e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(8); 960-966

Original Research Article

Knowledge Attitude and Practice among 6-14 Year Children with Type 1 Diabetes Mellitus: A Cross-Sectional Study in a Tertiary Care Centre in Mandya

Ashwini D.P.[1], Raksha Revanna[2], Sridhar P.V.[3]

[1]Junior Resident, Department of Paediatric, Mandya Institute of Medical Sciences, Mandya, Karnataka, India

[2]Senior Resident , Department of Paediatric, Mandya Institute of Medical Sciences, Mandya, Karnataka, India

[3]Professor and Head of Department, Department of Paediatric, Mandya Institute of Medical Sciences, Mandya, Karnataka, India

Received: 01-05-2026 / Revised: 15-06-2026 / Accepted: 21-07-2026

Corresponding author: Dr. Ashwini D.P.

Conflict of interest: Nil

Abstract:

Background: Type 1 diabetes mellitus (T1DM) is a chronic autoimmune disease requiring lifelong insulin therapy and adequate self-management. Knowledge, attitude and practice (KAP) among children and caregivers play a crucial role in achieving optimal glycaemic control and preventing complications. Objective: To assess the knowledge, attitude and practice regarding T1DM among children aged 6–14 years attending a tertiary care centre in Mandya.

Methods: This hospital-based cross-sectional study included 35 children with T1DM. A pre-tested semi-structured questionnaire assessed socio-demographic characteristics and KAP related to insulin administration, glucose monitoring, diet, exercise and diabetes care. Data were analysed using descriptive statistics.

Results: The mean age was 10.97±3.09 years, with 54.3% males. Eighty percent of participants knew the meaning of diabetes, while only 45.7% were aware of its complications. Most participants demonstrated good practices regarding insulin storage (97.1%), HbA1c monitoring (82.9%) and blood glucose monitoring (80%). However, deficiencies were observed in knowledge of insulin dosing, complications and regular clinic attendance. Significant gender differences were noted in selected KAP domains.

Conclusion: Although basic awareness and several self-care practices were satisfactory, important gaps remain in knowledge and adherence. Structured diabetes education and regular counselling for children and caregivers are essential to improve long-term disease management and reduce diabetes-related complications.

Keywords: Knowledge, Attitude and Practice, 6-14 years, Type 1 Diabetes Mellitus.

DOI: 10.25258/ijcpr.18.8.147

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0) and the Budapest Open Access Initiative (http://www.budapestopenaccessinitiative.org/read), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Type 1 Diabetes is characterized by deficient insulin secretion because of pancreatic β-cell damage and requires daily administration of insulin. Globally there are about 30 million people with type 1 diabetes [1]. Presentation occurs in 2 peak age group 5-7 years and puberty. The classic clinical manifestations of new onset diabetes in children reflect the hyperglycemic and catabolic physiologic state and include polyuria, polydipsia, polyphagia, and weight loss. Other common symptoms include fatigue, weakness, and a general feeling of malaise [2].

Individuals with T1DM confront serious life style alterations, including an absolute daily requirement for exogenous insulin, the need to monitor their own glucose level and need to pay attention to dietary intake [2]

Adherence, a critical component in the treatment of chronic diseases like diabetes, is the extent to which patients' activities such as taking medication or changing the lifestyle coincides with medical advice. If the patient understands the pathophysiology of diabetes and the process involved in the management and treatment of diabetes, his degree of compliance will improve leading to better glycemic control3

Type 1 diabetes often develops among young people who rarely have the skills, knowledge and self-efficacy to properly manage their condition.

Knowledge, attitude and practices make significant differences at the population level. Effective self-management reduces the risk of both micro and macrovascular complications that cause damage to eyes, kidneys, feet and cardiovascular system [4,5] Long term treatment of type 1 diabetes mellitus requires adequate knowledge, attitude, and practices regarding insulin administration, insulin dose adjustment, meal timing, physical activity, hypoglycemia management and proper sick day management [6].

Awareness and right approach to diabetes can significantly reduce the morbidity and mortality and can cut down the burden of health care cost among diabetes patients

Objectives: To describe the knowledge, attitude and practice towards Type 1 Diabetes Mellitus among 6 to 14 year old patients and their care givers.

Methodology

Study Design: Cross-Sectional.

