



**KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT FOOT CARE
AMONG DIABETIC PATIENTS**

A PROJECT REPORT

BY

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

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APPROVAL

This project, “**Knowledge, Attitude and Practice About Foot Care Among Diabetic Patients**”, has been turned in by **Nahida Haque Tisha** to the Department of Nutrition and Food Engineering at Daffodil International University. It has been accepted as a partial fulfillment of the requirements for the degree of B.Sc. in Nutrition and Food Engineering and approved for its style and content.

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DECLARATION

I hereby declare that this project has been done by me under the supervision of **Tasmia Tasnim, Assistant Professor**, Department of Nutrition and Food Engineering, Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Background: Diabetes mellitus (DM) is a highly prevalent chronic disease. The primary objective of this study was to assess the knowledge, attitude and practice about foot care among diabetic patients.

Methods: This cross-sectional descriptive study examined diabetic patients' foot care knowledge, attitudes, and practices (KAP) at the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine, and Metabolic Disorders (BIRDEM) in Dhaka, Bangladesh. The study had 132 participants, calculated using sample size for finite populations. A structured questionnaire collected demographic, clinical, and diabetic foot care KAP. Knowledge was assessed with six questions, attitudes with eleven, and practices with eight. Scores were assigned for knowledge (0-3: Poor, 4-6: Good), attitudes (0-4: Negative, >4: Positive), and practices (0-4: Poor, ≥5: Good). Data analysis was conducted in SPSS version 25, with a p-value <0.05 indicating significance.

Results: The majority of the sample consists of individuals aged 21-40 years (86.4%), with a significant proportion being married (59.8%) or widowed (24.2%). Most patients have completed primary education (68.2%) and are employed in the private sector (78.8%). Clinically, a large number of patients are overweight (83.3%), and a significant portion have had diabetes for 6-10 years (50.8%). The average fasting glucose level is 10.20 ± 1.79 mmol/L, and the average HbA1c level is 7.85 ± 1.03 mmol/L, indicating suboptimal glycemic control. The study reveals that 67.4% of patients have poor knowledge about diabetes, while 32.6% demonstrate good knowledge. Positive attitudes towards diabetes management are prevalent in 82.6% of patients, and 84.8% exhibit good self-care practices. Age significantly influences knowledge and attitudes but not practices. Marital Status does not significantly affect KAP. Level of Education is significantly associated with knowledge and practices but not attitudes, indicating that higher education levels contribute to better knowledge and self-care practices. Occupation is significantly associated with knowledge and attitudes but not practices, suggesting that employment type influences understanding and perception of diabetes but not necessarily the management behaviors.

Conclusion: This study emphasizes the necessity of focused educational interventions to enhance diabetes knowledge and self-care practices, specifically among distinct demographic groups. Improving patients' comprehension and attitudes towards diabetes has the potential to result in improved glycemic control and overall health outcomes.

Keywords: Diabetes, Foot care, Knowledge, attitude, practice

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CHAPTER 1

INTRODUCTION

1.1 Background

Diabetes mellitus (DM) is a highly prevalent chronic disease. The worldwide prevalence among adults aged 20–79 years was at 6.4% (~285 million adults) in 2010 and was projected to increase to 7.7% (~439 million adults) in 2030 (Shaw et al., 2010). As early as 2014, the worldwide prevalence was already 422 million, which is almost close to the projected prevalence for 2030 (WHO, 2016). There was an observed increase in the prevalence of DM among individuals aged >65 years (Wild et al., 2004). Foot ulceration is one of the most common complications of diabetes (Boulton et al., 2005). The current reported global prevalence of diabetic foot ulcer is 6.3%, higher among males (4.5%), higher among type 2 diabetics (6.4%), and highest in North America compared with other countries (Zhang et al., 2017). It has been reported that nearly 70% of nontraumatic amputations were implemented due to a diabetic foot (Carmona et al., 2005). However, most such foot ulcers can be prevented by educating people with diabetes (Jayaprakash et al., 2011). Several studies conducted varying prevalence of diabetic foot ulcers from 26.0% to 61.8% (Al-Hariri et al., 2017). One of the most important aspects of the management of diabetic foot ulcer is proper care and prevention of injuries to the foot. This requires patients to have proper education, awareness of proper care, and management of foot ulcers and knowledge. Studies have shown that only 22.2% of diabetic patients examine their feet only when they experience a problem, whereas some reports showed that 61.8% of diabetic patients had poor diabetic foot care (Goie et al., 2016).

Diabetes-related self-care activities depend on the ability of patient to manage his/her daily life. Evidence shows that the individuals with diabetes often have inadequate knowledge on and nature, risk factors and associated complications which may result in underlying factors (Sivagnanam et al., 2002). If proper guidance and education on diabetes self-management are given, patients are able to improve their lifestyle and maintain good glycemic control. Patients' knowledge or lack of understanding hinders proper guidance toward the disease. Health education may be effective if the patients' knowledge, attitudes and practices toward the diabetes are identified. In Bangladesh, repeated re-enforcement of health education and strong motivation are emphasized in the patients with diabetes (Saleh et al., 2012). Results of the conducted studies suggested emphasizing on proper education and awareness programs which should be developed according to the society requirements to improve knowledge of patients and change their attitudes and skills; thereby leading to better control of the disease, as an integral part of comprehensive diabetes care (Nicolucci et al., 2000).

In the United States, diabetes self-management education (DSME) with national standard follow-ups is recommended and provided by professional diabetes educators in addition to physicians (Al-Maskari et al., 2013).

