Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2259 - 2273
Received 31 May 2021; Accepted 15 December 2021

Assessment of Knowledge, Attitudes, and Practices of Primary Care Physicians in Makkah 2021 at Saudi Arabia toward Management of Type 2 DM in RAMADAN

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Abstract:

Background: Low knowledge about diabetes coupled with high disease prevalence is common in low-resource countries. This study evaluated diabetes-related knowledge, attitudes, and practices in of primary care physicians in Makkah toward management of Type 2 DM in RAMADAN

More than two-thirds (70%) of patients with diabetes mellitus (DM) reside in lower middle-income countries. The prevalence of DM is common in SA so there is a need to explore' awareness of DM in the primary care physicians in Makkah toward management of Type 2, Also, it is one of the top ten chronic conditions that can lead to mortality universally . Furthermore, diabetes has been shown to be a major risk factor for cardiovascular diseases, high blood pressure, stroke, amputations, as well as pregnancy complications. Although the real cause for diabetes is still unclear, many risk factors and lifestyle modifications have been
examined and demonstrated.

Aim of the study: To assess the Knowledge, attitudes, and practices of primary care physicians in Makkah at Saudi Arabia 2021toward management of Type 2 DM in RAMADAN

Method: cross sectional study conducted among primary care physicians in Makkah, during the July to October 2021, the Sample size of diabetic primary care physicians our total participants

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2259 - 2273
Received 31 May 2021; Accepted 15 December 2021

were (200) to assess the KTP, of primary care physicians in Makkah toward management of Type 2 DM in RAMADAN.

Result Regarding Knowledge, attitudes, and practices of the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Knowledge average information were(53.0%) the $X^2$50.68 a significant relation were p-value =0.001 Regarding Practices the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Practices average information were(44.0%) the X^2 13.24 a significant relation were p-value =0.001

Conclusion: This review highlights the need for increased awareness and knowledge of diabetes mellitus among diabetic Type 2 DM in RAMADAN in Makkah the primary care physicians awareness about the primary prevention strategies for T2DM in RAMADAN should be a public health priority in KSA.

Keywords: Knowledge, attitudes, practices, physicians, Makkah management, Type 2 DM, RAMADAN

Introduction:

Low knowledge about diabetes coupled with high disease prevalence is common in low-resource countries. This study evaluated diabetes-related knowledge, attitudes, and practices in of primary care physicians in Makkah toward management of Type 2 DM in RAMADAN

More than two-thirds (70%) of patients with diabetes mellitus (DM) reside in lower middle-income countries [1]

The prevalence of DM is common in SA, so there is a need to explore' awareness of DM in the primary care physicians in Makkah toward management of Type 2. So that policymakers can devise policies to educate the young generation. We aimed to investigate knowledge, attitudes, and practices regarding DM among primary care physicians.[2]

The prevalence of diabetes in various regions has attracted significant attention of the medical experts. The prevalence of diabetes is expected to increase in the future due to changes in lifestyle and unhealthy diets of individuals in KSA.[3] More than two-thirds (70%) of patients with diabetes mellitus (DM) reside in lower middle-income countries [4] In the medical services space, the most multiplied illness perceived over the world is diabetes. This is obvious from the expanded revealing of diabetes illness which is relied upon to arrive at a figure of 366 million [5] and expected to turn into the seventh driving reason for death by 2030 [6]. In 2014 alone, its worldwide commonness was accounted for to be 8.5 percent [2]

