AJBMS AFGHANISTAN Journal of Basic Medical Sciences
ISSN: 3005-6632

Afghanistan Journal of Basic Medical Sciences

2025 Jan 2(2): 140-151.

ajbms.knu.edu.af

Knowledge, Attitude, and Preventive Practices for Cardiovascular Diseases among Type 2 Diabetic Patients in Kabul City

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ARTICLE INFO

Type: Original Article
Received: 13 May 2025
Accepted: 25 June, 2025

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To cite this article: Safi MN, Mohammadi KM, Rahmati A. Knowledge, Attitude, and Preventive Practices for Cardiovascular Diseases among Type 2 Diabetic Patients in Kabul City.
Afghanistan Journal of Basic Medical Sciences. 2025 Jan 2(2):140-151.
https://doi.org/10.62134/khatamuni.95

ABSTRACT

Background: We investigated the knowledge, attitudes, and preventive practices (KAP) regarding cardiovascular diseases (CVD) among type 2 diabetics in Kabul City, Afghanistan in 2024-25. Understanding these factors is critical for developing effective public health interventions in resource-limited settings
Methods: A total of 528 participants were enrolled. Data were collected through structured questionnaires assessing participant's knowledge of CVD, attitudes toward prevention, and reported practices.
Results: 83.3% of participants recognized CVD as a leading cause of death, and 86.4% acknowledged the importance of physical activity in prevention. However, knowledge of specific symptoms was notably low, with only 12.1% identifying chest pain as a heart attack symptom. Attitudes toward CVD prevention were generally positive, with 97.0% emphasizing physical activity and dietary control. Despite this, only 63.6% engaged in moderate aerobic activities, and 50.0% reported adding salt to their food. Gender differences were significant, with males scoring higher in knowledge and practice. Age and education levels also influenced KAP scores.
Conclusion: The study highlights substantial gaps in knowledge and preventive practices among type 2 diabetics in Kabul. Targeted educational interventions are essential to enhance symptom recognition and promote effective preventive behaviors, addressing the identified discrepancies in knowledge and actual practices.

Keywords: Diabetes, Cardiovascular Diseases, Public Health, Health Education, Afghanistan

Introduction

Diabetes mellitus (DM) encompasses a group of metabolic disorders characterized by persistent hyperglycemia due to deficiencies in insulin production, function, or both. It remains one of the leading causes of mortality worldwide (1). As of 2021, an estimated 537 million adults aged 20–79 years were diagnosed with diabetes, accounting for approximately one in ten individuals within this age group. This figure is expected to rise to 643 million by 2030 and 783 million by 2045 (2). Alarmingly, more

than 75% of individuals with diabetes reside in low- and middle-income countries, underscoring significant global health disparities (3).

In 2021, diabetes was responsible for approximately 6.7 million deaths, equating to one fatality every five seconds (2). The mortality burden is particularly severe in resource-limited settings, where access to healthcare and diabetes management services may be inadequate (4). Additionally, diabetes substantially increases the risk of CVD, with diabetic individuals experiencing a two- to four-fold higher likelihood of cardiovascular events compared to those without diabetes (5). Among individuals with diabetes, CVD is the most common cause of morbidity and mortality (6). This heightened risk is observed in both men and women, with relative CVD mortality risks ranging from 1 to 3 in men and 2 to 5 in women compared to non-diabetics (7).

Despite the well-established link between diabetes and CVD, many diabetic individuals are unaware of their elevated cardiovascular risk, which may impede preventive measures. One study reported that while 61% of patients with type 2 diabetes acknowledged the association between diabetes and CVD, only 29% actively considered their cardiovascular risk in routine health management (8). Assessing patients' knowledge, attitudes, and practices (KAP) regarding chronic diseases is essential for designing effective educational interventions aimed at mitigating disease complications. Evidence suggests that higher knowledge levels correlate with improved disease management. For instance, while awareness and attitudes toward CVD prevention were relatively high, adherence to preventive practices remained low, emphasizing the need for targeted education (9). Furthermore, evaluating KAP can help identify gaps in knowledge that may contribute to suboptimal health outcomes. Inadequate understanding of chronic diseases among patients directly impacted their ability to manage their conditions effectively (10). Despite the growing global burden of CVD, particularly among individuals with type 2 diabetes (11), there remains a significant lack of context-specific data on the KAP related to CVD risk in low-resource settings.

