tailored education, better healthcare access, enhanced community support, and effective policy initiatives to address these challenges and improve outcomes.

Key words: Diabetes mellitus, knowledge, self-care, practice, disease management

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Diabetes is a chronic condition caused by insufficient insulin production or inefficient insulin use, leading to high blood glucose levels that can disrupt metabolic processes and harm the entire body. Once considered prevalent in wealthy countries, type 2 diabetes now affects younger populations and is increasingly common in low-income nations, where it often has an earlier onset and more complications like cardiovascular disease, neuropathy, retinopathy, and nephropathy. According to WHO, 346 million people worldwide have diabetes, a number projected to quadruple by 2030 without proper care. Middle- and low-income countries account for 80% of diabetes-related deaths, with India expected to lead globally, reaching 7.94 crore cases by 2030. Studies show prevalence rates of 5–8% in rural and 10–16% in urban India and Sri Lanka (Ahmad, & S. H. *et al.*, 2023).

Diabetes primarily occurs in two forms: type 1 diabetes, or insulin-dependent diabetes mellitus, typically affects individuals under 30 and can be fatal without prompt treatment. Type 2 diabetes, the most common form, accounts for 90–95% of cases. In 2019, high blood sugar caused an estimated 1.5 million deaths globally. Diabetes increases the risk of heart disease, peripheral arterial and cerebrovascular diseases, obesity, cataracts, erectile dysfunction, non-alcoholic fatty liver disease, and infections. Globally, its prevalence is higher in urban areas (10.2%) than rural ones (6.9%). Effective diabetes management requires lifestyle adjustments, including diet control, medication adherence, regular blood sugar monitoring, insulin administration, avoiding alcohol, and routine check-ups. The American Diabetes Association (ADA) recommends diabetes self-management education and support for individuals with type 2 diabetes (Nagaraju, kumara *et al.*, 2024).

Diabetes mellitus (DM) is a metabolic disorder characterized by persistently high blood sugar and disruptions in protein, fat, and carbohydrate metabolism. Ethiopia, a member of the IDF, has 1.7 million diabetics, contributing to Africa's total of 19.4 million. In 2017, the IDF reported 4 million global diabetes-related deaths, surpassing the WHO's estimate of 1.3 million. Diabetes significantly impacts the global economy, with 46.2% of deaths occurring among workers under 60, and Africa facing the highest rate at 73.1%. In resource-limited countries like Ethiopia, self-care practices offer cost-effective and beneficial outcomes. However, in Adama, Ethiopia, factors influencing inadequate self-care behaviors remain unclear, prompting research into their extent and causes (Bekele & Y. *et al.*, 2024).

In the 21st century, diabetes mellitus has emerged as a significant public health challenge. The prevalence of type 2 diabetes (T2DM) in Lebanon is 15.8%, similar to rates in industrialized nations but lower than nearby countries like Bahrain (25.5%), the UAE (23.3%), and Saudi Arabia (23.7%). Research on diabetes knowledge and practices in the Middle East and North

Africa (MENA) region, especially in Lebanon, is limited. Lebanon, a middle-income country in the third stage of demographic transition, has experienced declines in fertility and mortality rates. This study aims to assess the knowledge and self-management practices of Lebanese diabetes patients, focusing on treatment methods and disease monitoring (Sunny & A. *et al.*,2024).

Between 15% and 25% of people with diabetes will develop foot ulcers during their lifetime. Foot complications, such as ulcers, infections, and amputations, are severe consequences of diabetes but can often be prevented through proper foot care. A diabetes care program should focus on improving healthcare delivery, enhancing education, increasing access, and promoting preventive measures to reduce morbidity and mortality. Patients must be educated on daily foot evaluations and basic care, including proper footwear and wound management. This review aims to assess the extent of self-care behaviors and knowledge among individuals with diabetic foot ulcers (DFUs) (Untari & R.H. *et al.*, 2024).

Diabetes is rising rapidly, especially in emerging nations. In 2010, 6.4% of the global population (285 million adults) had diabetes, a figure projected to increase to 7.7% (439 million) by 2030. To prevent severe complications and reduce the financial burden on healthcare systems, comprehensive services, including health education on self-management, are essential. Effective glycemic control requires proper medication, regular monitoring, and diabetes self-management education, which is now a vital part of clinical care. This study aims to evaluate the role of self-care behaviors and disease awareness in achieving glycemic control and effective disease management (Padma & valsangkar *et al.*,2012).

Gestational Diabetes Mellitus (GDM) is marked by elevated blood sugar levels first detected during pregnancy. Since 1995, its prevalence has doubled, increasing from 4.5% to 9% by 2015. By 2017, 16.2% of pregnancies globally were affected by hyperglycemia, with GDM accounting for 86.4% of these cases. While GDM often resolves after childbirth, it poses significant long-term risks, with nearly half of affected women developing type 2 diabetes mellitus (T2DM) within 5–10 years. Proper management can significantly reduce complications for mothers, fetuses, and newborns, but existing guidelines for GDM management are inadequate, particularly in addressing self-care education. To bridge these gaps, a comprehensive self-care package for GDM was developed through systematic reviews, qualitative research, and expert input from Iranian medical universities. The development process included analyzing international guidelines, authoritative resources, and the educational challenges faced by pregnant women with GDM. The package focuses on key self-care areas, including nutrition, physical activity, blood glucose monitoring, medication management, mental health, screening, and postpartum care. Input from multidisciplinary expert panels further refined the content (Kolivand & M. H. *et al.*,2019)

1.2 Objective

❖ **General objective:**

To evaluate the knowledge and self- care practice of diabetic patient.