Diabetes is a metabolic disease that its main manifestation is chronic hyperglycemia which leads to further complications and damage to various organs of human body. Primary goal of diabetes treatment is maintain blood glucose levels close to normal range [1]. In the past three decades, despite considerable advances in treatment modalities of diabetes, it has been shown considerable gaps between patients 'outcome and acceptable treatment in developed and also in developing countries. Different reasons are proposed in failure to achieve therapeutic goals such as poor adherence to treatment regimens by patients or malpractice by physicians [7] Diabetes mellitus (DM) is one of the most common chronic diseases. [1,2] Type 2 diabetes mellitus (T1DM) is the most common autoimmune endocrine disorder in the adult with increasing incidence worldwide that varies according to race, country, and region. [3, 4] In the last decades, several studies reported a significant increase in T2DM cases in adult up to old years .[8-9] An Australian randomized

controlled trial suggested that incorrect knowledge about DM risk factors and motivation to make lifestyle changes were significantly associated with diet modifications and exercise habits. That study also reported a strong association between lifestyle modifications and reduction in waist circumference, body mass index, and blood glucose level (BGL) [10]. However, these factors still remain challenges for developing countries including Pakistan. In 2004, Pakistan formed a national action plan to prevent non-communicable diseases (NCD). The main agenda in terms of DM was construction of a population-based NCD surveillance system and integrated public health program. This aimed to integrate DM prevention and ensure availability of anti-diabetics at all levels of healthcare [11].

Literature Review

The results of one study in the US showed that physicians' knowledge in the treatment of diabetes was not enough and knowledge level of different medical groups such as general practitioners, specialists, internal medicine residents and medical students had significant differences with each other[12,13] .

According to Diabetes Atlas published by the International Diabetes Federation (IDF), India was home to 62.4million diabetics in the year 2011 and the incidence is on a continuous rise and this number is predicted to rise to almost70 million people by 2025. The countries with the largest number of diabetic people will be in India, China and USA by 2030. It is estimated that every fifth person with diabetes will be an Indian. While the ICMR study reported that the prevalence was 2.1 per cent in urban and 1.5 per cent in rural areas. [14]

In UK was also seen that physicians' knowledge about starting insulin therapy in type 2 diabetes, patients' treatment with diet and insulin treatment during an acute illness was not enough. So, suggested that knowledge deficiency decreases by developing appropriate educational programs for physicians, especially those who graduated years before.[15,16]

Another study conducted in rural Northwest of Pakistan regarding knowledge of diabetes among patients showed that high proportion of males have better understanding of diabetes symptoms, signs and complication as compared to females and gender difference was not significant when question about suitable diet was asked for.[17] Another study also showed that overall males were found more aware about diabetes mellitus, healthy diet and life style modification like practicing regular exercise.[18] Another showed that the mean score of diabetic knowledge was higher in male than female[19]

A recent study mentioned that DM could be effectively managed and controlled by early screening and abandoning sedentary routine. Adopting healthy lifestyles can be very useful in avoiding all the complications of this avertable disease.[20]

In a study from Singapore demonstrated that diabetic education had changed the practice among diabetics towards self-care. Another study showed that education had a significant role in diabetic awareness to keep correct blood glucose level.[15] These findings are consistent with other studies.[21] Virtually, there are no epidemiological studies in Bangladesh assessing the level of diabetic education and knowledge both in diabetic and non-diabetic population.

In a study,[22] revealed similar trends of having poor knowledge regarding CVD in KAU students.[22] In a recent survey, Alqahtani et al (2020) in Riyadh, KSA, revealed better knowledge scores among the adult population regarding DM.[23] Alenazi et al (2020) mentioned relatively better (62.6%) knowledge scores in young school children regarding DM.[24] Another study from

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 7, 2021, Pages. 2259 - 2273
Received 31 May 2021; Accepted 15 December 2021

KSA regarding awareness about DM's risk factors reported that almost 50% of the study participants did not have up to the mark knowledge regarding DM.[25,26]

In a study in Pakistan, it has been shown that urban people are knowledgeable than the people residing in the rural area and they suggested the urgent need of diabetic education in the rural area.[27] Of the African rural patient population, 52.2% had lower awareness of blood glucose compared to 47.5% of the African urban dwellers.[28]