While several studies have examined KAP in various regions, no research to date has specifically explored these dimensions among type 2 diabetic patients in Kabul, Afghanistan. This gap is critical, given the increasing prevalence of diabetes and the associated CVD risk in the Afghan population, coupled with limited public health infrastructure and preventive education. Addressing this gap is essential for developing targeted interventions and improving disease outcomes. Therefore, we aimed to assess the KAP regarding CVD risk among individuals with type 2 diabetes in Kabul City in 2024-25.

Materials and Methods

This cross-sectional study was conducted at Wazir Mohammad Akbar Khan National Hospital, Kabul, Afghanistan to evaluate the KAP of patients with diabetes regarding CVD prevention from May 2024 to March 2025. A total of 528 participants were recruited using a convenience sampling method. Eligible participants included individuals aged 20 years and above, diagnosed with type 2 diabetes for at least six months, and willing to participate. Patients with cognitive impairments or severe comorbidities that could hinder their ability to complete the questionnaire were excluded. Ethical approval was obtained before data collection, and necessary coordination was made with the hospital administration. Informed consent was taken from the enrolled cases.

Patients attending routine check-ups who met the inclusion criteria were invited to

participate after receiving detailed information about the study and providing informed consent. Data collection was conducted using two structured questionnaires. The first questionnaire gathered demographic details, including gender, age, education level, occupation, marital status, and duration of diabetes. The second questionnaire assessed KAP related to CVD prevention and was adapted from the validated instrument developed by Kohi et al (12). The knowledge section comprised 12 multiple-choice questions evaluating awareness of CVD risk factors, with response options of "No" (0 points), "Don't know" (1 point), and "Yes" (2 points), yielding a total score range of 0 to 24, where higher scores indicated greater knowledge. The attitude section consisted of 10 Likert-scale items measuring perceptions of CVD prevention strategies, with response options ranging from "Strongly disagree" 1) n to "Strongly agree" 5), leading to a total score range of 10 to 50, where higher scores denoted a more favorable attitude. The practice section included seven questions assessing preventive behaviors related to CVD, with response options of "No" (0 points), "Don't know" (1 point), and "Yes" (2 points), resulting in a total score range of 0 to 14, where higher scores indicated better adherence to preventive measures.

Data were analyzed using Statistical Package for Social Sciences Software (SPSS) version 24.0 (IBM Corp., Armonk, NY, USA). Descriptive analysis was used to analyze the socio-demographic and the level of knowledge and practice on CVD prevention. Pearson correlation, independent t-tests, and one-way ANOVA, were applied to examine associations between KAP scores and demographic variables.

Results

Sociodemographic Characteristics

A total of 528 participants were enrolled, consisting of 240 males (45.5%) and 288 females (54.5%). The mean age was 52.54 ± 10.56 years, with the majority (42.0%) aged between 51 and 60 years. Most participants were married (98.5%) and homemakers (54.5%). The educational background of participants varied, with 68.2% being illiterate and only 5.7% having a bachelor's degree or higher. The duration of diabetes ranged from less than one year to over 20 years, with the largest proportion (42.4%) having diabetes for 1–5 years (Table 1).

Knowledge of Cardiovascular Disease

The majority of participants (83.3%) identified CVD as a leading cause of death in Afghanistan, and 86.4% acknowledged the role of physical activity in prevention. Awareness of dietary influences was high, with 89.4% recognizing the benefits of fruit and vegetable consumption, and 90.9% understanding the risks of excessive salt intake. However, knowledge of CVD symptoms was low, with only 12.1% recognizing chest pain as a symptom of a heart attack and 3.0% identifying sudden weakness as a symptom of stroke. The mean knowledge score was 19.29 ± 2.40 (Table 2).