❖ **Specific objective:**

- ✚ To evaluate diabetes understanding, including awareness of its nature, complications, and treatment options among diagnosed individuals.
- ✚ To examine adherence to self-care practices (diet, exercise, medication, monitoring, and foot care) in diabetes management.
- ✚ To investigate the correlation between diabetes knowledge levels and consistent adoption of self-care practices to assess improved adherence.
- ✚ To explore the role of healthcare providers in educating and empowering diabetic patients for effective self- management and improved health outcomes.
- ✚ To identify obstacles preventing effective self-care, such as financial, educational, or psychological factors.

CHAPTER TWO

LITERATURE REVIEW

2.1 Literature Review

This study examined diabetes knowledge, glycemic control, and self-care habits among Indian adults with diabetes. Most participants (51.1%) were aged 45–60, and 54% had type 2 diabetes for less than 10 years. Poor glycemic control ($HbA1C \geq 7\%$) was found in 102 individuals. While illness knowledge strongly correlated with self-care, it did not significantly affect HbA1C levels. The findings highlight the need for tailored diabetes education programs to promote effective self-care and improve glycemic control (Kanagala & S. A. K. *et al.*,2023).

A cross-sectional study in a Kuala Lumpur metropolitan hospital examined awareness and behaviors related to diabetic foot risk factors. Among 100 diabetes patients, 53% had diabetic foot, and 25% scored poorly on diabetic foot care knowledge. Significant correlations were found between diabetic foot and both peripheral neuropathy and vascular disease, though awareness did not correlate with foot care practices. The study highlights the importance of educating diabetes patients on proper foot care to improve daily management and prevent complications (Naicker & S. A. *et al.*,2009)

Type 2 diabetes mellitus (T2DM) is a prevalent global condition with both reversible factors like diet, exercise, and smoking, and irreversible ones like age, genetics, and ethnicity. This review explores the link between T2DM, dietary practices, and its consequences. Poor diet and sedentary lifestyles are major drivers of rising diabetes rates in emerging nations. High HbA1c levels are key risk factors for microvascular and macrovascular complications. Managing diet can help reduce HbA1c and prevent complications. Enhanced awareness of diabetes complications improves dietary habits and self-care. Healthcare providers and organizations should educate patients on nutrition's role in managing diabetes while considering cultural, familial, and social factors for effective nutritional therapy (Sami & M. R. *et al.*,2017).

Self-efficacy strongly correlates with diet, exercise, and foot care, making it a crucial factor in long-term diabetes management. The diabetic self-efficacy scale showed reliable internal consistency across diverse groups, including variations in race/ethnicity and health literacy. This association remained significant even after adjusting for insulin use and diabetes duration. Health literacy did not alter the self-efficacy and self-management link. However, barriers like poor patient-physician communication, comorbidities (e.g., depression), financial challenges, and limited access to safe exercise areas or fresh foods in low-income communities can hinder self-management. Despite these challenges, the stability of the self-efficacy–self-management connection highlights its importance, especially in vulnerable populations (Sarkar & D.*et al.*, 2006).

Diabetic foot issues cause over half of all diabetes-related hospital stays, with 10-15% of diabetics experiencing foot ulcers and 15% of amputations involving diabetics. Education on the link between glucose management and foot health is essential for both patients and primary care providers. Managing diabetic foot disease involves identifying at-risk feet, treating severe cases, and preventing complications, with the goal of avoiding amputation. Effective management requires a multidisciplinary team, including podiatrists, endocrinologists, surgeons, and diabetes educators. Conservative treatment methods like proper footwear, hygiene, debridement, and wound care have significantly reduced amputation risks (Ahmad, J.,2016).

This cross-sectional study in Pyay, Myanmar, evaluated diabetes knowledge and self-care behaviors among type 1 and type 2 diabetics. Among 100 participants, 36.5% of males and 63.5% of females had poor diabetes control. Participants aged 41–60 accounted for 42.3% of those with poor control and 45.8% of those with good control. A significant link was found between diabetes management and having a primary healthcare provider, with 75% of those with poor control lacking one. Poor diabetes knowledge (92.5%) was associated with inadequate management, highlighting the importance of education for better glycemic control (Aung & S. S., 2017).

This study aimed to assess the effectiveness of self-care management demonstrations for individuals with diabetes mellitus. It involved 75 clients using a quasi-experimental design with pre- and post-tests. Initially, 87% of participants lacked knowledge about blood glucose monitoring and 93% about insulin injection, but after demonstrations, these figures dropped to 12% and 8%, respectively. Performance in demonstrating these techniques also improved, with 97% and 98% failing initially, but only 22% and 27% failing post-test. The study found a significant correlation between knowledge and factors such as age, education, and health information sources, concluding that self-care management demonstrations greatly benefit diabetes patients (Missiriya & S., 2016).

The study found that many diabetic patients engage in poor self-care, emphasizing the need for coordinated intervention to improve their health. To enhance diabetes self-care, hospitals, healthcare professionals, health programs, and NGOs should focus on connecting patients with supportive social groups, improving education, and providing self-monitoring glucose meters to those unable to afford them (Chali & A. T. *et al*, 2018).

This study highlighted the critical self-care educational and support needs for women managing gestational diabetes mellitus (GDM), focusing on four key areas: lifestyle adjustments, knowledge and skills, mental health, and family support. The findings emphasize the importance of targeted education programs that address physical activity, mental well-being, and the active involvement of families in the care process. Sharing these insights on a global platform can help shape more inclusive and effective international guidelines for GDM self-care, ultimately improving outcomes for mothers and their children.(Kolivand, M., 2018).

CHAPTER THREE

METHODOLOGY

3.1 Materials

- ✚ Paper: Used to print survey
- ✚ Participants
- ✚ Sampling techniques
- ✚ Self- care practice questionnaire
- ✚ Data collection methods: Surveys and questionnaire, patients interview
- ✚ Clinical data and health record

3.2 Study Design

This cross-sectional study focused on diabetes patients admitted to the hospital between March to June, 2024. Interviews were conducted with 255 patients who were hospitalized for diabetes or related conditions. A questionnaire was used to collect the data, and the collected information was analyzed and visualized for the study.