Study Period: 6 months after the approval of the IEC-MIMS.

Study Population: Type 1 Diabetes Mellitus patients aged 6 to 14 years admitting to MIMS, Mandya.

Sample Size: 35.

Sampling Method: Convenience sampling.

$n= Z^2_{1-\alpha/2}pq/ l^2$

Z1-α/2 = 1.96 standard normal variable

P=83% knowledge about insulin[9]

Q=100- P = 100-83 = 17

L = 15% of P = 12.45

n = 1.96×1.96×83×17 / 12.45×12.45

= 34.97 ≈35

Sampling Method: Convenience sampling

$n= Z^2_{1-\alpha/2}pq/ l^2$

Z1-α/2 = 1.96 standard normal variable

P=83% knowledge about insulin[3]

Q=100- P = 100-83 = 17

L = 15% of P = 12.45

n = 1.96×1.96×83×17 / 12.45×12.45

= 34.97 ≈35

Inclusion Criteria:

- Type 1 Diabetes Mellitus patients aged 6 to 14 years
- Patients willing to give informed assent to participate in the study and their parent / guardian willing to give informed consent for the child to participate in the study.

Exclusion Criteria: Nil.

Method of Data Collection (study tools): The present study is a hospital based cross-sectional study with 40 children with type 1 DM from age 6 years to 14 years admitted to MIMS Mandya. Patients satisfying inclusion criteria will be subjected to detailed history and clinical examination after obtaining informed and written assent from the patient/parent or guardian. A pre-tested semi-structured proforma was used to collect data about the knowledge attitude and practice regarding type 1 diabetes from participants and their care givers by interview method,The proforma shall have 4 parts. The first part shall collect socio-demographic details. The second part shall collect details regarding their knowledge of various aspects of type 1 diabetes. The third part shall collect information regarding their attitude towards the various aspects of type 1 diabetes. The fourth part shall collect details regarding their diagnosis, treatment, compliance, etc. other details like results of RBS, HbA_1C measurements shall be noted from case sheet.

Statistical Analysis: The collected data will be entered in Microsoft excel and analysed using open epi 3.01, Descriptive statistics like frequency and proportion will be used for categorical data,

Mean and standard deviation will be used for quantitative data. Statistical significance will be considered if $p < 0.05$.

Results

The patients mean age was 10.97+/-3.09 years. Total patients evaluated were 35 among them 16 were female and 19 were male. 13 were in higher primary school and 22 were in high school as shown in table 1.

Regarding knowledge about diabetes 80% knew what the meaning of diabetes 65.71% knew about symptoms of DM. half of them knew about complications of DM.

Half had good knowledge about timing of taking insulin and half needed proper counseling regarding the same. Majority around 62.9% knew about the consequences if insulin is used in lesser doses. Most of them knew the rotation of the injection site as shown in table 2.

Regarding attitude most of the 74.3% knew DM was a lifelong disease, and many of them 71.4% felt insulin is not a safe drug and its overdose can cause hypoglycemia. Majority were well aware

that a good diet with proper use of insulin will help to lead a healthy and productive life. Majority 74.3% wanted to know more about DM through media and internet and many of them tried searching as shown in table2. Coming to practice most of the 97.1% knew how to store insulin in home and only 1 person needed counseling proper storage.

Table 1: Distribution of cases according to Demographic variables of the study subjects

Demographic variables of the study subjects		Frequency	Percent
Gender	Female	16	45.7
	Male	19	54.3
Age category	5 to 7 years	4	11.4
	8 to 10 years	13	37.1
	11 to 14 years	18	51.4
Educational status	6^{th}	4	11.4
	7^{th}	9	25.7
	8^{th}	10	28.6
	9^{th}	12	34.3

More 60% were reluctant to attend the DM clinic and thought the same insulin dose can be used and felt no need of attending DM clinic.

Majority 88.6% used to buy insulin in advance before it gets over and 4 told they used to buy after insulin gets empty. 82.9% used to get HBA1C check-up regularly as per doctors order and remaining were defaulters. 80% used to do daily GRBS monitoring as per treating doctor's order and remaining used to check weekly once or monthly twice. 74.3% used to do regular exercise remaining didn't have knowledge that exercise will help in DM and needed counseling. Most of them used to avoid simple sugar in daily life. Most 74.3% were missing insulin doses very often as shown in table 2.