Table 1: Demographic characteristics of patients with type 2 diabetes

Characteristics	***n (%)***
Gender	
Male	240 (45.5)
Female	288 (54.5)
Age (years)	
20-30	40 (7.6)
31-40	24 (4.5)
41-50	154 (29.2)
51-60	222 (42.0)
61-70	72 (13.6)
>70	16 (3.0)
Marital status	
Married	520 (98.5)
widowed	8 (1.5)
Occupation	
House Wife	288 (54.5)
Retired	24 (4.5)
Self-employed	120 (22.7)
Government employee	8 (1.5)
Unemployed	80 (15.2)
Student	8 (1.5)
Level of education	
Illiterate	360 (68.2)
Primary education	96 (18.2)
High School	42 (8.0)
Bachelor and Higher	30 (5.7)
Duration of Diabetes (years)	56 (10.6)
<1	224 (42.4)
1-5	131 (24.8)
6-10	70 (13.3)
11-15	29 (5.5)
16-20	18 (3.4)
20>	

Table 2: Awareness of cardiovascular disease prevention in patients with type 2 diabetes

Knowledge	***Yes***	***No***	***I don't know***
	n (%)	n (%)	n (%)
Are cardiovascular diseases a leading cause of death in Afghanistan.	440 (83.3)	16 (3.0)	72 (13.6)
Can physical activities help prevent cardiovascular diseases.	456 (86.4)	8 (1.5)	64 (12.1)
Does daily consumption of fruits and vegetables have a positive impact on heart and vascular health.	472 (89.4)	-	56 (10.6)
Can a family history of cardiovascular diseases (father, mother, sister, or brother) increase the risk.	272 (51.5)	48 (9.1)	208 (39.4)
Are obese individuals at a higher risk of developing cardiovascular diseases.	416 (78.8)	8 (1.5)	104 (19.7)

Can the consumption of tobacco products (e.g., cigarettes, hookah) increase the risk of cardiovascular diseases.	488 (92.4)	16 (3.0)	24 (4.5)
Does consuming salt and canned products increase the risk of high blood pressure.	480 (90.9)	-	48 (9.1)
Can controlling blood sugar and preventing diabetes reduce cardiovascular complications.	400 (75.8)	16 (3.0)	112 (21.2)
Is controlling high blood pressure important for preventing heart attacks.	440 (83.3)	24 (4.5)	64 (12.1)
Can chest pain, pressure, or burning sensation be symptoms of a heart attack.	64 (12.1)	-	464 (87.9)
Can pain or discomfort in the jaw, neck, between the shoulders, arms, or stomach be symptoms of a heart attack.	40 (7.6)	-	488 (92.40
Can sudden weakness or numbness in the face, arms, or legs be symptoms of a stroke.	16 (3.0)	-	512 (97.0)
Knowledge Total Score Mean ± Std. Deviation 2.400 ± 19.29			

Attitudes toward Cardiovascular Disease Prevention

Attitudes toward CVD prevention were generally positive. A large proportion (97.0%) emphasized the importance of physical activity, weight control, and salt reduction in maintaining cardiovascular health. However, attitudes toward tobacco consumption varied, with 95.5% believing it to be harmful, while a minority remained uncertain. The mean attitude score was 48.15 ± 4.05 (Table 3).