3.3 Study Criteria

❖ **Suggested Inclusion Criteria :**

- ✚ Male and Female Diabetes Patients between 18 -65 years old
- ✚ Patients with type- I, type- II, gestational diabetes patients

❖ **Exclusion Criteria:**

- ✚ Paediatric Patients
- ✚ Patients who are not willing to give the consent form

3.4 Study Location

This study was carried out at the Shaheed Ziaur Rahman Medical College Hospital in the district of Bogura. In addition to conducting in-person interviews with the patients, that was gathered information from their prescription records and doctor's reports with their consent.

3.5 Data Collection and Study Period

This study is 3months duration from March to June, 2024

3.6 Study Population:

The study comprises individuals diagnosed with Type I, Type II and gestational diabetes who sought treatment at Shaheed Ziaur Rahman Medical College Hospital in Bogura district.

3.7 Sample Size and Calculation

If the study involves assessing proportions (e.g., percentage of patients who follow self-care practices), the formula is:

$$n = \frac{z^2 \times pq}{d^2}$$
$$= \frac{1.96^2 \times .80 \times (1-.80)}{(.05)^2}$$
$$= 245.86 \approx 246$$

Where:

n = required sample size

z = z-score (1.96 for 95% confidence)

p = expected proportion (use 0.80)

q = 1-p

d = margin of error (e.g., 0.05 for 5% error)

N.B: 255 data has been taken.

3.8 Data Collection Tools

Based on the goals, a structured questionnaire was created. The survey was completed by the respondent. There was pre-testing. Guide's expertise and experience served as the foundation for the final inquiry. A clear explanation of the study's goal was given before the interview, to the responder.

3.9 Data Collection Method

Data were collected using a structured questionnaire through face-to-face interviews with diabetic patients at Shaheed Ziaur Rahman Medical College. Additional information was obtained from patient records and hospital databases, ensuring comprehensive and accurate data collection.

3.10 Data Analysis

- ✚ Following collecting, the responses to every interview question were verified for accuracy and completeness before being input into a computer for analysis.
- ✚ SPSS Version 26.0, the most recent version of the statistical package for social science software, was used to analyze the data.
- ✚ Tables were used to display the data.

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Result

Table 4.1.1: Demographic characteristics of the study participant

Variable	Category	Number	Percent
Age (Years)	18-25	14	5.5
	26-35	45	17.6
	36-45	75	29.4
	46-55	78	30.6
	56-65	43	16.9
Gender	Male	194	76.1
	Female	61	23.9
Duration of diabetes mellitus (Years)	<1	103	40.4
	1-5	128	50.2
	6-10	24	9.4
Types of diabetes	Type-I	80	31.4
	Type-II	146	57.3
	Gestational	29	11.4
Educational Status	Primary	32	12.5
	Secondary	122	47.8
	Higher secondary	77	30.2
	B.Sc	16	6.3
	M.Sc	8	3.1
Occupation	Student	64	25.1
	Employee	64	25.1
	Unemployed	53	20.8
	Businessman	37	14.5
	Retired	8	3.1
	Housewife	29	11.4
Monthly Family Income(Taka)	5000-15000	40	15.7
	16000-25000	114	44.7
	26000-35000	77	30.2
	36000-45000	24	9.4

The demographic overview of the study participants reveals that the majority are male (76.1%) and middle-aged, between 36 and 55 years. Most participants have been living with diabetes for 1 to 5 years (50.2%), with type 2 diabetes being the most common form (57.3%). In terms of education, 47.8% have completed secondary education, and the majority are employed or students. Monthly family income ranges from 5,000–15,000 Taka to 36,000–45,000 Taka, with 44.7% falling within the 16,000–25,000 Taka bracket.

Table 4.1.2: Frequency of nutritional status of the diabetic patients

Variable	Category	Number	Percentage(%)
Nutritional Status	Underweight	8	3.1%
	Normal	96	37.6%
	Overweight	151	59.2%

The table presents that the frequency and percentage distribution of nutritional status among diabetic patients. It shows that a majority of patients (59.2%) are categorized as overweight. A significant number (37.6%) are within the normal weight range, while a small proportion (3.1%) are underweight. This data highlights the prevalence of overweight and obesity among diabetic patients, which is a significant concern as it can exacerbate the complications of diabetes.

Table 4.1.3: Frequency of blood glucose level of the diabetic patients in fasting and after 2hour breakfast

Variable	Category	Number	Percentage(%)
Fasting Blood Glucose level(F)	3.9-5.6mmol/l	16	6.3%
	5.6-6.9mmol/l	9	3.5%
	>7mmol/l	230	90.2%
After 2hr breakfast Blood Glucose level(ABF)	7.8-11.1 mmol/l	11	4.3%
	<7.8 and 11.1mmol/l	27	10.6%
	>11	217	85.1%

The table presents the frequency and percentage distribution of blood glucose levels among diabetic patients both in fasting state and after 2 hours of breakfast. It shows that a significant majority of patients have high fasting blood glucose levels (>7mmol/l) (90.2%), indicating poor glycemic control. Similarly, after 2 hours of breakfast, a large proportion of patients (85.1%) still have elevated blood glucose levels (>11mmol/l), further highlighting the need for improved blood sugar management in this population.

Table 4.1.4: Frequency of meal plan of diabetic patients

Variable	Category	Number	Percent
Frequency Of Meal	1-3 times	167	65.6
	Less than 3 times	24	9.4
	Free time meals	64	25.1

The table highlights the frequency of meal plans followed by diabetic patients. A significant majority (65.6%) adhere to a structured meal plan, consuming meals 1 to 3 times daily. In contrast, 9.4% consume fewer than three meals per day, and 25.1% choose their meals based on free time availability. This data indicates that while most patients strive to maintain a regular meal schedule, there remains scope for improving dietary adherence among some individuals.