Table 2: Distribution of cases according to knowledge, attitude and practice of the study subjects (n=35):

Knowledge	**Correct Response**	**Incorrect Response**
What is diabetes	28 (80.0%)	7 (20%)
Symptoms of DM	23 (65.71%)	12 (34.29%)
Complications of DM	16 (45.71%)	19 (54.29%)
Consequences of too much insulin	17 (48.57%)	18 (51.43%)
Timing of Insulin dose	17 (48.57%)	18 (51.43%)
Consequences of too little insulin	22 (62.9%)	13 (37.14%)
Rotation of injection site	28 (80.0%)	7 (20%)
Attitude	**Positive Attitude**	**Negative Attitude**
DM is lifelong disease	26 (74.3%)	9 (25.71%)
Insulin is not a safe drug	25 (71.4%)	10 (28.57%)
Diet with insulin	33 (94.3%)	2 (5.71%)
Inclination to learn about DM from media	26 (74.3%)	9 (25.71%)
Practice	**Correct Practice**	**Incorrect Practice**
Storage of insulin at home	34 (97.1%)	1 (2.86%)
Frequency of Attending DM clinic	14 (40.0%)	21 (60%)
Buy insulin from chemist if insulin gets over	31 (88.6%)	4 (11.43%)
Frequency of HbA1c check up	29 (82.9%)	6 (17.14%)
GRBS monitoring	28 (80.0%)	7 (20%)
Does exercise	26 (74.3%)	9 (25.71%)
Avoiding extra sugars intake	31 (88.6%)	4 (11.43%)
Missing insulin doses	26 (74.3%)	9 (25.71%)

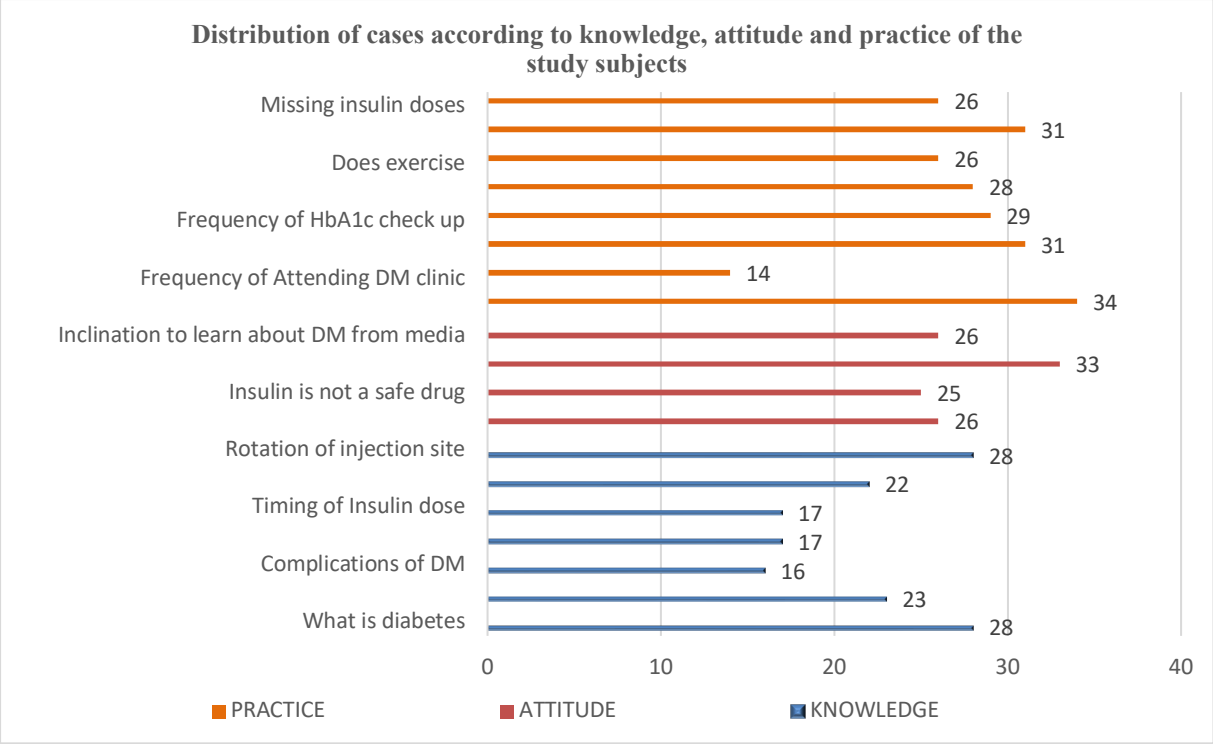

Figure 1: Distribution of cases according to knowledge, attitude and practice of the study subjects