Table 3: Attitude of cardiovascular disease prevention in patients with type 2 diabetes

Attitude	***Strongly agree***	***Agree***	***I don't know***	***Disagree***	***Strongly Disagree***
	n (%)	n (%)	n (%)	n (%)	n (%)
I believe physical activity is essential for health.	512 (97.0)	-	8 (1.5)	8 (1.5)	-
I believe I should try walking instead of taking a taxi or bus to reach my destination.	488 (92.4)	16 (3.0)	16 (3.0)	8 (1.5)	-
I believe using any form of tobacco (such as cigarettes or hookah) is harmful to health.	-	8 (1.5)	8 (1.5)	8 (1.5)	504 (95.5)
I believe maintaining an appropriate weight (avoiding overweight) helps me stay healthy.	512 (97.0)	-	8 (1.5)	8 (1.5)	-
I believe eating less fatty food is necessary for maintaining health.	504 (95.5)	8 (1.5)	8 (1.5)	8 (1.5)	-
I believe consuming 3-5 servings of raw or cooked fruits daily can be beneficial for my health.	504 (95.5)	8 (1.5)	8 (1.5)	-	-
I believe uncontrolled blood sugar in diabetic patients can lead to heart attacks.	464 (87.9)	8 (1.5)	48 (9.1)	8 (1.5)	-
I believe stress and mental pressure should be controlled to prevent heart attacks.	496 (93.9)	-	24 (4.5)	8 (1.5)	-
I believe reducing salt intake can prevent high blood pressure.	512 (97.0)	-	8 (1.5)	8 (1.5)	-
I believe consuming fish twice a week is good for heart and vascular health.	240 (45.5)	144 (27.3)	136 (25.8)	-	8 (1.5)
Attitude Total Score Mean ± Std. Deviation 48.15 ± 4.046					

Practice of Cardiovascular Disease Prevention

Approximately 59.1% engaged in vigorous aerobic activities, while 63.6% participated in moderate aerobic exercises. Dietary habits showed variability, with 69.7% adhering to recommended fruit and vegetable intake, but 50.0% reported adding salt to their food. Additionally, 12.1% used tobacco products. The mean practice score was 6.89 ± 3.06 (Table 4).

Table 4: Practice of cardiovascular disease prevention in patients with type 2 diabetes

Practice	***Yes***	***No***	***I don't know***
	n (%)	n (%)	n (%)
Do you engage in vigorous aerobic physical activity (such as running, cycling, fast swimming, etc.) for 75 minutes per week.	312 (59.1)	216 (40.9)	-
Do you engage in moderate aerobic physical activity (such as brisk walking, light cycling, dancing, gardening, etc.) for 150 minutes per week.	336 (63.6)	192 (36.4)	-
Do you include sufficient fruits and vegetables in your diet based on the diabetic diet guidelines.	368 (69.7)	160 (30.3)	-
Do you use oil for cooking.	472 (89.4)	56 (10.6)	-
Do you add salt to your food at the table.	264 (50.0)	264 (50.0)	-
Do you currently use tobacco products (such as cigarettes, hookah).	64 (12.1)	464 (87.9)	
Practice Total Score Mean ± Std. Deviation 6.8939 ± 3.05859			

Differences in KAP

Males had significantly higher knowledge (P=0.001) and practice scores (P = 0.001) than females, while attitude scores did not differ significantly (P= 0.36). Age was significantly associated with knowledge (P= 0.001) and practice (p = 0.001), with the 31–40 age group achieving the highest scores. Education level significantly influenced all three domains (P < 0.05), with participants holding a bachelor's degree scoring the highest in knowledge and practice. Longer diabetes duration was associated with lower knowledge scores (P = 0.001), but individuals with over 20 years of diabetes had the highest practice scores (P = 0.001) (Table 5).

Correlations between KAP

Knowledge was positively correlated with attitude (r = 0.194, P < 0.01) and practice (r = 0.281, P < 0.01), indicating that higher knowledge levels were associated with better attitudes and practice. However, a weak negative correlation was observed between attitude and practice (r = -0.126, P < 0.01), suggesting that a positive attitude does not necessarily translate into improved preventive behaviors (Table 6).