Table 4.1.5: Respondent's knowledge about diabetes mellitus

Variable	Category	N(%)
Familiar with target blood glucose range	Yes	178 (69.8%)
	No	77(30.2 %)
Meeting with a dietitian or nutritionist to discuss of dietary need	Occasionally	10(3.9%)
	Rarely	2(.8%)
	Never	243(95.3%)
Attending diabetes education classes/ programs	Yes	85(33.3%)
	No	170(66.7%)
Supporting System in place for managing diabetes	Yes	122(47.8%)
	No	133(52.2%)

The table shows that 69.8% of respondents are familiar with the target blood glucose range. However, a concerning lack of engagement with dietary support and diabetes education is evident. Only 3.5% meet with a dietitian or nutritionist occasionally, and just 33.3% attend diabetes education classes/programs. While 47.8% have a support system for managing diabetes, a significant 52.2% do not attend the support system in place for diabetes. These findings highlight the need for increased access to dietary support, expanded diabetes education programs, and comprehensive support systems for individuals with diabetes.

Table 4.1.6: Respondent's knowledge about disease and medication of diabetes mellitus

Variable	Category	N(%)
Diagnosed ever been told or have had problems like-	High blood pressure	56(22%)
	Eye or vision problems	53(20.8%)
	Surgery in last 5years	48(18.8%)
	Asthma	53(20.8%)
	Obesity	8(3.1%)
	Heart disease	8(3.1%)
	Kidney/bladder problems	21(8.2%)
Having any allergy problems	Yes	106(41.6%)
	No	133(52.2%)
Frequency of taking diabetes medication as prescribed	Always	106(41.6%)
	Often	56(22%)
	Occasionally	64(25.1%)
	Never	8(3.1%)

The table shows that 22% of respondents have high blood pressure, 20.8% have eye/vision problems, and 18.8% underwent surgery in the last 5 years. Asthma affects 20.8%, obesity and heart disease each 3.1%, kidney/bladder problems 8.2%, and allergies 41.6%. Medication adherence varies, with 41.6% always, 22% often, 25.1% occasionally, and 3.1% never taking diabetes medication as prescribed. Prioritize screening for high blood pressure and eye problems, raise awareness of diabetes complications, promote regular check-ups, improve medication adherence, and provide comprehensive diabetes education and support.

Table 4.1.7: Respondent's knowledge about diet of diabetes mellitus

Variable	Category	N(%)
Counting carbohydrates in meals	Yes	199(78%)
	No	56(22%)

This table shows that 78% of respondents count carbohydrates in their meals, while 22% do not count carbohydrate to manage diabetes. Educating all respondents on the significance of carbohydrate counting can enhance understanding of portion control and improve blood sugar regulation for effective diabetes management.

Table 4.1.8: Respondent's self-care practice about diet of diabetes mellitus

Variable	Category	N(%)
Following specific meal plan for diabetes management	Yes	80(31.4%)
	No	175(68.6%)
Consuming sugary foods or beverages	Rarely	113(44.3%)
	Occasionally	77(30.2%)
	Often	57(22.4%)
	Always	8(3.1%)

This table shows that 31.4% of respondents follow a specific meal plan for diabetes management, while 68.6% do not follow specific meal. 44.3% rarely consume sugary foods or beverages, 30.2% do so occasionally, 22.4% often do, and 3.1% always do. Encourage all respondents to follow a specific meal plan tailored to their individual needs. Emphasize the importance of limiting sugary food intake to maintain blood sugar control. Provide education on healthy eating habits and portion control.

Table 4.1.9: Respondent's self-care practice of diabetes mellitus

Variable	Category	N(%)
Checking blood glucose level	Daily	61(23.9%)
	A few times a week	173(67.8%)
	Rarely	21(8.2%)
Engaging in physical activity for 30 minutes or more per week	<5days	56(22%)
	>3days	146(57.3%)
	Never	53(20.8%)
Experience any physical limitations that affect ability to experience	Yes	56(22.7%)
	No	195(76.8%)
Various types of physical activity that patient are engaged	Walking	171(67.1%)
	Bicycling	45(17.6%)
	Swimming	6(2.4%)
	Walking down stairs/upstairs	33(12.9%)
	Always	48(18.8%)
Regular checkup with health care provider for diabetes management	Often	130(51%)
	Occasionally	69(27.1%)
	Rarely	8(3.1%)

This table shows that only 23.9% of respondents monitor blood glucose daily, with 67.8% checking several times weekly. While 57.3% engage in 30+ minutes of physical activity on most days, 22.7% report limitations. Walking is the most common activity (67.1%), followed by bicycling, swimming and stair climbing. Regular checkups are consistent for 18.8%, with 51.0% attending often. Emphasis should be on improving blood glucose monitoring, encouraging physical activity, addressing limitations, and promoting regular healthcare visits.

Table 4.1.10: Respondent's self-care practice about smoking status and medication of diabetes mellitus

Variable	Category	N(%)
Smoking status	Yes	96(37.6%)
	No	159(62.4%)
Getting enough sleep	Yes	130(51%)
	No	125(49%)
Taking medication for diabetes	Yes	115(45.65%)
	No	136(54.35%)

The table reveals that 37.6% of respondents are smokers, 51% report adequate sleep, while 49% experience insufficient sleep. In terms of diabetes management, 45.65% take prescribed medication, while 54.35% do not take their medication. Addressing these findings requires supporting smoking cessation, fostering healthy sleep routines, encouraging non-medicated individuals to seek medical guidance, and promoting adherence to prescribed treatments to enhance overall health outcomes.