Diabetes education provided by physicians in Bangladesh has some limitations, and its impact on self-management is unclear. Considering this issue, the Diabetic Association of

Bangladesh (BADAS) trained 100 diabetes educators following a well-designed curricula and appropriate training materials and methods. This curriculum was developed based on the International Diabetes Federation (IDF) considering the local culture and context.

Knowledge plays a vital role in any future disease development and its early prevention and detection. Positive knowledge, attitude and practice (KAP) are important for DM patients. Elements of KAP are interrelated and dependent on each other. If the level of one element is higher, the other two factors should be affected positively. KAP regarding diabetes vary greatly depending on socio economic conditions, cultural beliefs and habits.

Knowledge of diabetes can prevent the imminent chronic comorbidities of DM, which impact significantly on the quality of life of the diabetic patients. Information can help people to assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take charge of their disease for their lifetime(Moodley et al., 2007).

A literature search on knowledge about diabetes in developing countries yielded very few studies dealing with awareness of diabetes among people with the disease and there are virtually no data on whole populations. In Bangladesh there have been a few clinical based studies on knowledge about diabetes among nondiabetic and diabetic patients(Saleh et al., 2012). Even in other developing countries, such studies have focused mainly on diabetic patients and are mostly clinic based. The necessity for greater awareness regarding prevention, diagnosis, risk factor control and disease management has been supported from previous KAP studies(Demaio et al., 2013).

1.2 Objectives

The primary objective of this study was to assess the knowledge, attitude and practice about foot care among diabetic patients.

1.2.1 Specific objectives

1. To determine demographic characteristics of diabetic patients
2. To evaluate the clinical characteristics of diabetic patients:
3. To assess knowledge, attitudes, and practices (KAP) of diabetic patients
4. To investigate association between demographic and clinical characteristics and KAP.

CHAPTER 2

LITERATURE REVIEW

Understanding knowledge, attitude, and practice (KAP) regarding diabetes mellitus (DM) is essential for the effective prevention and management of the disease. Increased awareness among large population groups can significantly reduce the incidence and complications associated with diabetes and related metabolic disorders. The study by Fatema et al. (2017) provides a comprehensive overview of KAP among non-diabetic and type 2 diabetes mellitus (T2DM) patients in Bangladesh, highlighting the need for targeted educational interventions.

Research on diabetes-related KAP has shown varying levels of awareness and management practices across different populations. In Bangladesh, studies like Fatema et al. (2017) have provided valuable insights into the demographic and socio-economic factors influencing KAP. The study's large sample size and robust methodology offer a reliable assessment of the current state of diabetes awareness in the country.

The cross-sectional study design used by Fatema et al. (2017) is a common and effective method for assessing KAP in large population groups. By employing a structured, interviewer-administered questionnaire, the study ensures consistent data collection and reliable categorization of KAP scores. Statistical analyses, including multivariate linear regression, help identify significant associations between KAP and various covariates.

The study found that knowledge about diabetes is generally average among the Bangladeshi population, with T2DM patients showing better knowledge compared to non-diabetic individuals. Attitudes towards diabetes management are predominantly positive, especially among females, while practices related to diabetes care are better among T2DM patients. Middle-aged participants, urban residents, those with higher educational backgrounds, and individuals from upper socio-economic classes demonstrate significantly higher KAP scores.

Major themes emerging from the literature include the role of personal experience with diabetes in enhancing knowledge, the positive attitude towards diabetes management among females, and the influence of socio-economic factors on KAP scores. Debates focus on the gender differences in KAP and the socio-economic disparities that affect diabetes awareness and management practices. Identifying these themes and debates highlights the need for tailored educational interventions that address specific demographic and socio-economic challenges.

Despite the valuable insights provided by Fatema et al. (2017), there are notable gaps in the literature. Detailed analysis of rural populations' specific challenges and barriers is needed to improve their KAP regarding diabetes. Additionally, longitudinal studies are necessary to understand how KAP evolves over time and to evaluate the long-term effectiveness of educational campaigns and interventions.

The literature on diabetes-related KAP in Bangladesh, exemplified by the study conducted by Fatema et al. (2017), indicates that while knowledge and practice levels are average,

attitudes towards diabetes management are generally positive. To prevent diabetes and its complications, there is an urgent need for coordinated educational campaigns, particularly focused on poorer, rural, and less educated groups. Future research should aim to address the identified gaps and provide more comprehensive strategies for improving diabetes awareness and management practices.

Diabetes education is a crucial component in the management of type 2 diabetes mellitus (T2DM), significantly impacting patients' knowledge, attitudes, and self-care activities. In Bangladesh, the Diabetic Association of Bangladesh (BADAS) has implemented educational programs to address the limitations of physician-provided education and improve self-management among diabetic patients. The study by Saleh et al. (2017) evaluates the effectiveness of these educational interventions, providing valuable insights into their impact on newly diagnosed T2DM patients.

Existing literature underscores the importance of diabetes education in enhancing patient outcomes. Studies have shown that comprehensive educational programs can lead to significant improvements in diabetes-related knowledge, attitudes towards disease management, and adherence to self-care practices. The study by Saleh et al. (2017) aligns with these findings, demonstrating that structured educational interventions can produce substantial benefits in a resource-limited setting like Bangladesh.