Table 5: Comparison of knowledge, attitude, and practice scores on cardiovascular disease prevention in different groups

Variable	*Knowledge Mean ± SD*	*p-value*	*Attitude Mean ± SD*	*P-value*	*Practice Mean ± SD*	*P-value*
Gender						
Male	19.83 ± 2.10	0.000	47.97 ± 5.13	0.36	7.86 ± 2.83	0.000[a]
Female	18.83 ± 2.53		48.31 ± 2.84		6.08 ± 3.00	
Age						
20-30	18.00 ± 4.05	0.000	47.00 ± 5.08	0.11	6.40 ± 2.97	0.000[b]
31-40	20.33 ± 0.96		49.00 ± 0.83		8.66 ± 0.96	
41-50	19.17 ± 2.20		48.58 ± 3.49		5.84 ± 3.26	
51-60	19.42 ± 2.20		47.85 ± 4.99		7.33 ± 2.88	
61-70	20.22 ± 1.03		48.67 ± 1.06		7.22 ± 3.28	
>71	16.00 ± 3.09		47.50 ± 0.51		8.00 ± 0.00	
Marital status						
Married	19.31 ± 2.41	0.12	48.12 ± 4.07	0.19	6.84 ± 3.05	0.04[b]
Widowed	18.00 ± 0.00		50.00 ± 0.00		10.00 ± 0.00	
Occupation						
House Wife	18.83 ± 2.53	0.000	48.31 ± 2.84	0.06	6.08 ± 3.00	0.000[b]
Retired	20.67 ± 3.47		49.33 ± 0.96		10.00 ± 0.00	
Self-employed	19.20 ± 2.26		46.93 ± 7.03		7.33 ± 2.99	
Government employee	20.00 ± 0.00		49.00 ± 0.00		10.00 ± 0.00	
Unemployed	20.40 ± 0.92		48.90 ± 1.22		7.80 ± 2.90	
Student	21 .00 ± 0.00		49.00 ± 0.00		8.00 ± 0.00	
Education						
Illiterate	19.02 ± 2.59	0.01	48.38 ± 2.57	0.000	6.20 ± 2.95	0.000[b]
Primary	19.75 ± 1.97		49.00 ± 1.29		8.00 ± 2.72	
High School	19.67 ± 1.95		48.86 ± 1.18		8.19 ± 3.17	
Bachelor and Higher	20.47 ± 0.50		41.73 ± 12.72		9.86 ± 1.38	

Duration of Diabetes (years)						
<1	20.14 ± 0.99	0.000	48.71 ± 1.03	0.028	7.42 ± 2.57	0.000[b]
1-5	19.71 ± 1.94		48.64 ± 2.33		6.75 ± 3.19	
6-10	19.33 ± 2.38		47.31 ± 6.82		7.48 ± 3.25	
11-15	17.03 ± 3.51		47.49 ± 3.91		5.57 ± 2.92	
16-20	19.48 ± 1.92		48.66 ± 0.89		6.75 ± 1.88	
20>	19.56 ± 0.51		48.22 ± 0.64		8.00 ± 0.00	

Table 6: The relationship between knowledge, attitude, and practice scores on cardiovascular disease prevention.

	Knowledge	***Attitude***	***Practice***
Knowledge	1.000	0.194	0.181
Attitude	0.194	1.000	-0.126
Practice	0.181	-0.126	1.000

Discussion

The findings of this study provide valuable insights into the sociodemographic characteristics, KAP regarding CVD prevention among individuals with diabetes in Kabul. The demographic profile of participants reveals a predominantly middle-aged population, with a high percentage of females and a significant portion being homemakers. Notably, the low educational attainment, with 68.2% of participants being illiterate, underscores the critical need for targeted educational programs aimed at enhancing health literacy. Additionally, the duration of diabetes among participants varied significantly, with 42.4% having diabetes for 1–5 years. The causes of T2D in this population are multifactorial, involving a combination of lifestyle, genetic, and psychosocial factors, including obesity (13), Psychosocial Stress (14), and family history (15). For females, particularly homemakers, factors such as obesity and physical inactivity (16), gestational diabetes (17), and socioeconomic constraints (18) play a significant role. Furthermore, low educational attainment is associated with an increased risk of developing T2D, as studies indicate that individuals with lower education levels often exhibit poorer healthcare utilization and self-care behaviors critical for effective diabetes management. For instance, those with low educational attainment are less likely to engage in regular health check-ups and diabetes self-care practices, leading to poorer health outcomes (19).