2.1 Rationale

The month of Ramadan is one of the months that people wait with longing for fasting, but some precautions must be taken for patients with type 2 Diabetes mellitus. DM is a life-long disorder which can be treated by a complex regimen of insulin injections, diet and exercise, and which greatly affects the life of patients and their families. Diabetes patients may find it difficult to find medical and social support at the environment from families, primary care physicians, staff, and other people. Consequently, this study will add significantly to the limited the knowledge, attitudes, and practices toward management of Type 2 DM in RAMADAN in the patients visiting the Diabetic Center. Prevention and health promotion is one of the cornerstones in our practice, thus investing in knowledge, attitudes, and practices toward management of Type 2 DM

2.2Aim of the study:

To assess the Knowledge, attitudes, and practices of primary care physicians in Makkah toward management of Type 2 DM in RAMADAN

2.3 Objectives:

To assess the level of Knowledge, attitudes, and practices of primary care physicians toward management of Type 2 DM in RAMADAN among patients visiting the Diabetic Centerat the western sector in Makkah city.

3. Methodology:

3.1 Study design:

This study is a cross sectional descriptive study

3.2 Study Area

The study will be carried out in the city of Makkah Al-Mokarramah Makkah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. It is located in the western area in Kingdom of Saudi Arabia and called the Holy Capital. Contains a population around 2.578 million. The city has seven Leader of PHC divided into three inners and four outer. Each leders consists of a group of Primary Health Care Centers. The researcher has be conducted at ALsulmaniah center primary care in Makkah Mokarramah.

3.3 Study Population

The study will be conducted among AL sulmaniah center primary care in Makkah Mokarramah. During the April to June, 2021 the period of study in 2021

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3.4 Selection criteria:

3.4.1 Inclusion criteria

- At AL sulmaniah center primary care .
- All nationalities

3.4.2 Exclusion criteria :

- No specific exclusion criteria.

3.5 Sample size

All the physicians' in the primary care diabetic Center at AL-Eskan PHC and the Diabetic Center in Makkah Mokarramah around . The sample size has be calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly the Sample size is(130) of physicians' in the primary care diabetic and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has be **(200).** Computer generated simple random sampling technique was used to select the study participants.

Sampling technique:

Systematic random sampling technique is adopted. After that, by using random number generator, then simple random sampling technique was applied to select the PHC. Also, convenience sampling technique will be utilized to select the participants in the study. By using systematic sampling random as dividing the total population by the required sample size; **(200).**

Data collection tool

The self-administered questionnaire is designed based on previous studies and frameworks to assess Knowledge, attitudes, and practices of primary care physicians in Makkah toward management of Type 2 DM in RAMADAN. The questionnaire was developed in English. The questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take ∼10 min to complete .

To collect the information, a set of questions were constructed and developed. All questions were closed-ended, with tick boxes provided for responses; participants answered the questionnaires from the April to June, 2021 the period of study in 2021.

The questionnaire consisted of questions that

First part General and Socio demographic information. These variables included contact data (email or mobile phone number), age, date, city of birth, and smoking (yes/no). Other variables were education level, employment status, income, marital status, parental status, and number of children, and area of residence.

A questionnaire was developed that had (7) Socio demographic data and (14) questions related to knowledge, (10) attitudes, and (15) practices, respectively. The two senior faculty members checked the questionnaire's validity and comprehension, and it was revised according to their suggestions. A pilot study was conducted on 20 primary care physicians to check the

questionnaire's understanding and responses further, and its Cronbach's alpha was 0.75. The results of the pilot study were not included in the final analysis.
The scoring of the knowledge questions was done as ≤ 50% score = poor knowledge (1 – 21 score), 50% −75% score= moderate knowledge (22 – 33 score), >75% score= good knowledge (34–43). For the attitude scoring was done as correct answer = 1 score, incorrect (No) = minus score, unsure= 0 score. Plus score was considered positive, while 0 or minus score was considered negative. The practice questions were coded as correct (yes) answer = 1 score, incorrect (No) = zero score, unsure= 0 score and >50% score was considered adequate.