The pretest-posttest study design used by Saleh et al. (2017) is robust and effective in assessing the impact of educational interventions. By recruiting a large sample of 500 newly diagnosed T2DM patients and using a structured, interviewer-administered questionnaire, the study ensures reliable data collection. The 18-month follow-up period allows for the assessment of both immediate and sustained impacts of the educational program on patients' self-care activities.

The study found significant improvements in patients' knowledge and attitudes towards diabetes following the educational intervention. The mean knowledge score increased from 5.5 ± 2.9 to 8.5 ± 2.6 , and the mean attitude score improved from 79.9 ± 6.5 to 85.7 ± 6.1 . Additionally, there were notable increases in self-care activities: blood glucose monitoring rose from 8.3% to 67.7%, exercise participation from 69.2% to 85.2%, foot care from 25.8% to 82.8%, and smoking cessation from 86.7% to 92.1%. These results highlight the effectiveness of the educational program in enhancing self-care behaviors among T2DM patients.

The major themes emerging from the literature include the effectiveness of diabetes education in improving knowledge and self-care activities, the need for continuous support to sustain behavioral changes, and the influence of cultural practices on health behaviors. The study by Saleh et al. (2017) raises important debates about the adequacy of one-time educational sessions versus ongoing support. The slight decrease in meal timing adherence and the increase in betel nut consumption post-intervention suggest that continuous education and culturally sensitive approaches are essential for sustained improvements.

Despite the positive findings, there are notable gaps in the literature. The long-term sustainability of the observed improvements remains unclear, necessitating further research

to assess the enduring impact of educational interventions. Additionally, the study highlights the need for more comprehensive support systems, including regular follow-ups and psychological support, to ensure sustained behavior changes. Future research should explore the effectiveness of continuous educational programs and culturally tailored interventions to address the unique needs of diverse populations.

The study by Saleh et al. (2017) demonstrates that diabetes education significantly enhances knowledge, attitudes, and self-care activities among T2DM patients in Bangladesh. However, the findings also underscore the need for ongoing educational support and culturally sensitive approaches to sustain these improvements. To maximize the benefits of diabetes education, future programs should incorporate continuous support mechanisms and address cultural practices that influence health behaviors.

Diabetes mellitus (DM) is a major health concern worldwide, with Saudi Arabia ranking second in the Middle East for diabetes prevalence and seventh globally. Effective management of diabetes and its complications, such as diabetic foot ulcers, requires patients to have good knowledge, attitude, and practices (KAP) regarding foot care. This literature review examines the KAP of diabetic foot care among patients in Riyadh, Saudi Arabia, based on the study by Alshammari et al. (2019).

Existing literature underscores the critical role of patient education in preventing diabetic foot ulcers and other complications. Studies have shown that patients with better knowledge and practices are less likely to develop foot problems. However, there is often a gap between knowledge and actual behavior, as seen in various settings worldwide. The study by Alshammari et al. (2019) provides a detailed examination of these aspects in the Saudi context.

The descriptive cross-sectional study conducted by Alshammari et al. (2019) surveyed 368 diabetic patients at King Saud Medical City in Riyadh. The use of a structured questionnaire to assess KAP ensures comprehensive data collection. The study's large sample size and inclusion of both Type 1 and Type 2 diabetes patients provide a broad understanding of the diabetic foot care practices in this population.

The study revealed that 76.6% of patients had good knowledge of diabetic foot care, but only 11.1% had attended a class on the subject. A significant proportion (22%) received education from a doctor, and 10.3% from a nurse. While the majority (98.4%) washed their feet daily, only 47.6% self-inspected their feet daily. Higher education levels, being married, and government employment were associated with better knowledge. Interestingly, patients with longer diabetes duration (>5 years) had better foot care practices, although attitudes towards foot care did not significantly differ across age groups.

The study highlights a key theme: the high level of knowledge about diabetic foot care does not necessarily translate into positive attitudes or consistent practices. This discrepancy raises questions about the factors influencing attitudes and the effectiveness of knowledge alone in changing behavior. The low percentage of patients receiving formal education from healthcare providers suggests a need for improvement in clinical practices. Additionally,

the study points to the influence of educational background and employment status on knowledge levels, indicating that socio-economic factors play a role in health education.

Despite the high knowledge levels, the poor attitude towards foot care and the low uptake of formal education highlight significant gaps. There is an urgent need for structured educational programs that not only impart knowledge but also foster positive attitudes and consistent self-care practices. Future research should focus on understanding the barriers to positive attitudes and developing targeted interventions to address these barriers. Enhancing the role of healthcare providers in patient education and providing continuous support can improve the overall management of diabetic foot care.

The study by Alshammari et al. (2019) reveals a high level of knowledge and good practices regarding diabetic foot care among diabetic patients in Riyadh, Saudi Arabia. However, the poor attitude towards foot care and the limited formal education received by patients underscore the need for comprehensive educational programs. To improve diabetic foot care outcomes, it is essential to address the gaps in attitude and education, and to implement strategies that foster sustained behavior change.

CHAPTER 3

MATERIALS AND METHODS

3.1 Study Design

A cross-sectional descriptive study was conducted to assess the attitude, knowledge, and practice regarding foot care among diabetic patients.

3.2 Location

The study was carried out in “Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders” at Shahbag, Dhaka, Bangladesh, a tertiary care center in Bangladesh. This setting was chosen due to its high patient volume and comprehensive diabetes care services.