The results indicate that while general awareness of CVD risk factors was relatively high, knowledge regarding specific symptoms remained alarmingly low. A majority of participants correctly identified CVD as a leading cause of death (83.3%) and recognized the importance of physical

activity (86.4%) and dietary habits (89.4%) in CVD prevention. However, only 12.1% recognized chest pain as a symptom of a heart attack, and an even smaller proportion (3.0%) identified sudden weakness as a stroke symptom. These findings are consistent with previous studies conducted in low- and middle-income countries, where knowledge gaps regarding CVD symptoms contribute to delays in seeking medical care, thus increasing the risk of severe complications and mortality (20, 21).

The low mean knowledge score (19.29 ± 2.40) further highlights the urgent need for comprehensive public health campaigns aimed at improving awareness of early warning signs of CVD among high-risk populations. Despite the knowledge gaps, attitudes toward CVD prevention were generally positive, with an overwhelming majority of participants (97.0%) recognizing the importance of physical activity, weight control, and salt reduction in maintaining cardiovascular health. However, attitudes toward tobacco use varied, with 95.5% acknowledging its harmful effects while a small percentage remained uncertain. This discrepancy suggests that while awareness of modifiable risk factors is widespread, certain misconceptions or cultural beliefs may persist, potentially influencing preventive behaviors. The mean attitude score of 48.15 ± 4.05 reflects an overall positive perception of CVD prevention strategies, aligning with findings from similar studies where individuals express strong health-conscious attitudes but often struggle to translate them into concrete behavioral changes (22-24).

The findings reveal inconsistencies between positive attitudes and actual preventive practices. While a majority engaged in moderate physical activity (63.6%), participation in vigorous aerobic activities was lower (59.1%). Additionally, 69.7% adhered to recommended dietary habits, yet 50.0% continued to add salt to their food, and 12.1% reported tobacco use. These discrepancies underscore the challenges in converting knowledge and awareness into sustainable lifestyle modifications. The low mean practice score (6.89 ± 3.06) suggests that despite recognizing the importance of preventive measures, participants may face barriers such as lack of motivation, limited access to healthcare resources, or cultural and socioeconomic factors that hinder behavior change. This trend has been observed in another study where knowledge and positive attitudes do not always lead to improved health behaviors, emphasizing the need for structured behavioral interventions and support systems to reinforce healthy practices (25).

The study identified significant differences in knowledge and practice scores based on gender, with males scoring higher than females. This gender disparity may be attributed to differences in health literacy, educational opportunities, and access to healthcare information, as previously reported in studies from similar socio-cultural contexts (26).

Age was also significantly associated with both knowledge and practice, with participants in the 31–40 yr age group demonstrating the highest scores, possibly due to greater exposure to health information and active engagement in preventive care. Education level played a crucial role as well, with higher education levels correlating with better knowledge, attitudes, and practices. These findings reinforce the impact of educational attainment on health-related behaviors and highlight the need for tailored interventions targeting less-educated populations. Interestingly, while longer diabetes duration was linked to lower knowledge scores, individuals with over 20 years of diabetes exhibited the highest practice scores. This paradox suggests that experiential learning over time may enhance self-care behaviors, even in the absence of

formal education. However, the decline in knowledge over time may indicate a lack of continuous health education, highlighting the necessity for ongoing patient education programs to reinforce awareness and prevent misinformation. Correlation analysis revealed a positive but weak correlation between knowledge and attitude, and between knowledge and practice. This suggests that while higher knowledge levels contribute to better attitudes and practices, their influence remains limited. More notably, a weak negative correlation was observed between attitude and practice, indicating that a positive attitude does not necessarily lead to improved preventive behaviors. This finding aligns with previous research highlighting the "knowledge-practice gap," where individuals may understand the importance of preventive measures but struggle to adopt them due to various barriers (27, 28). Addressing this gap requires multifaceted interventions, including behavior modification strategies, policy changes, and community-based support programs to bridge the disconnect between awareness and action.