Among males and females, males had good knowledge about DM, its complication and consequence of too little insulin in P value was significant and in the remaining part of knowledge questions both had equal education. In the attitude section more females thought insulin is not safe and male had more inclination to know more about DM from media then females. And practice section males used to visit more frequently to DM clinics the females probably had gender bias from parents in India male children's are more cared than females, male children's were more frequently monitored by HBA1C and GRBS then female children probably for the same reason. And female children used to miss insulin more frequently than males as shown in table 3.

Table 3: Distribution of cases according to knowledge, attitude and practice of the study subjects with respect to gender:

KNOWLEDGE	**Male (n=19)**	**Female (n=16)**	**Total (n=35)**	**P value**
What is diabetes	18 (94.7%)	10 (62.5%)	28 (80.0%)	**0.017**
Symptoms of DM	14 (73.7%)	9 (56.3%)	23 (65.71%)	0.279
Complications of DM	12 (63.2%)	4 (25.0%)	16 (45.71%)	**0.023**
Consequences of too much insulin	10 (52.6%)	7 (43.7%)	17 (48.57%)	0.600
Timing of Insulin dose	9 (47.4%)	8 (50.0%)	17 (48.57%)	0.876
Consequences of too little insulin	9 (47.4%)	13 (81.2%)	22 (62.9%)	**0.038**
Rotation of injection site	15 (78.9%)	13 (81.2%)	28 (80.0%)	0.865
Attitude				
DM is lifelong disease	12 (63.2%)	14 (87.5%)	26 (74.3%)	0.100
Insulin is not a safe drug	10 (52.6%)	15 (93.8%)	25 (71.4%)	**0.007**
Diet with insulin	18 (94.7%)	15 (93.8%)	33 (94.3%)	0.900
Inclination to learn about DM from media	16 (84.2%)	10 (62.5%)	26 (74.3%)	**0.025**
Practice				
Storage of insulin at home	18 (94.7%)	16 (100.0%)	34 (97.1%)	0.351
Frequency of Attending DM clinic	11 (57.9%)	3 (18.8%)	14 (40.0%)	**0.018**
Buy insulin from chemist if insulin gets over	16 (84.2%)	15 (93.8%)	31 (88.6%)	0.376
Frequency of HbA1c check up	18 (94.7%)	11 (68.9%)	29 (82.9%)	**0.042**
GRBS monitoring	18 (94.7%)	10 (62.5%)	28 (80.0%)	**0.017**
Does exercise	12 (63.2%)	14 (%)	26 (74.3%)	0.100
Avoiding extra sugars intake	16 (84.2%)	15 (93.8%)	31 (88.6%)	0.376
Missing insulin doses	11 (68.9%)	15 (93.8%)	26 (74.3%)	**0.015**