3.3 Study Population

The study population consisted of diabetic patients attending the diabetes clinic at BIRDEM General Hospital. Inclusion criteria included patients aged 18 years and above, diagnosed with diabetes with foot ulcers for at least one year, and willing to provide informed consent. Patients with cognitive impairments or severe comorbidities that could hinder participation were excluded.

3.4 Sample size determination

The sample size was calculated using the formula for cross-sectional studies:

$$\text{Finite population: } n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1 - \hat{p})}{\varepsilon^2 N}}$$

$$n' = \frac{385}{1 + \frac{(1.96)^2 \times 0.5(1 - 0.5)}{(0.05^2) \times 200}}$$

$$n' = 131.81$$

$$n' = 132$$

where:

n': required sample size = 132, n: sample size for 95% confidence level = 385, N: population size = 200, z: Z-value (1.96 for a 95% confidence level), $\hat{p}$: estimated proportion of patients with adequate knowledge and practices (assumed to be 50% as a conservative estimate), ε : margin of error (0.05); 5%.

3.5 Data collection

Data were collected using a structured questionnaire. The questionnaire was designed to collect demographic information, clinical characteristics, and responses related to knowledge, attitude, and practices regarding foot care.

3.6 Scoring system

Knowledge, attitude, and practice (KAP) were assessed using specific sections of the questionnaire.

3.6.1 Knowledge

The knowledge section consisted of six questions, each with a "Yes" or "No" response. Each correct answer ("Yes") was awarded one point, with a total possible score ranging from 0 to 6. Higher scores indicated better knowledge about diabetic foot care.

3.6.2 Attitude

The attitude section consisted of eleven questions, each with a "Yes" or "No" response. Each positive response ("Yes") was awarded one point, with a total possible score ranging from 0 to 11. Higher scores indicated a more positive attitude toward diabetic foot care.

3.6.3 Practice

The practice section consisted of eight questions, each with a "Yes" or "No" response. Each correct practice ("Yes") was awarded one point, with a total possible score ranging from 0 to 8. Higher scores indicated better foot care practices.

Table 1: Scoring system of Knowledge, Attitude and Practice of diabetic patients

KAP	Score	Categories
Knowledge	0-3	Poor
	4-6	Good
Attitude	0-4	Negative
	>4	Positive
Practice	≤4	Poor
	≥5	Good

3.7 Data analysis

Data were analyzed using SPSS version 25. Descriptive statistics, including frequencies and percentages, were used to summarize demographic and clinical characteristics. Chi-square tests were employed to examine associations between demographic variables and KAP scores. A p-value of <0.05 was considered statistically significant.

3.8 Ethical considerations

Written informed consent was obtained from all participants after explaining the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Participants were assured that declining to participate would not affect their medical care. Data were anonymized to maintain confidentiality and used solely for research purposes.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

The majority of diabetic patients in this sample fall within the age range of 21-40 years, comprising approximately 86.4% of the total sample. Most diabetic patients in the sample are married (59.8%) or widowed (24.2%), while smaller proportions are single (9.1%) or divorced (6.8%). A significant proportion of diabetic patients have completed primary education (68.2%), followed by those who can read and write (23.5%). Only a small percentage of patients are illiterate (8.3%). The majority of diabetic patients are employed in the private sector (78.8%), while a smaller proportion are government employees (21.2%).

Table 2: Demographic characteristics of diabetic patients.

Variables	Frequency	Percentages
Age		
15-20	1	0.8%
21-30	52	39.4%
31-40	62	47.0%
41-50	17	12.9%
Marital Status		
Single	12	9.1%
Married	79	59.8%
Divorced	9	6.8%
Widowed	32	24.2%
Level Of Education		
Illiterate	11	8.3%
Can read and write	31	23.5%
Primary	90	68.2%
Occupation		
Government employee	28	21.2%
Private employee	104	78.8%

The majority of diabetic patients in this sample are overweight (83.3%), while a smaller proportion have a normal nutritional status (16.7%). The distribution of diabetes duration in the sample indicates that a significant proportion of patients have been living with diabetes for 6-10 years (50.8%), followed by 1-5 years (26.5%) and 11-20 years (22.0%). Most diabetic patients visit the diabetes clinic 1-5 times (56.1%) or 6-10 times (41.7%) within a given timeframe. The fasting glucose levels of diabetic patients in the sample vary, with a significant portion falling within the range of 8.2 - 10.2 mmol/L (36.4%) and 10.2 - 12.2 mmol/L (31.1%). The majority of patients have HbA1c levels in the range of 7.1 - 9.0 mmol/L (67.4%), indicating suboptimal glycemic control. The average fasting glucose level in the sample is 10.20±1.79 mmol/L, while the average HbA1c level is 7.85±1.03 mmol/L.

Table 3: Clinical characteristics of diabetic patients.

Variables	Frequency	Percentages
Nutritional Status		
Normal	22	16.7
Overweight	110	83.3
Duration Of Diabetes		
1-5	35	26.5%
6-10	67	50.8%
11-20	29	22.0%
≥21	1	0.8%
Diabetes Clinic		
1-5 times	74	56.1%
6-10 times	55	41.7%
11-15 times	3	2.3%
Fasting Glucose Level		
6.2 - 8.2 mmol/L	19	14.4%
8.2 - 10.2 mmol/L	48	36.4%
10.2 - 12.2 mmol/L	41	31.1%
12.2 - 14.2 mmol/L	24	18.2%
HbA1c		
5.1 - 7.0 mmol/L	32	24.2%
7.1 - 9.0 mmol/L	89	67.4%
9.1 - 11.0 mmol/L	10	7.6%
11.1 - 13.0 mmol/L	1	0.8%
Fasting Glucose Level	10.20±1.79 mmol/L	
HbA1c	7.85±1.03 mmol/L	

The majority of diabetic patients in the sample exhibit poor knowledge about diabetic foot care, with 67.4% falling into this category. Approximately one-third of diabetic patients (32.6%) demonstrate a good level of knowledge about the condition.