Data collection technique:

Researcher has be visits the selected AL sulmaniah center primary care after getting the approval from the ministry of health. The researcher has be obtained permission from primary health care director and participants.

After the arrival of the participants to the AL sulmaniah center primary care , they should go to the reception first to register and ensure the presence of the center's card, the researcher will be select participants conveniently until the target number achieves and gives the questionnaire for answering. She will be explained the purpose of the study to all participants attending the clinic.

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 will be used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using Chi-Square tests ($\chi 2$) to test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 will be considered statistically significant.

Pilot study

A pilot study will be conducted in one PHC in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire will be clear and no defect will be detected in the methodology

Ethical considerations

Permission from the Makkah joint program of family medicine will be obtained. Permission from the Directorate of Health Affairs of the Holy Capital Primary Health Care will be obtained. Verbal consents from all participants in the questionnaire were obtained. All information was kept confidential, and results will be submitted to the department as feedback .

Budget: Self-funded

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Results

Table 1 Distribution of demographic data(age, gender, Level of education, economic level, Sources of information) in our study(n=200)

	N	%
Age		
20-30	56	28
30-40	66	33
>40	78	39
Gender		
Female	108	54
Male	92	46
Department		
Clinics	42	21
Critical Care Area	36	18
Emergence department	50	25
Medical	22	11
Obstetrics and Gynecologic	16	8
Pediatric	24	12
Surgical	10	5
Clinical experiences		
less than one year	30	15
1-5 years	46	23
5-10 years	88	44
more than 10 years	36	18
Level of education		
High education	64	32
university	50	25
Postgraduate Studies	86	43
Economic level		
Low	38	19
Average	102	51
High	60	30
The main sources of information about DM cited by physicians		
Booklets and brochures	26	13
Mass media	44	22
Own personal experience	70	35
Educational films	50	25
Medical and clinical study	66	33

Table 1 shows that most of the participants (39.0%) were in the age group > 40 years the majority of them were female (54.0%) while male (46.0%), also regarding Department the majority of participant are Emergence department were(25.0%) while Clinical experiences the majority of participant 5-10 years were (44.0%).

Regarding the Level of education the majority of participant Postgraduate Studies were (43.0%).regarding the economic level the majority of participant average economic level were(51.0%). While sources of information most of participants from Own personal experience were (35.0%)

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Table 2 Distribution of the knowledge toward management of Type 2 DM in RAMADAN

	true		false		Chi-square	
	N	%	N	%	X^2	P-value
DM leads to polyuria in diabetic patients:	156	78	44	22	62.720	<0.001*
DM leads to polydepsia in diabetic patients	138	69	62	31	28.880	<0.001*
DM leads to fatigue and lack of concentration in diabetic patients in Ramadan:	170	85	30	15	98.000	<0.001*
DM leads to loss of weight in diabetic patients:	150	75	50	25	50.000	<0.001*
Type I DM is treated with insulin:	154	77	46	23	58.320	<0.001*
Tremors and sweating means hypoglycemia in diabetic Patient in Ramadan:	136	68	64	32	25.920	<0.001*
The diabetic Patient should take Sweets before start the fast :	116	58	84	42	5.120	<0.001*
The diabetic Patient should take sweets or juices before physical activity class and the activity class start after breakfast	176	88	24	12	115.520	<0.001*
Glucose is essential for the brain to function in particular Ramadan.	146	73	54	27	42.320	<0.001*
A major concern for the Patient with diabetes is the likelihood of developing in particular Ramadan	132	66	68	34	20.480	<0.001*
A sign of high glucose in a Patient with diabetes may be in particular Ramadan	158	79	42	21	67.280	<0.001*
Glucagon is	122	61	78	39	9.680	<0.001*

Table 2 shows all item of knowledge toward management of Type 2 DM in RAMADAN the majority answer true were respectively (78, 69, 85, 75, 77, 68, 58, 88, 73, 66, 79, 61%) while respectively the X^2 (62.720,28.880, 98.000, 50.000, 58.320, 25.920, 5.120, 115.520, 42.320, 20.480,67.280, 9.680)and a significant relation between Knowledge were p-value =0.001 respectively (<0.001).