Table 4.1.11: Relationship between types of diabetes and check their blood glucose level as advised by health provider

Variable	Category	Checking blood glucose level as advised by patients' health care provider					
Type		As recommended	Occasionally	Rarely	Never	Total	P value
	Type I	32	24	24	0	80	0.005
	Type II	64	53	16	13	146	
	Gestational	21	8	0	0	29	

The table shows that there is a statistically significant relationship between the type of diabetes and whether or not a person checks their blood glucose level as advised by their health care provider (P-value = 0.005). Specifically, people with Type II diabetes are more likely to check their blood glucose level as advised than those with Type I or gestational diabetes.

Table 4.1.12: Relationship between age and familiar with their target blood glucose range

Variable	Category	Targeting blood glucose range(fasting and post meal level)			
Age(Years)		Yes	No	Total	P value
	18-25	12	2	14	
	26-35	29	16	45	
	36-45	59	16	75	
	46-55	42	36	78	0.001
	56-65	36	7	43	
Education	Primary	32	0	32	
	Secondary	69	53	122	
	Higher secondary	53	24	77	0.000
	B.Sc	16	0	16	
	M.Sc	8	0	8	

The table shows that older age groups (46-65 years) and individuals with higher education (higher secondary and above) are more familiar with their target blood glucose ranges than younger or less-educated groups. These differences are statistically significant (p-values 0.001 and 0.000), indicating that age and education positively influence understanding.

Table 4.1.13: Relationship between types of diabetes and engage in physical activity for 30minutes or more per week

Variable	Category	Engaging in physical activity for 30minutes or more per week				
Type		<5days	>3days	Never	Total	P value
	Type I	40	24	16	80	0.000
	Type II	16	114	16	146	
	Gestational	0	8	21	29	

The table shows that there is a statistically significant relationship between the type of diabetes and how many days per week a person engages in physical activity for 30 minutes or more (P-value = 0.000). Specifically, people with Type II diabetes are more likely to engage in physical activity for 30 minutes or more per week than those with Type I or gestational diabetes.

Table 4.1.14: Relationship between age and the frequency of various types of physical activity that patient are engaged

Variable	Category	Various types of physical activity that patient are engaging					
Age(Years)		Walking	Bicycling	Swimming	Walking down stairs/upstairs	Total	P value
	18-25	9	3	1	1	14	.134
	26-35	24	13	0	8	45	
	36-45	55	9	3	8	75	
	46-55	49	14	2	13	78	
	56-65	34	6	0	3	43	

The table examines that the relationship between age and the frequency of various types of physical activity are engaged by the participants. Walking is the most commonly enjoyed activity across all age groups, followed by bicycling. Swimming and walking downstairs/upstairs are less frequently engaged. There is no significant association between age and the types of physical activity engaged, as indicated by the p-value of 0.134. This suggests that individuals of different ages have similar preferences for physical activities.

Table 4.1.15: Relationship between age and take medication for diabetes patient

Variable	Category	Taking Medication for Diabetes Patient				P value
		Yes	No	If yes, please list them	Total	
Age(Years)	18-25	2	12	0	14	0.001
	26-35	16	21	16	45	
	36-45	25	33	13	75	
	46-55	31	45	0	78	
	56-65	24	9	8	43	
Types	Type I	16	56	8	80	0.005
	Type II	69	48	29	146	
	Gestational	13	16	0	29	

The table examines that the relationship between age, diabetes type, and take medication among diabetes patients. Notably, the proportion of participants taking medication increases with age, with the highest proportion (42%) in the 46-55 age group. Similarly, a higher proportion of individuals with Type II diabetes (47%) are taking medication compared to those with Type I diabetes (20%) or gestational diabetes (45%). These differences are statistically significant, as indicated by the p-values of 0.001 and 0.005, respectively, suggesting that age and diabetes type are associated with medication use. This finding highlights the importance of early intervention and medication management in diabetes care.

Table 4.1.16: Relationship between education and taking medication as prescribed of diabetes patient

Variable	Category	Taking diabetes medication as prescribed						P value
Education		Always	Often	Occasionally	Rarely	Never	Total	
	Primary	8	8	16	0	0	32	
	Secondary	37	48	16	21	0	122	
	Higher secondary	37	0	32	0	8	77	0.001
	B.Sc	16	0	0	0	0	16	
	M.Sc	8	0	0	0	0	8	

The table shows that there is a statistically significant relationship between education level and taking diabetes medication as prescribed (P-value = 0.001). Specifically, people with higher secondary education or above are more likely to take their medication as prescribed compared to those with primary or secondary education.

Table 4.1.17: Relationship between types of diabetes, age and consuming sugary foods or beverages

Variable	Category	Consuming sugary foods or beverages					
Type		Always	Occasionally	often	Rarely	Total	P value
Age(Years)	Type I	1	29	15	44	80	0.721
	Type II	4	42	37	85	146	
	Gestational	3	6	3	5	29	
	18-25	1	3	4	6	14	.049
	26-35	3	17	10	15	45	
	36-45	2	30	14	29	75	
	46-55	1	18	20	39	78	
	56-65	1	9	9	24	43	

This table shows that there is a significant association between age and the frequency of high-sugary consumption, as indicated by the p-value of 0.049. This suggests that older individuals may consume sugary foods or beverages less frequently compared to younger individuals.

There is no significant association between diabetes type and the frequency of high-sugary consumption, as indicated by the p-value of 0.721. This suggests that individuals with different types of diabetes have similar patterns of high-sugary consumption.

Table 4.1.18: Relationship between age and specific meal plan for diabetes management

Variable	Category	Follow a specific meal plan for diabetes management			
Age(Years)		Yes	No	Total	P value
	18-25	4	10	14	0.162
	26-35	19	26	45	
	36-45	21	54	75	
	46-55	28	50	78	
	56-65	8	35	43	

The table shows that a higher proportion of participants in the younger age groups (18-25 and 26-35 years) follow a specific meal plan for diabetes management compared to older age groups. This suggests that younger individuals with diabetes may be more likely to adhere to dietary guidelines. However, it's important to note that the p-value = 0.162 indicates that the difference in meal plan adherence between age groups is not statistically significant.