Table 4: Knowledge level of diabetic patients.

Knowledge	Frequency	Percentages
Poor Knowledge	89	67.4%
Good Knowledge	43	32.6%

The majority of diabetic patients in the sample exhibit a positive attitude toward their condition, with 82.6% falling into this category. A smaller proportion of diabetic patients (17.4%) demonstrate a negative attitude toward their condition.

Table 5: Attitude levels of diabetic patients.

Attitude	Frequency	Percentages
Negative Attitude	23	17.4%
Positive Attitude	109	82.6%

The majority of diabetic patients in the sample exhibit good practice in managing their condition, with 84.8% falling into this category. A smaller proportion of diabetic patients (15.2%) demonstrate poor practice in managing their condition.

Table 6: Practice level of diabetic patients

Practice	Frequency	Percentages
Poor Practice	20	15.2%
Good Practice	112	84.8%

Among patients aged 21-30, a significant proportion demonstrate good knowledge (55.8%) and positive attitudes (45.9%). Patients aged 31-40 show higher rates of negative attitudes (73.9%) compared to other age groups. In terms of practice, patients aged 21-30 also exhibit a higher percentage of good practices (40.2%). Married individuals show higher rates of good knowledge (72.1%) and positive attitudes (62.4%) compared to other marital status categories. Widowed individuals demonstrate higher rates of negative attitudes (39.1%). Patients with a primary level of education exhibit higher rates of good knowledge (97.7%) and positive attitudes (71.6%) compared to other education levels. Illiterate patients show higher rates of poor practice (25.0%). Private employees demonstrate higher rates of good knowledge (55.8%) and positive attitudes (75.2%) compared to government employees. Patients with a diabetes duration of 6-10 years show higher rates of good knowledge (53.5%) and positive attitudes (55.0%). Patients with a longer duration of diabetes (11-20 years) demonstrate higher rates of poor practice (35.0%). Patients who visit the diabetes clinic 1-5 times show higher rates of good knowledge (62.8%) and positive attitudes (59.8%). Patients with more frequent clinic visits (6-10 times) demonstrate higher rates of good practice (65.0%). Patients with higher fasting glucose levels and HbA1c levels tend to exhibit higher rates of poor practice, indicating a potential association between glycemic control and adherence to self-care behaviors. Patients classified as overweight demonstrate higher rates of good knowledge (74.4%) and positive attitudes (81.7%) compared to those with a normal nutritional status.

Table 7: Knowledge, Attitudes, and Practices among patients with type 2 diabetes.

Variables	Knowledge		<i>P</i> <i>value</i>	Attitude		<i>P</i> <i>value</i>	Practice		<i>P</i> <i>value</i>
	Poor Knowledge	Good Knowledge		Negative Attitude	Positive Attitude		Poor Practice	Good Practice	
Age			0.004*			0.009*			0.936
15-20	1(1.1%)	--		--	1(0.9%)		--	1(0.9%)	
21-30	28 (31.5%)	24(55.8%)		2(8.7%)	50(45.9%)		7(35.0%)	45(40.2%)	
31-40	43(48.3%)	19(44.2%)		17(73.9%)	45(41.3%)		10(50.0%)	52(46.4%)	
41-50	17(19.1%)	--		4(17.4%)	13(11.9%)		3(15.0%)	14(12.5%)	
Marital Status			0.122			0.324			0.753
Single	8(9.0%)	4(9.3%)		2(8.7%)	10(9.2%)		1(5.0%)	11(9.8%)	
Married	48(53.9%)	31(72.1%)		11(47.8%)	68(62.4%)		11(55.0%)	68(60.7%)	
Divorced	6(6.7%)	3(7.0%)		1(4.3%)	8(7.3%)		2(10.0%)	7(6.3%)	
Widowed	27(30.3%)	5(11.6%)		9(39.1%)	23(21.1%)		6(30.0%)	26(23.2%)	
Level Of Education			0.000*			0.138			0.012*
Illiterate	11(12.4%)	--		2(8.7%)	9(8.3%)		5(25.0%)	6(5.4%)	
Can read and write	30(33.7%)	1(2.3%)		9(39.1%)	22(20.2%)		3(15.0%)	28(25.0%)	
Primary	48(53.9%)	42(97.7%)		12(52.2%)	78(71.6%)		12(60.0%)	78(69.6%)	
Occupation			0.000*			0.029*			0.054
Government employee	9(10.1%)	19(44.2%)		1(4.3%)	27(24.8%)		1(5.0%)	27(24.1%)	
Private employee	80(89.9%)	24(55.8%)		22(95.7%)	82(75.2%)		19(95.0%)	85(75.9%)	