Table 3 Distribution of the practices toward management of Type 2 DM in RAMADAN

practices	Done		Not done		Chi-square	
	N	%	N	%	X^2	P-value
1.Trying to have competency in using glucometer	170	85	30	15	98.000	0.000
2.Allowing Patient to use restroom more than once time	90	45	110	55	2.000	0.157
3.Permission for the Patient to perform self-injection of insulin in the home	152	76	48	24	54.080	0.000
4. Helping diabetic Patient in making decisions in particular Ramadan	178	89	22	11	121.680	0.000
5.Trying to have competency in insulin injection in particular Ramadan	184	92	16	8	141.120	0.000
6.Discussing Patient about condition at the	174	87	26	13	109.520	0.000

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beginning of in particular Ramadan						
7.Preventing diabetic Patient from eating sweets at home in particular Ramadan	192	96	8	4	169.280	0.000
8. Permission for the Patient to eat his meal and snack anywhere, including al tarwah prayer and physical activity	166	83	34	17	87.120	0.000
9.Asking Patient for availability of sugar free foods	196	98	4	2	184.320	0.000
10.Talking about DM with diabetic Patient and all friends in particular Ramadan	158	79	42	21	67.280	0.000
11. In the event that the patient feels Dizziness or he should initiate breakfast in particular Ramadan	172	86	28	14	103.680	0.000
12.Getting emergencies help immediately if diabetic Patient loses his consciousness in particular Ramadan	156	78	44	22	62.720	0.000
13.Making a list for diabetic Patient medications & times of administration in particular Ramadan	176	88	24	12	115.520	0.000
14.Developing an emergency action plan if problems with hypoglycemic reaction in particular Ramadan	146	73	54	27	42.320	0.000
15.Knowing meal &snacks schedule and remind the Patient to take snack at time in particular Ramadan	172	86	28	14	103.680	0.000

Table 3 shows all item of practices toward management of Type 2 DM in RAMADAN the most of participant answer done were respectively (85,76,89,92,87,96,83,98,79, 86, 78,88,73,86%) while respectively the X^2 (98.000,54.080,121.680,141.120,109.520,169.280,87.120,184.320,67.280,103.680, 62.720,115.520,42.320,103.680)and a significant relation between practices were p-value =0.001 respectively (<0.001). except the Allowing Patient to use restroom more than once time the most of participant answer not done were (55.0%) the X2 2.000 no significant relation between practices were p-value =0.001

Table 4 Distribution of the Attitude toward management of Type 2 DM in RAMADAN

Attitude	**Agree**		**Neutral**		**Disagree**		**% of agreement**	**Chi-square**	
	N	**%**	**N**	**%**	**N**	**%**		**X^2**	**P-value**
1. diabetic Patient shouldn't be treated the same as other peers as they deserve special attention in particular Ramadan	152	76	24	12	24	12	88.00	163.840	0.000
2. Sometimes patients with DM pretend ill to win their	84	42	64	32	52	26	72.00	7.840	0.020

sympathy in particular Ramadan									
3. providing diabetes care to a patients is not their responsibility but a family responsibility in particular Ramadan	40	20	66	33	94	47	57.67	21.880	0.000
4. physicians have a role in gathering information updating their knowledge about DM in particular Ramadan	152	76	24	12	24	12	88.00	163.840	0.000
5. physicians should educate patients about DM and its prevention in particular Ramadan	164	82	16	8	20	10	90.67	213.280	0.000
6. physicians should counsel and advising diabetic patients in particular Ramadan	150	75	42	21	8	4	90.33	164.920	0.000
7. the physicians confident in own abilities to manage DM in particular Ramadan	172	86	24	12	4	2	94.67	252.640	0.000
8. the physicians ready to attend training about DM care even in Ramadan	134	67	44	22	22	11	85.33	105.640	0.000
9. Are you support the fasting of a pregnant and feeding woman you have diabetic in particular Ramadan.	38	19	20	10	142	71	49.33	130.120	0.000
10. Do you support presence of physicians and nurse available at the time in particular Ramadan	174	87	10	5	16	8	93.00	259.480	0.000