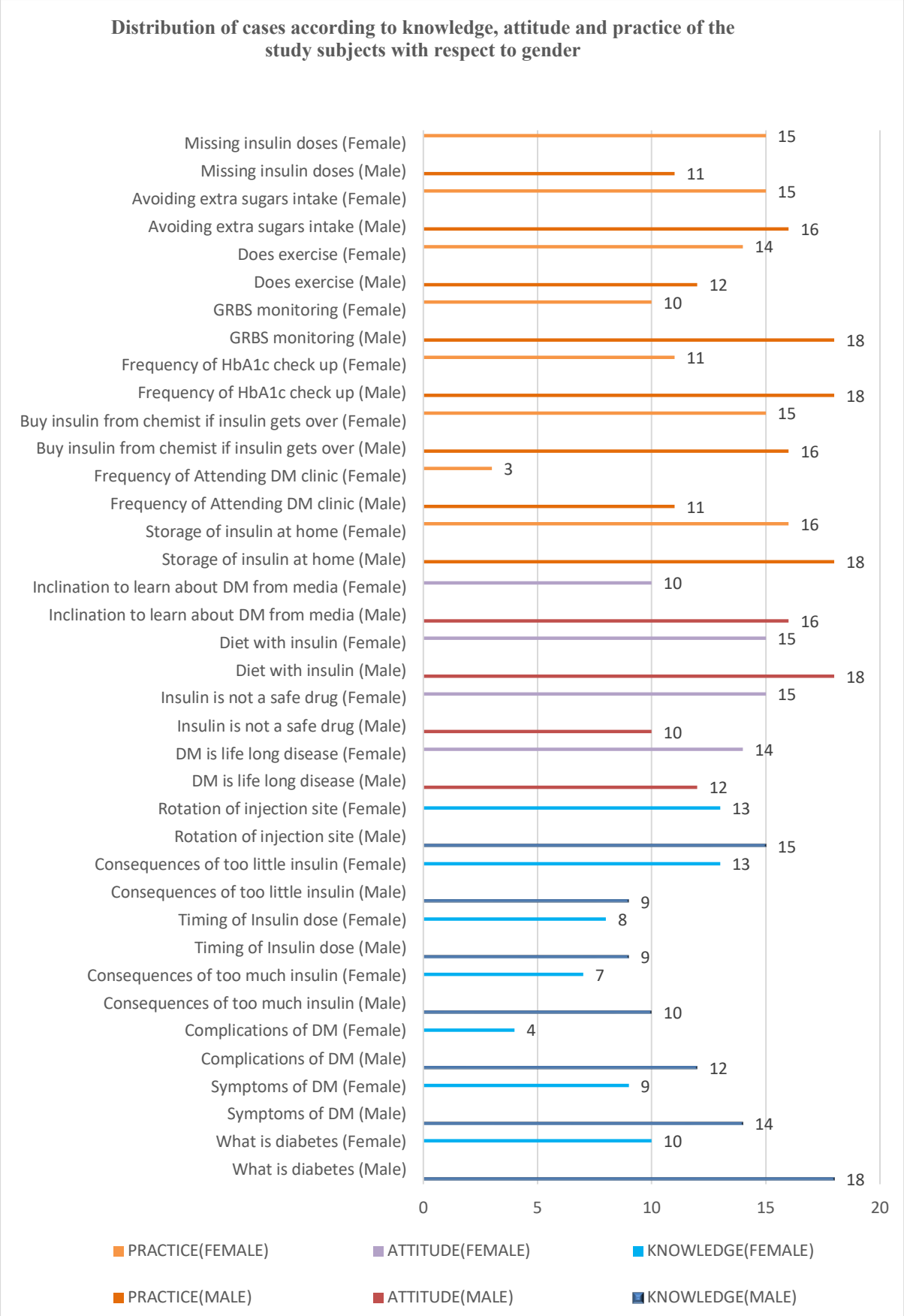

Figure 2: Distribution of cases according to knowledge, attitude and practice of the study subjects with respect to gender

Discussion

Knowledge, attitude and practice (KAP) regarding diabetes vary greatly depending on socioeconomic conditions, cultural beliefs and habits. Understanding these variables is important in designing prevention and management strategies for diabetes. The findings of the present study reassert the gaps in knowledge, attitude and practice regarding DM. in type 1 DM Made with Xodo PDF Reader and Editor knowing about proper insulin dose, site for taking insulin and proper method and rotation of site is very important and knowing about possible complications and how to tackle them plays a key role and in our study half the lacking these knowledge and need proper counseling and proper education. Most of them knew what DM is but they were lacking knowledge regarding insulin and DM complications. In our study most of them knew DM being a chronic condition and need of control over diet and we saw males had a better attitude regarding diet control and insulin effect of DM and had more interest in knowing DM from media than females. In our survey we felt most knew about proper storage of insulin and they were in regular monitoring with HBA1C and GRBS, male more than females. Most were regularly working out and avoiding sugar.