Table 4.1.19: Relationship between types of diabetes, family income and attended any diabetes education classes or programs

Variables	Category	Attended any diabetes education classes or programs			
Types		Yes	No	Total	P value
Income (Taka)	Type I	8	72	80	0.000
	Type II	69	77	146	
	Gestational	8	21	29	
	5000-15000	16	24	40	0.000
	16000-25000	48	66	114	
	26000-35000	21	56	77	
	36000-45000	0	24	24	

The table highlights that individuals with Type II diabetes and those from higher income brackets are significantly more likely to attend diabetes education programs compared to those with Type I or gestational diabetes and lower income groups. Both associations are statistically significant (p-value 0.000).

Table 4.1.20: Relationship between age, types of diabetes and sleep

Variables	Category	Getting sleep			
Age(Years)		Yes	No	Total	P value
Type	18- 25	9	5	14	
	26-35	20	25	45	
	36-45	46	29	75	
	46-55	36	42	78	0.000
	56-65	19	24	43	
	Type I	40	40	80	
	Type II	69	77	146	0.234
	Gestation	21	8	29	

The table examines the relationship between age, diabetes type, and sleep quality among diabetes patients. Notably, a higher proportion of participants in older age groups (46-55 and 56-65 years) agree that they are getting enough sleep compared to younger age groups. However, there is no significant association between diabetes type and sleep quality, as indicated by the p-value of 0.234. The significant difference in sleep quality across age groups (p-value of 0.000) suggests that older individuals with diabetes may be more likely to report adequate sleep compared to younger individuals.

Table 4.1.21: Relationship between types of diabetes and meet with a dietitian or nutritionist to discuss dietary need

Variable	Category	Meeting with a dietitian or nutritionist to discuss dietary need					
Type		Regularly	Occasionally	Rarely	Never	Total	P value
	Type I	0	2	1	77	80	.442
	Type II	0	5	1	140	146	
	Gestational	0	1	0	28	29	

The table shows that there is no significant relationship between diabetes type and meeting with a dietitian or nutritionist to discuss dietary needs. The p-value of .442 indicates that the observed differences in meeting frequency across diabetes types could have occurred by chance.

In other words, the type of diabetes does not seem to influence whether or not people meet with a dietitian or nutritionist.

4.2 Discussion

In this study of 255 diabetes patients, the largest demographic group was participants aged 36-45 years (29.4%), followed by those aged 46-55 years (30.6%). The majority were male (76.1%) and had been living with diabetes for 1–5 years (50.2%), findings consistent with prior research by (Kugbey ,K. et al. 2017). Type II diabetes was the most common (57.3%), and nearly half of the participants (47.8%) had attained secondary education, similar to findings by (Karbalaeifar ,A. et al. 2016). Employment status was evenly distributed between employed and unemployed participants (25.1% each), and most were middle class (62.4%), with monthly family incomes primarily ranging from 16,000 to 25,000 Taka, aligning with (Weledegebriel , A et al. (2021). Alarmingly, a significant proportion had fasting blood glucose levels exceeding 7 mmol/l and post-breakfast levels above 11 mmol/l. The majority (65.5%) consumed 1-3 meals daily. 59.2% were classified as overweight, a pattern also observed by (Kugbey , K. et al. (2017). Regarding self-care practices, while 67.8% of participants regularly monitored their blood glucose and 69.8% were aware of their target range, 90% did not consistently monitor their levels, echoing the findings of (Saleh et al. (2012). Furthermore, 95.3% had never consulted a dietitian, 66.7% had not attended diabetes education programs, and 52.2% lacked a supportive care system. Regular check-ups were more common, with 72.9% attending them frequently. Health challenges among participants included high blood

pressure (22%), eye problems (20.8%), and surgeries within the past five years (18.8%). Smoking was reported by 37.6%, and only 41.6% consistently adhered to prescribed medications. Dietary management practices showed that 31.4% followed a specific meal plan, 78% counted carbohydrates, and most consumed high sugary foods occasionally (29%) or rarely (59.2%). Middle aged participants (36-55 years) were more likely to adhere to meal plans than older individuals, with a statistically not significant age-related difference ($P = 0.162$). The study also identified no significant relationship between diabetes type and consultations with dietitians or carbohydrate counting. However, there was a significant association between age and sugary food consumption ($P = 0.049$), with the 46-55 age group being the most affected, consistent with (Berhe ,A.A. et al. 2017). Type II diabetes patients were more likely to engage in physical activity ($P = 0.000$), though many did so for less than 30 minutes weekly, similar results from (Weledegebriel ,A. et al. 2021). Walking emerged as the most preferred activity across all age groups, while strenuous activities like bicycling and swimming decreased with age. Medication adherence showed no significant relationship with age but was strongly associated with education level ($P = 0.000$), with higher-educated individuals adhering better to prescribed regimens. Familiarity with target glucose levels also improved with age ($P = 0.001$) and education ($P = 0.000$), a trend consistent with (Berhe ,A.A et al. 2017). Type II diabetes patients were more likely to check blood glucose levels regularly ($P = 0.005$) and attend diabetes education programs ($P = 0.000$). Higher-income participants were also more likely to participate in educational programs. Lastly, sleep quality decreased with age ($P = 0.000$), but there is statistically not significant between types and sleep and regular check-ups were more frequent among younger participants, indicating a need for targeted interventions for older and lower-income groups.