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Table 2 shows all item of Attitude toward management of Type 2 DM in RAMADAN the most of participants answer Agree were respectively (76, 76,82,75,86,67,87) except some item while respectively the $\mathbf{X^2}$ (163.840,163.840,213.280,164.920,252.640,105.640,130.120,259.48)and a significant relation between Attitude were p-value =0.001 respectively (<0.001).

Table(5) Distribution of the Knowledge, attitudes, and practices in Makkah toward management of Type 2 DM in RAMADAN

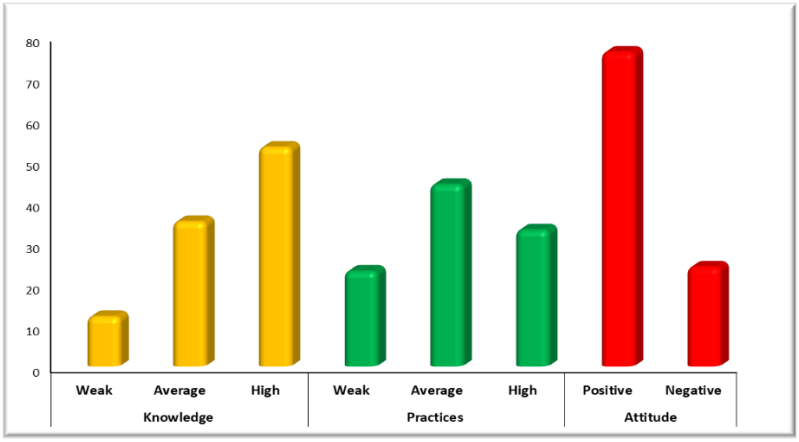
	N	%	**Chi-square**	
Knowledge			**X^2**	**P-value**
Weak	24	12	50.68	<0.001*
Average	70	35		
High	106	53		
Practices				
Weak	46	23	13.24	0.0013*
Average	88	44		
High	66	33		
Attitude				
Positive	152	76	53.045	<0.001*
Negative	48	24		

Table 5 Regarding Knowledge, attitudes, and practices of the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Knowledge average information were(53.0%) the $X^2$50.68 a significant relation were p-value =0.001

Regarding Practices the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Practices average information were(44.0%) the X^2 13.24 a significant relation were p-value =0.001

Regarding Attitude the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Attitude Positive information were(76.0%) the X^2 53.045 a significant relation were p-value =0.001

Figure 1 Distribution of the Knowledge, attitudes, and practices in Makkah toward management of Type 2 DM in RAMADAN



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Discussion

There may be a gap between knowledge of diabetes and awareness of diabetes all participants in our study were of primary care physicians , the study aimed to Assessment of Knowledge, attitudes, and practices of primary care physicians in Makkah 2021 at Saudi Arabia toward management of Type 2 DM in RAMADAN, objectives of the study to assessment of Knowledge, attitudes, and practices of primary care physicians in Makkah 2021 at Saudi Arabia toward management of Type 2 DM in RAMADAN. This is the first study to assess the level of assessment of Knowledge, attitudes, and practices of primary care physicians in Makkah 2021 at Saudi Arabia toward management of Type 2 DM in RAMADAN in Makah .

In the present study, shows that most of the participants (39.0%) were in the age group > 40 years the majority of them were female (54.0%) while male (46.0%), also regarding Department the majority of participant are Emergence department were(25.0%) while Clinical experiences the majority of participant 5-10 years were (44.0%.)