Duration Of Diabetes			0.604			0.115			0.212
1-5	22(24.7%)	13(30.2%)		7(30.4%)	28(25.7%)		2(10.0%)	33(29.5%)	
6-10	44(49.4%)	23(53.5%)		12(52.2%)	55(50.5%)		11(55.0%)	56(50.0%)	
11-20	22(24.7%)	7(16.3%)		3(13.0%)	26(23.9%)		7(35.0%)	22(19.6%)	
≥21	1(1.1%)	--		1(4.3%)	--		--	1(0.9%)	
Diabetes Clinic			0.322			0.618			0.065
1-5 times	47(52.8%)	27(62.8%)		12(52.2%)	62(56.9%)		7(35.0%)	67(59.8%)	
6-10 times	39(43.8%)	16(37.2%)		11(47.8%)	44(40.4%)		13(65.0%)	42(37.5%)	
11-15 times	3(3.4%)	--		--	3(2.8%)		--	3(2.7%)	
Fasting Glucose Level			0.087			0.157			0.249
6.2 - 8.2 mmol/L	13(14.6%)	6(14.0%)		5(21.7%)	14(12.8%)		5(25.0%)	14(12.5%)	
8.2 - 10.2 mmol/L	38(42.7%)	10(23.3%)		11(47.8%)	37(33.9%)		9(45.0%)	39(34.8%)	
10.2 - 12.2 mmol/L	22(24.7%)	19(44.2%)		6(26.1%)	35(32.1%)		4(20.0%)	37(33.0%)	
12.2 - 14.2 mmol/L	16(18.0%)	8(18.6%)		1(4.3%)	23(21.1%)		2(10.0%)	22(19.6%)	
HbA1c			0.197			0.070			0.567
5.1 - 7.0 mmol/L	18(20.2%)	14(32.6%)		5(21.7%)	14(12.8%)		7(35.0%)	25(22.3%)	
7.1 - 9.0 mmol/L	61(68.5%)	28(65.1%)		11(47.8%)	37(33.9%)		11(55.0%)	78(69.6%)	

9.1 - 11.0 mmol/L	9(10.1%)	1(2.3%)		6(26.1%)	35(32.1%)		2(10.0%)	8(7.1%)	
11.1 - 13.0 mmol/L	1(1.1%)	--		1(4.3%)	23(21.1%)		--	1(0.9%)	
Nutritional Status			0.056			0.259			0.129
Normal	11(12.4%)	11(25.6%)		2(8.7%)	20(18.3%)		1(5.0%)	21(18.8%)	
Overweight	78(87.6%)	32(74.4%)		21(91.3%)	89(81.7%)		19(95.0%)	91(81.3%)	

*Significant at 5% level

There is a significant association between age and knowledge ($\chi^2 = 13.167$, $p = 0.004$) as well as attitude ($\chi^2 = 11.619$, $p = 0.009$). This suggests that age influences both knowledge levels and attitudes toward diabetes. However, there is no significant association between age and practice ($\chi^2 = 0.423$, $p = 0.936$), indicating that age may not directly impact self-care practices among diabetic patients.

There are no significant associations between marital status and knowledge ($\chi^2 = 5.789$, $p = 0.122$), attitude ($\chi^2 = 3.473$, $p = 0.324$), or practice ($\chi^2 = 1.199$, $p = 0.753$). Marital status does not appear to be a significant determinant of knowledge, attitudes, or practices among diabetic patients in this sample.

There are significant associations between level of education and knowledge ($\chi^2 = 25.609$, $p < 0.001$) as well as practice ($\chi^2 = 8.811$, $p = 0.012$). Higher levels of education are associated with greater knowledge and better self-care practices among diabetic patients. However, there is no significant association between level of education and attitude ($\chi^2 = 3.954$, $p = 0.138$), suggesting that education level may not directly influence attitudes toward diabetes.

There are significant associations between occupation and knowledge ($\chi^2 = 20.141$, $p < 0.001$) as well as attitude ($\chi^2 = 4.740$, $p = 0.029$). Patients with different occupations exhibit varying levels of knowledge and attitudes toward diabetes. However, there is no significant association between occupation and practice ($\chi^2 = 3.707$, $p = 0.054$), indicating that occupation may not directly impact self-care practices among diabetic patients.

There are no significant associations between these clinical characteristics and knowledge, attitudes, or practices among diabetic patients ($p > 0.05$). These factors do not appear to be significant determinants of knowledge, attitudes, or practices in this sample.

4.2 Discussion

This study highlights the knowledge, attitudes, and practices to diabetic foot care among diabetic patients attending a diabetic clinic in Dhaka, Bangladesh.

Our rate for good knowledge (32.6%) is much lower than reported by previous studies done in Malaysia (58%) and several previous studies conducted in Saudi Arabia 53.6% and 13.2% (George et al., 2013; Solan et al. 2017; Al-Aboudi et al., 2016).

This study also is in agreement with other previous studies that patients who have a higher level of education have better knowledge of diabetic foot care (Goweda et al., 2017; Solan et al., 2017). Illiterate patients require a deeper explanation or interpretation of the questions being asked, which may not be viable in a self-administered questionnaire (Jasper et al., 2014). It has been suggested that being married translates to the presence of spousal support related to nutrition and dietary control, commitment to treatment and management, and better coping with chronic diseases, such as diabetes, which may explain why our married couples know diabetes foot care more than unmarried patients (Beverly et al., 2008).

Being employed translates to better income and probably better quality of life compared with the unemployed and those with low-income patients. Patients who are employed and educated may have received information on modification and prevention of injuries and may have improved their attitude toward diabetes and diabetic foot care for a healthier lifestyle (Gagliardino et al., 2007).