Implications for Public Health and Future Interventions

The findings of this study have significant public health implications, particularly in resource-limited settings like Kabul. Despite high awareness of general CVD risk factors, the low recognition of symptoms, suboptimal preventive practices, and disparities related to gender and education highlight key areas for intervention. Effective strategies should focus on strengthening health education programs to improve symptom recognition and facilitate early intervention. Additionally, enhancing community-based initiatives that encourage physical activity, healthier dietary choices, and smoking cessation is essential. Addressing social and structural barriers, including gender inequalities in healthcare access, is also crucial. Implementing culturally tailored behavioral interventions can help bridge the gap between attitude and practice. Future research should explore the underlying barriers to behavior change, including economic, psychological, and cultural factors, to design more effective intervention models. Moreover, longitudinal studies would be valuable in assessing the long-term impact of educational and policy interventions on CVD prevention behaviors among diabetic individuals.

Conclusion

This study highlights significant disparities in KAP related to CVD prevention among individuals with type 2 diabetes in Kabul. While awareness of risk factors was relatively high, recognition of symptoms remained low, and preventive behaviors were inconsistent. Gender, age, education, and diabetes duration significantly influenced KAP scores, underscoring the need for targeted health interventions. The weak correlation between attitude and practice further emphasizes the necessity for behavioral support programs that go beyond knowledge dissemination to actively promote lifestyle changes. A holistic, multi-level approach involving education, behavioral strategies, policy changes, and community engagement is essential to improve CVD prevention and overall health outcomes in this high-risk population.

Acknowledgments

The authors express their gratitude to the Kabul University of Medical Sciences and Ministry of Public Health. No financial support was received.

Conflict of Interest

The authors report no conflicts of interest in this work.