CHAPTER FIVE

CONCLUSION

5.1 Conclusion

In conclusion, the findings highlight significant challenges and gaps in diabetes self-care practices, with notable demographic, educational, and behavioral disparities. The majority of participants, primarily males aged 36-55 years with Type II diabetes, exhibit poor adherence to self-care recommendations. Key issues include limited engagement with dietitians or nutritionists (95.3% have never consulted one), insufficient participation in educational programs (66.7% have not attended any educational programs), and inadequate support systems (52.2% lack them). Poor glycemic control is evident, with 90.2% of patients having fasting blood glucose levels above 7 mmol/L and 85.1% showing postprandial levels exceeding 11 mmol/L. Overweight and obesity affect 59.2% of patients, compounding the risk of complications. Only 31.4% follow a specific meal plan, and physical activity is insufficient for many, with 20.8% engaging in no exercise and only 57.3% exercising for 30 minutes or more on most days. Among respondents, 44.3% report rarely consuming sugary foods, 30.2% consume them occasionally, 22.4% often, and 3.1% always. Medication adherence is uneven, with 41.6% always complying, and younger participants exhibit better understanding and management practices than older age groups. Significant barriers include low health literacy, lack of access to structured care, and socioeconomic constraints, particularly in lower-income groups.

5.2 Recommendation

To enhance self-care, a multifaceted approach is essential. Education programs tailored to age and literacy levels can improve understanding and promote adherence to lifestyle changes including quitting smoking, ensuring adequate sleep, managing stress, and addressing physical limitations, should be prioritized. Affordable access to healthcare, including routine checkups, dietary consultations, and support for physical activity, is critical. The importance of limiting sugary food intake to maintain effective blood sugar control is emphasized. Provide education on healthy eating habits and portion control. Community initiatives such as peer groups and culturally tailored programs can foster accountability and emotional support. Public health policies should focus on improving access to diabetes care resources and integrating self-management support into primary healthcare systems. By addressing these gaps, patients can achieve better health outcomes, reducing the burden of diabetes-related complications.

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APPENDICES

Appendix 1: Questionnaire

Year:

Date:

1.Information about patient:

Name:

Name of the hospital:

2.Anthropometric Parameters:

I. Age Range:

1.18-25Years:

2.26-35Years:

3.36-45Years:

4.46-55Years:

5.56-65Years:

I. Sex:

II. Weight:

III. Height:

3.Lab Test(Blood):

1. Blood Glucose(F):..... mmol/dl

2. Blood Glucose (ABF):..... mmol/dl

3. HbA1c..... %

Supplements: ☐ Yes ☐ No

If yes, type: Vitamin and minerals

Vitamins

Minerals

Appetite:☐Excellent ☐ Good ☐Fair ☐Poor

4.Frequency Of Meal:

- ☐ 1-3 times meal
- ☐ Less than 3 Times meal
- ☐ Free times meal

5.Socioeconomic & Cultural Factor:

Monthly family income:

1. 5000-15000Taka
2. 16000-25000Taka
3. 26000-35000Taka
4. 36000-45000Taka

Religion:

1. Muslim:
2. Hindu:
3. Other:

Education:

1. Primary
2. Secondary
3. Higher Secondary
4. B.Sc
5. M.Sc
6. Other

Occupation:

1. Student
2. Employee
3. Unemployed
4. Businessman
5. Retired
6. Housewife
7. Other

Living Status:

1. Higher Class
2. Middle Class
3. Lower Middle Class

Marital Status:

1. Single
2. Married
3. Divorced
4. Other

Rural/Urban:

Section 1: Diabetes History:

1. How long have you had diabetes diagnosed? -----
2. What types of diabetes do you have?
 - ☐ Type 1
 - ☐ Type 2
 - ☐ Gestational
 - ☐ Other
3. How often do you check your blood glucose level?
 - ☐ Daily
 - ☐ A few times a week
 - ☐ Rarely
 - ☐ Never

Section 2: Medical History:

1. Have you ever been diagnosed, ever been told or have you had problems with the following?
 - ☐ High blood pressure
 - ☐ Eye or vision problem
 - ☐ Surgery in the last 5 years
 - ☐ Asthma
 - ☐ Obesity
 - ☐ High Cholesterol
 - ☐ Heart disease /chest pain
 - ☐ Stroke
 - ☐ Kidney/Bladder problems
 - ☐ Thyroid disease
 - ☐ Hyperlipidemia
2. Do you have any allergies?
 - ☐ Yes
 - ☐ No
 - ☐ If yes, medication-----
3. Do you smoke?
 - ☐ Yes
 - ☐ No
 - ☐ If yes, How long did you smoke? -----
4. Do you drink alcohol
 - ☐ Yes
 - ☐ No

- If yes, amount and types-----

Section 3: Nutrition and Diet:

1. Do you follow a specific meal plan for diabetes management?

- Yes
- No

2. How often do you meet with a dietitian or nutritionist to discuss your dietary need?

- Regularly
- Occasionally
- Rarely
- Never

3. Do you count carbohydrates in your meals?

- Yes
- No

4. How often do you consume sugary foods or beverage?

- Rarely
- Occasionally
- Often
- Always

Section 4: Physical Activity:

1. How many days per week do you engage in physical activity for 30 minutes or more?

- < 5 Days
- > 3 Days
- Never

2. How many days per week do you engage in physical activity for less than 30 minutes to 20 minutes?

- < 5 Days
- > 3 Days
- Never

3. What types of physical activity do you enjoy?

- Walking
- Bicycling
- Swimming
- Walking down stairs /upstairs

4. Do you experience any physical limitations that affect your ability to experience?

- ☐ Yes
- ☐ No
- ☐ If yes, which type of limitation do you face?.....