This study also highlights that patients who frequently visit the diabetic clinic has better attitude toward diabetic foot and diabetic foot care. Most of these patients who have better attitude toward diabetic foot and diabetic foot care were patients who had long-standing diabetes of 6-10 years.

Patients who were had visited the diabetic clinic several times may have acquired information through several years of having diabetes or may have spent more time with their doctors and nurses to search and ask for possible explanations that were probably ignored by diabetic patients who had shorter duration of diabetes. Another thing is that physicians and nurses may have spared more time for their patients particularly when such complication as diabetic foot occur among patients with long-standing diabetes. For this reason, physicians and nurses regardless of the duration of diabetes should realize the importance of education and instilling awareness for diabetic complications, such as diabetic foot at the time of diagnosis (Shah et al., 2009).

Surprisingly, the practice of diabetic foot care was significantly better among patients who have a longer duration of diabetes (6-10 years) although this rate is higher compared to previous studies on diabetic foot care practices (Hasnain et al., 2009).

This study reveals that 32.6% of our patients have a good knowledge diabetic foot and diabetic foot care. However, a significant majority (82.6%) have positive attitude toward diabetic foot and diabetic foot care but many have negative attitude (17.4%) and poor practices (15.2%) of diabetic foot and diabetic foot care.

This knowledge needs to be translated into good practice and good attitude toward foot care. There is a need to reorient and motivate healthcare practitioners not only educating diabetic patients but constantly reminding these patients of the complications of diabetes (Hasnain et al., 2009).

The study design using a questionnaire even it was conducted via face-to-face interview may have served as a limitation to the study. The fact that our questions were designed and answerable by yes or no pattern may have affected the validity of the information obtained. It has been suggested that interviewers strongly prefer to ask one-sided yes/no questions and that respondents usually give agreeing answers to these yes/no questions (Molenaar et al., 1996).

Probably, this is the reason why there was a high rate of poor knowledge and good practices among our respondents, since these patients may just have agreed to answer “yes” on several questions pertaining to knowledge and practices. Another limitation of this study is that it was conducted only among patients attending a single diabetic clinic and hence may not be generalizable to the overall diabetic population

CHAPTER 5

CONCLUSION

The majority of the patients are adults aged 21-40 years, predominantly married, and with a primary education level. Most are employed in the private sector and are overweight. Clinically, the majority have been living with diabetes for 6-10 years, visit the diabetes clinic regularly, and showed suboptimal glycemic control, as indicated by their fasting glucose and HbA1c levels. The majority of patients showed poor knowledge about diabetic foot care, but most have a positive attitude and good practices in managing their condition. Age significantly influences knowledge and attitudes but not practices. Marital Status does not significantly affect KAP. Level of Education is significantly associated with knowledge and practices but not attitudes, indicating that higher education levels contribute to better knowledge and self-care practices. Occupation is significantly associated with knowledge and attitudes but not practices, suggesting that employment type influences understanding and perception of diabetes but not necessarily the management behaviors. Duration of Diabetes, Clinic Visits, Fasting Glucose Levels, and HbA1c levels do not show significant associations with KAP, indicating these clinical factors do not directly impact knowledge, attitudes, or practices. The study emphasizes the necessity of focused educational interventions to enhance understanding of diabetes management, especially among younger patients and individuals with limited educational achievements. Augmenting knowledge could additionally fortify the favorable attitudes and commendable practices witnessed in the sample, ultimately resulting in improved health outcomes. Furthermore, it is essential to prioritize the clinical management of diabetes, which involves consistent monitoring and maintaining optimal glycemic control. This is vital for enhancing the overall quality of care provided to individuals with diabetes.

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APPENDICES

Appendix 01: Questionnaires

Attitude and knowledge and Practice about foot care among diabetic patients

Patient Name: _____

Anthropometric parameters

Height : _____

Weight: _____

BMI: _____

Nutritional Status

- ☐ Unclear weight
- ☐ Normal
- ☐ Over weight
- ☐ Obesity

Biochemical parameters

Fasting Glucose Level: _____

HbA1c: _____

1. Gender

- ☐ Male
- ☐ Female

2. Age groups (year)

- ☐ 15-20
- ☐ 21-30
- ☐ 31-40
- ☐ 41-50

- ☐ 51-60
- ☐ >60
- 3. Marital status
 - ☐ Single
 - ☐ Married
 - ☐ Divorced
 - ☐ Widowed
- 4. Level of education
 - ☐ Illiterate
 - ☐ Can read and write
 - ☐ Primary
 - ☐ Intermediate
 - ☐ Secondary
 - ☐ University
- 5. Occupation
 - ☐ Government employee
 - ☐ Private employee
 - ☐ Retired
 - ☐ Housewife
 - ☐ Unemployed
 - ☐ Others
- 6. Duration of diabetes (year)
 - ☐ 1-5
 - ☐ 6-10
 - ☐ 11-20
 - ☐ ≥ 21
- 7. Number of visits to the diabetes clinic per year
 - ☐ 1-5 times
 - ☐ 6-10 times
 - ☐ 11-15 times
 - ☐ ≥ 16 time

Knowledge

1. Knows that diabetic patients may develop reduced blood flow to their feet
 - ☐ Yes
 - ☐ No
2. Knows that diabetics may develop lack of sensation on their feet
 - ☐ Yes
 - ☐ No
3. Knows that diabetics can develop foot ulcers
 - ☐ Yes
 - ☐ No
4. Knows that diabetics can develop foot gangrene
 - ☐ Yes
 - ☐ No
5. Knows that with loss of sensation in the feet, makes them prone to foot ulcers
 - ☐ Yes
 - ☐ No
6. Knows that reduced blood flow to the feet, makes them prone to foot ulcers
 - ☐ Yes
 - ☐ No