Reference

1. Rahaman KS, Majdzadeh R, Holakouie Naieni K, Raza O. Knowledge, attitude and practices (kap) regarding chronic complications of diabetes among patients with type 2 diabetes in dhaka. Int J Endocrinol Metab. 2017;15:e12555.
2. Arvind K, Ruby G, Abrar Ahmad Z, Ranjeet K, Amit S. Prevalence of diabetes in india: A review of idf diabetes atlas 10th edition. Current Diabetes Reviews. 2024;20:105-114.
3. Guariguata L, Whiting DR, Hambleton I, Beagley J, Linnenkamp U, Shaw JE. Global estimates of diabetes prevalence for 2013 and projections for 2035. Diabetes Res Clin Pract. 2014;103:137-149.
4. Xu Z, Feng J, Xing S, Liu Y, Chen Y, Li J, Feng Y. Global trends and spatial drivers of diabetes mellitus mortality, 1990-2019: A systematic geographical analysis. Front Endocrinol (Lausanne). 2024;15:1370489.
5. Siqueira AF, Almeida-Pititto B, Ferreira SR. [cardiovascular disease in diabetes mellitus: Classical and non-classical risk factors]. Arq Bras Endocrinol Metabol. 2007;51:257-267.
6. Leon BM, Maddox TM. Diabetes and cardiovascular disease: Epidemiology, biological mechanisms, treatment recommendations and future research. World J Diabetes. 2015;6:1246-1258.
7. Rivellese AA, Riccardi G, Vaccaro O. Cardiovascular risk in women with diabetes. Nutr Metab Cardiovasc Dis. 2010;20:474-480.
8. Stoner Kc, Fitts En, Gopisetty D, et al. 1477-p: Insights from type 2 diabetes patients suggest need for cardiovascular health education. Diabetes. 2019;68
9. Al-Maskari F, El-Sadig M, Al-Kaabi JM, Afandi B, Nagelkerke N, Yeatts KB. Knowledge, attitude and practices of diabetic patients in the united arab emirates. PLoS One. 2013;8:e52857.
10. Kanwal S, Malik T, Noman M, Rehman A, Riaz M, Abd-ur-Rehman H, Bilal Shah S. A cross-sectional study assessing knowledge attitude and practice of diabetic patients at tertiary care hospitals of twin of pakistan. J App Pharm. 2015;8:2.
11. Dal Canto E, Ceriello A, Rydén L, Ferrini M, Hansen TB, Schnell O, Standl E, Beulens JW. Diabetes as a cardiovascular risk factor: An overview of global trends of macro and micro vascular complications. Eur J Prevent Cardiol. 2020;26:25-32.
12. Koohi F, Amiri P, Mehrabi Y, Karimi M, Khalili D. Development and validation of a knowledge, attitude, and practice questionnaire regarding cardiovascular diseases in an iranian general population. BMC Public Health. 2021;21:2050.
13. Ruze R, Liu T, Zou X, et al. Obesity and type 2 diabetes mellitus: Connections in epidemiology, pathogenesis, and treatments. Front Endocrinol. 2023;14:1161521.
14. Heraclides A, Chandola T, Witte DR, Brunner EJ. Psychosocial stress at work doubles the risk of type 2 diabetes in middle-aged women: Evidence from the whitehall ii study. Diabetes Care. 2009;32:2230-2235.
15. Smith KR, Meeks H, Curtis D, Brown BB, Kole K, Kowaleski-Jones L. Family history of type 2 diabetes and the risk of type 2 diabetes among young and middle-aged adults. Chronic Dis Transl Med . 2025;11:46-56.
16. Leiva AM, Martínez MA, Petermann F, Garrido-Mendez A, Poblete-Valderrama F, Diaz-Martinez X, Celis-Morales C. Risk factors associated with type 2 diabetes in chile. Nutricion Hospitalaria. 2018;35:400-407.
17. Chen P, Wang S, Ji J, et al. Risk factors and management of gestational diabetes. Cell Biochem Biophys. 2015;71:689-694.
18. Silva DMGVd, Hegadoren K, Lasiuk G. The perspectives of brazilian homemakers concerning living with type 2 diabetes mellitus. Revista latino-americana de enfermagem. 2012;20:469-477.
19. Alguwaihes A, Shah BR. Educational attainment is associated with health care utilization and self-care behavior by individuals with diabetes. Age. 2009;65:30.
20. Khan MS, Jafary FH, Faruqui AM, et al. High prevalence of lack of knowledge of symptoms of acute myocardial infarction inpakistan and

its contribution to delayed presentationto the hospital. BMC Public Health. 2007;7:284.
21. Mulure N, Hewadmal H, Khan Z. Assessing barriers to primary prevention of cardiovascular diseases in low and middle-income countries: A systematic review. Cureus. 2024;16
22. Vörös K, Márkus B, Hargittay C, Sisak O, Kalabay L. Perceived cardiovascular risk and attitude towards lifestyle change. Fam Pract. 2018;35:712-717.
23. Wu Y, Deng Y, Zhang Y. Knowledge, attitudes, and behaviors of nursing professionals and students in beijing toward cardiovascular disease risk reduction. Res Nurs Health. 2011;34:228-240.
24. Tindle H, Davis E, Kuller L. Attitudes and cardiovascular disease. Maturitas. 2010;67:108-113.
25. R FA. The relationship between health-related knowledge and attitudes and health risk behaviours among portuguese university students. Glob Health Promot. 2024;31:36-44.
26. Harsch S, Jawid A, Jawid E, Saboga-Nunes L, Sørensen K, Sahrai D, Bittlingmayer U. Health literacy and health behavior among women in ghazni, afghanistan. Front Public Health. 2021; 9: 629334. 2021
27. Kennedy T, Regehr G, Rosenfield J, Roberts SW, Lingard L. Exploring the gap between knowledge and behavior: A qualitative study of clinician action following an educational intervention. Acad Med. 2004;79:386-393.
28. Rimal RN. Closing the knowledge-behavior gap in health promotion: The mediating role of self-efficacy. Health Commun. 2000;12:219-237.