Section 5: Medication and blood glucose monitoring:

1. Are you taking medication for diabetes

- ☐ Yes
- ☐ No
- ☐ If yes, please list them-----

2. How often do you take your diabetes medication as prescribed?

- ☐ Always
- ☐ Often
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

3. Are you familiar with your target blood glucose range (fasting and post meal level)?

- ☐ Yes
- ☐ No

4. How often do you check your blood glucose levels as advised by your health care provider?

- ☐ As recommended
- ☐ Occasionally
- ☐ Rarely
- ☐ Never

Section 6: Diabetes education and support:

1. Have you attended any diabetes education classes or programs?

- ☐ Yes
- ☐ No

2. Do you have a support system in place for managing your diabetes?

- ☐ Yes
- ☐ No

Section 7: Lifestyle and stress management :

1.Are you getting enough sleep?

- ☐ Yes
- ☐ No

Section 8: Complication and annual checkup:

1.How often do you have regular check up with your health care provider for diabetes management?

- ☐ Always
- ☐ Often
- ☐ Occasionally
- ☐ Rarely

❖ **Information of the food frequency questionnaire for the diabetes patients:**

Food Items	Daily	Frequently (4/5 times per week)	Monthly	Never
Rice/Bread/CHO				
Milk				
Yogurt				
Chicken				
Beef				
Fish				
Sugar				
Eggs				
Vegetables				
Potatoes				
Pulses/lentils				
Fruits				
Tea/Coffee				
Soft drinks				
Puffed rice/muri				
Fruit juice				
Snacks(samosa, pakora				
Sweets(Like rasgulla, jalebi)				
Salad				

Appendix 2: Synopsis

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Department of Nutrition and Food Engineering

Faculty of Allied Health Science (FAHS)

Daffodil Smart City, Birulia Savar, Dhaka-1216, Bangladesh

Student's Name: Sabirah Musfirat

Id: 191-34-885

Section: 191B

Title: Evaluation of Knowledge and Self Care Practices in Diabetic Patients and Their Role in Disease Management.

Introduction

Diabetes mellitus, characterized by high blood glucose levels due to insulin deficiencies, presents a significant global health challenge affecting millions worldwide. Effective management requires a comprehensive approach integrating medication, lifestyle adjustments, and self-care practices like blood glucose monitoring, medication adherence, healthy eating, exercise, and stress management. However, adherence to these practices is often hindered by factors such as limited understanding, financial constraints, cultural beliefs, and access disparities. Assessing patients' knowledge and adherence is crucial for tailored interventions and better outcomes. In 2021, approximately 537 million adults had diabetes, projected to reach 783 million by 2045. Effective management is crucial to prevent complications like cardiovascular disease, kidney failure, and blindness. Besides medication, patient education and self-care practices, such as dietary changes and regular exercise, are vital for successful diabetes management. (Kaur, G., Kaur, A., & Roy, K. (2030). Knowledge and Expressed Practices Regarding Self Care Management of Diabetes Mellitus among Younger and Older Adults with Type-II Diabetes Mellitus in Government Hospital Gurugram, Haryana, India.)

Literature Review

Globally, the prevalence of diabetes is on the rise, especially in developing nations. Estimates indicate an increase from affecting 6.4% (285 million adults) in 2010 to 7.7% (439 million adults) by 2030. India holds the highest diabetic population worldwide, expected to surge from 41 million in 2006 to 70 million by 2025, attributed to lifestyle changes linked with urbanization and industrialization (Padma, K., S. et al 2012).

Missiriya S. conducted a study to assess the impact of demonstration on self-care management among diabetes mellitus clients. Through a quasi-experimental design involving pre- and post-tests, 75 participants were purposively selected. Results revealed that prior to the demonstration, 87% and 93% had inadequate knowledge about self-blood glucose monitoring and self-insulin injection, respectively. After the demonstration, these percentages significantly dropped to 12% and 8%. Likewise, poor practice rates decreased from 97% to 22% for blood sugar monitoring and from 98% to 27% for insulin injection. The study concluded that the demonstration effectively enhanced self-care management in diabetes mellitus clients. (Kaur, G., K. et al 2030)

❖ **General objective**

To evaluate of knowledge and self -care practices of diabetic patients.

❖ **Specific objective:**

- ✚ To evaluate diabetes understanding, including awareness of its nature, complications, and treatment options among diagnosed individuals.
- ✚ To examine adherence to self-care practices (diet, exercise, medication, monitoring, and foot care) in diabetes management.
- ✚ To investigate the correlation between diabetes knowledge levels and consistent adoption of self-care practices to assess improved adherence.
- ✚ To explore the role of healthcare providers in educating and empowering diabetic patients for effective self-management and improve health outcomes.
- ✚ To identify obstacles preventing effective self-care, such as financial, educational, or psychological factors.

Study Design

Diabetes patients who admitted the hospital during April to July of 2024 were the subjects of this cross sectional investigation. For the purpose of the study, interviews were conducted with 255 diabetic patients who admitted the hospital for diabetic and diabetic related disease.

Study Location

This study was carried out at the Shaheed Ziaur Rahman Medical College Hospital in the district of Bogura. In addition to conducting in-person interviews with the patients, that was gathered information from their prescription records and doctor's reports with their consent.

Data Collection and Study Period

I have started gathering information from March to June, 2024

Sampling Calculation

If the study involves assessing proportions (e.g., percentage of patients who follow self-care practices), the formula is:

$$n = \frac{z^2 \times pq}{d^2}$$
$$= \frac{1.96^2 \times .80 \times (1-.80)}{(.05)^2}$$
$$= 245.86 \approx 246$$

Where:

n = required sample size

Z = Z-score (1.96 for 95% confidence)

p = expected proportion (use 0.80)

q = 1-p

d = margin of error (e.g., 0.05 for 5% error)

N.B: 255 data has been taken

Expected Outcome

This study aims to boost diabetes knowledge, improve self-care behaviors, and establish a crucial link between education, knowledge, and effective disease management. It identifies and addresses specific knowledge gaps, tailoring strategies based on demographics. Validating instruments, including questionnaires, reinforces their effectiveness. The study contributes insights to diabetes care guidelines, emphasizing the interconnectedness of knowledge and self-care.

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