Attitude

1. Attend a class on diabetic foot care
 - ☐ Yes
 - ☐ No
2. Have received education on diabetic foot care from a doctor
 - ☐ Yes
 - ☐ No
3. Have received education on diabetic foot care from a nurse
 - ☐ Yes

- ☐ No
- 4. Takes responsibility for self-foot examination
 - ☐ Yes
 - ☐ No
- 5. Enjoys normal life by controlling blood sugar level
 - ☐ Yes
 - ☐ No
- 6. Nutrition is a factor to control blood sugar level
 - ☐ Yes
 - ☐ No
- 7. Had sores and cuts on their feet, and what they do if they had cuts and sores on their feet
 - ☐ Yes
 - ☐ No
- 8. Goes to the healthcare center
 - ☐ Yes
 - ☐ No
- 9. Goes to the emergency
 - ☐ Yes
 - ☐ No
- 10. Waits for hospital appointment
 - ☐ Yes
 - ☐ No
- 11. Uses herbal medicine
 - ☐ Yes
 - ☐ No

Practice

- 1. Self-inspects their foot daily
 - ☐ Yes
 - ☐ No

2. Wash their feet daily
 - ☐ Yes
 - ☐ No
3. Dries feet and between toes after washing
 - ☐ Yes
 - ☐ No
4. Applies lotion/moisturizer on feet
 - ☐ Yes
 - ☐ No
5. Does not walk barefoot
 - ☐ Yes
 - ☐ No
6. Inspects shoes before wearing them
 - ☐ Yes
 - ☐ No
7. Protects and keep feet away from hot and cold temperature
 - ☐ Yes
 - ☐ No
8. Trim toenails straight and file edges
 - ☐ Yes
 - ☐ No

Appendix 02: Synopsis

Daffodil International University
Department of Nutrition and Food Engineering (NFE)
Faculty Of Health and Life Sciences
Daffodil International University
Daffodil Smart City, Birulia, Savar, Dhaka – 1216, Bangladesh

1. Student's Name: Nahida Haque Tisha

2. Id: 191-34-844

1.Introduction

Diabetes mellitus is a chronic disease that often leads to complications, one of the most common being diabetic foot. Proper foot care is crucial for preventing foot ulcers and amputations, yet many diabetic patients lack the necessary knowledge, have inadequate attitudes, and practice poor foot care routines. This study aims to assess the knowledge, attitude, and practice (KAP) regarding foot care among diabetic patients, identifying gaps and potential areas for intervention.

2.Objectives

1. To assess the level of knowledge about foot care among diabetic patients.
2. To evaluate the attitudes of diabetic patients towards foot care.
3. To examine the practices related to foot care in diabetic patients.
4. To identify correlations between demographic factors and KAP levels.
5. To provide recommendations for improving foot care education and practices.

3.Methodology

- **Study Design:** Cross-sectional descriptive study.
- **Study Population:** Diabetic patients attending outpatient clinics in a selected hospital.
- **Sample Size:** 200 diabetic patients, selected through simple random sampling.
- **Data Collection:** Structured questionnaire comprising sections on demographics, knowledge, attitude, and practice regarding foot care.
- **Data Analysis:** Descriptive statistics to summarize the data; chi-square test to explore relationships between demographic variables and KAP levels.

4.Key Areas of Focus

1. **Knowledge:**
 - Understanding the importance of foot care.
 - Awareness of potential complications from poor foot care.

- Knowledge of proper foot hygiene and routine inspections.

2. **Attitude:**

- Patients' perception of the necessity of foot care.
- Belief in their ability to perform adequate foot care.
- Attitude towards seeking professional help for foot-related issues.

3. **Practice:**

- Frequency of foot inspections and hygiene practices.
- Use of appropriate footwear.
- Regular visits to healthcare providers for foot examinations.

5. **Expected Outcomes**

- **Knowledge Gaps:** Identification of areas where diabetic patients lack critical information about foot care.
- **Attitude Assessment:** Insights into how patients view the importance of foot care and their willingness to incorporate it into their daily routines.
- **Practice Patterns:** Understanding common practices and identifying harmful behaviors that need to be addressed.
- **Correlation Analysis:** Identifying demographic factors (age, gender, education level, duration of diabetes) that influence KAP levels.

This study will provide a comprehensive overview of the knowledge, attitude, and practice regarding foot care among diabetic patients. The findings will help in designing effective educational and behavioral interventions to prevent diabetic foot complications, ultimately improving the quality of life for diabetic patients.

6. **References**

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Signature of Supervisor

Signature of Fellow

Appendix 3: Plagiarism report

KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT FOOT CARE AMONG DIABETIC PATIENTS			
ORIGINALITY REPORT			
16%	14%	9%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	www.jfmipc.com Internet Source	3%	
2	sites.kowsarpub.com Internet Source	1%	
3	Submitted to Daffodil International University Student Paper	1%	
4	Reem Al Makari, Lynn Saifeddine, Nadia Al Masri, Hassan Balhas, Abbas Sader, Roy Aboulhosn, Bilal Azakir, Ghenwa Dakdouki. "Knowledge, attitudes, and practices of Footcare in Diabetic patients in Hammoud University Medical Center", Research Square Platform LLC, 2024 Publication	1%	
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