Several studies have reported that knowledge about diabetes is generally poor among diabetic patients [8, 10,11,12,13]. It is therefore evident that the difference in the knowledge levels among all participants is directly related to the level of literacy, level of training received and availability of information on diabetes [14]. One possible reason for failure to answer questions correctly may reflect not just poor knowledge but also substantial misconceptions surrounding issues like incurability of diabetes, the use of sweets by diabetics and the high cost of medicine. It should be noted that we observed a gender gap in knowledge, attitude and practice regarding diabetes. There are inequalities in education, health services and in all other spheres of life, with the literacy level of females lower than that of their male counterparts. Males showed significantly higher levels of knowledge. The findings show similarities with those from studies of various countries, including Bangladesh [7,8,9] where a wide gender gap was evident in knowledge, attitude and practice regarding diabetes [15].

Conclusion

We feel the in india still we need proper counseling and education among patients with type 1 DM in relation to what is DM, importance of insulin in type 1 DM , its proper usage , possible complications of DM and how to tackle them , importance of exercise , diet control. There are so many misconceptions in india and cultural beliefs which are causing hindrance in proper management of DM. media should be used properly in educating people and law and administration should put some restriction over some malpractices and educate people properly. and government should made all type of insulins are available in government hospital or at reasonable price. More reserech should happen with regard to insulin

References

1. World health Organization. Diabetes. (Internet). Available at https://www.who.int/health-topics/diabetes#tab=tab_1A. Accessed on 24 June 2024.
2. Kliegman R M. Nelson Textbook of Pediatrics. 21 sted. Philadelphia: Elsevier, 2020: 3022-3024.
3. Vimalavathini R, Agarwal SM, Gitanjali B. Educational program for patients with type-1 diabetes mellitus receiving free monthly supplies of insulin improves knowledge and attitude, but not adherence. Int J Diabetes Dev Ctries. 2008 Jul;28(3):86-90.
4. Owusu BA, Ofori-Boateng P, Forbes A, Doku DT. Knowledge of young people living with type 1 diabetes and their caregivers about its management. Nursing Open. 2022 Nov 30; 10 (1)6-13.
5. Akter F, Rashid SMM, Alam N, Lipi N, Qayum MdO, Nurunnahar M, et al. Knowledge, attitude and practice of diabetes among secondary school-going children in Bangladesh. Frontiers in Public Health. 2022 Nov 17;10 (1): 8-15
6. Tejaswi P. Dhakre S, Reddy P, Goyal C. Evaluation of the knowledge, attitudes and practices of diabetic patients in a tertiary care hospital in Central India. International Journal of Medical Research and Review. 2018 Jan 31;6(1):24-32.
7. Farzana S, Mumu SJ, Ferdous A, Liaquat A, Sharmin H, Ahmed KR. Knowledge, attitude and practice of type 2 diabetic patients regarding obesity: study in a tertiary care hospital in Bangladesh. J Public Health Africa. 2012;3:1.
8. 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(1):e52857.
9. Islam FMA, Chakrabarti R, Dirani M, Islam MT, Ormsby G, Wahab M, Critchley C, Finger RP. Knowledge, attitudes and practice of diabetes in rural Bangladesh: the Bangladesh population based diabetes and eye study (BPDES). PLoS One. 2014;9(10):e110368.
10. Kamel N, Badawy Y, El Zeiny NA, Merdan I: Sociodemographic determinants of managem

ent behaviour of diabetic patients. Part II. Diabetics' knowledge of the disease and their management behaviour. 1999.
11. Al-Adsani A, Moussa M, Al-Jasem L, Abdella N, Al-Hamad N. The level and determinants of diabetes knowledge in Kuwaiti adults with type 2 diabetes. Diabetes Metab. 2009;35(2): 121–8.
12. He X, Wharrad H. Diabetes knowledge and gly cemic control among Chinese people with type 2 d iabetes. Int Nurs Rev. 2007;54(3):280–7.
13. Shah VN, Kamdar P, Shah N. Assessing the knowledge, attitudes and practice of type 2 diabetes among patients of Saurashtra region, Gujarat. Int J Diab Developing Countries. 2009; 29(3):118.
14. Upadhyay DK, Palaian S, Shankar PR, Mishra P, Pokhara N. Knowledge, attitude and practice about diabetes among diabetes patients in western Nepal. Rawal Med J. 2008; 33(1):8–11.
15. Brown SA, Harrist RB, Villagomez ET, Segura M, Barton SA, Hanis CL. Gender and treatment differences in knowledge, health beliefs, and metabolic control in Mexican Americans with type 2 diabetes. Diabetes Educator. 2000;26(3):425–38.