Regarding the Level of education the majority of participant Postgraduate Studies were (43.0%(.regarding the economic level the majority of participant average economic level were(51.0%). While sources of information most of participants from Own personal experience were (35.0%)(See Table 1). In a Jordanian study[27] there was dominancy in male and young age participants. A study from Turkey showed that 50% of participant students were males [20] . A study from Ghana [28] showed more prevalence of males and married teachers and those with age of 30-39 years old and 1-5 years of experience. Most of in Ghana study participants showed a moderate level of knowledge not similar to our results reported. In Bahraini study, it was reported an average knowledge and awareness of students[18]

Overall the results Regarding Knowledge, attitudes, and practices of the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Knowledge average information were(53.0%) the X250.68 a significant relation were p-value =0.001. Regarding Practices the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Practices average information were(44.0%) the X2 13.24 a significant relation were p-value =0.001. Regarding Attitude the participant toward Type 2 DM in RAMADAN study results show the majority of participant had regarding Attitude Positive information were(76.0%) the X2 53.045 a significant relation were p-value =0.001.(See Table 5)

Our study findings are similar to a number of previous study results that showed an inadequate level of knowledge and awareness of diabetes mellitus among the respondents in Saudi Arabia [29].[30] reported that 15% of the study participants in Riyadh had inadequate knowledge of DM, while 72% had moderate knowledge, the respondents in Dammam were found to obtain low scores regarding knowledge and attitudes toward diabetes mellitus. In another survey by. [31], shows all item of knowledge toward management of Type 2 DM in RAMADAN the majority answer true were respectively (78, 69, 85, 75, 77, 68, 58, 88, 73, 66, 79, 61%) while respectively the X2 (62.720,28.880, 98.000, 50.000, 58.320, 25.920, 5.120, 115.520, 42.320, 20.480,67.280, 9.680)and a significant relation between Knowledge were p-value =0.001 respectively (<0.001) also shows all item of practices toward management of Type 2 DM in RAMADAN the most of participant answer done were respectively (85,76,89,92,87,96,83,98,79, 86, 78,88,73,86%) while respectively the X2 (98.000,54.080,121.680,141.120,109.520,169.280,87.120,184.320,67.280,103.680, 62.720,115.520,42.320,103.680)and a significant relation between practices were p-value =0.001 respectively (<0.001). except the Allowing Patient to use restroom more .(Table3,4)

Conclusion

Practice of fasting leads to changes in the timing and frequency of eating meals and taking medications. Thus, diabetes patients should be educated about how to take care of their dietary habits and medication. Skipping the dawn or dusk meals, irregularity in taking medicine and overeating at the time of breaking the fast may cause problems for diabetes patients. It is important to be aware of the need for adjustments of medicines during Ramadan. The main therapeutic adjustments are reduction in insulin dose and glucose-lowering agents. This must be done under the supervision of the treating physician.It has been suggested that Ramadan-focus. We recommend further strengthening of the Pre-Ramadan education programs by making them more inclusive especially for female patients, the less educated and those with a negative family history of diabetes.

References:

1. Williams, R., Karuranga, S., Malanda, B., Saeedi, P., Basit, A., Besançon, S., ... & Colagiuri, S. (2020). Global and regional estimates and projections of diabetes-related health expenditure: Results from the International Diabetes Federation Diabetes Atlas. *Diabetes research and clinical practice*, *162*, 108072.
2. Meo, S. A., Sheikh, S. A., Sattar, K., Akram, A., Hassan, A., Meo, A. S., ... & Ullah, A. (2019). Prevalence of type 2 diabetes mellitus among men in the Middle East: a retrospective study. *American journal of men's health*, *13*(3), 1557988319848577.
3. Saraswathi, S., Al-Khawaga, S., Elkum, N., & Hussain, K. (2019). A systematic review of childhood diabetes research in the Middle East Region. *Frontiers in endocrinology*, *10*, 805.
4. Gillani, A. H., Amirul Islam, F. M., Hayat, K., Atif, N., Yang, C., Chang, J., ... & Fang, Y. (2018). Knowledge, attitudes and practices regarding diabetes in the general population: A cross-sectional study from Pakistan. *International journal of environmental research and public health*, *15*(9), 1906.
5. Hoda, M., Hemaiswarya, S., & Doble, M. (2019). Diabetes: Its Implications, Diagnosis, Treatment, and Management. In *Role of Phenolic Phytochemicals in Diabetes Management* (pp. 1-12). Springer, Singapore.
6. Garland Jr, T., Schutz, H., Chappell, M. A., Keeney, B. K., Meek, T. H., Copes, L. E., ... & Eisenmann, J. C. (2011). The biological control of voluntary exercise, spontaneous physical activity and daily energy expenditure in relation to obesity: human and rodent perspectives. *Journal of Experimental Biology*, *214*(2), 206-229.
7. Saeedi, P., Petersohn, I., Salpea, P., Malanda, B., Karuranga, S., Unwin, N., ... & IDF Diabetes Atlas Committee. (2019). Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas. *Diabetes research and clinical practice*, *157*, 107843.
8. Alotaibi, A., Perry, L., Gholizadeh, L., & Al-Ganmi, A. (2017). Incidence and prevalence rates of diabetes mellitus in Saudi Arabia: An overview. *Journal of epidemiology and global health*, *7*(4), 211-218.
9. Robert, A. A., & Al Dawish, M. A. (2020). The worrying trend of diabetes mellitus in Saudi Arabia: an urgent call to action. *Current diabetes reviews*, *16*(3), 204-210.
10. Alakhrass, H. (2020). Impact of health-related Twitter messages on rates of diabetes screening in the Saudi Arabian population.

11. Abdirahman, H. A., Hassan, T., AbuAlUla, N. A., & Jacobsen, K. H. (2021). Knowledge and Attitudes About Type 2 Diabetes Among Female Nursing Students in Saudi Arabia. *World Medical & Health Policy*.
12. Pinar, A. (2017). What is secondary school students' awareness on disasters? A case study. *Review of International Geographical Education Online*, *7*(3), 315-331
13. Al-Mahrooqi, B., Al-Hadhrami, R., Al-Amri, A., Al-Tamimi, S., Al-Shidhani, A., Al-Lawati, H., ... & Al-Ghafri, T. (2013). Self-reported knowledge of diabetes among high school students in Al-Amerat and Quriyat, Muscat Governate, Oman. *Sultan Qaboos University Medical Journal*, *13*(3), 392.
14. Fareed, M., Salam, N., Khoja, A. T., Mahmoud, A. M., & Ahamed, M. (2017). Life style related risk factors of type 2 diabetes mellitus and its increased prevalence in Saudi Arabia: A brief review. *International Journal of Medical Research & Health Sciences*, *6*(3), 125-132.
15. Murad, M. A., Abdulmageed, S. S., Iftikhar, R., & Sagga, B. K. (2014). Assessment of the common risk factors associated with type 2 diabetes mellitus in Jeddah. *International journal of endocrinology*, *2014*.
16. Basit, A., Riaz, M., & Fawwad, A. (2015). Improving diabetes care in developing countries: The example of Pakistan. *Diabetes research and clinical practice*, *107*(2), 224-232.
17. Flavin, K. S., & Gavin 3rd, J. R. (1988). An assessment instrument to measure physicians' knowledge of diabetes management. *Journal of medical education*, *63*(9), 675-681.
18. FPC, F. A. L. A. (2003). Assessment of knowledge of diabetes mellitus among Bahraini school teachers. *Bahrain Medical Bulletin*, *25*(4).
19. Al Duraywish, A. A., & Nail, A. M. (2017). Assessment of the primary and intermediate school staffs' knowledge, attitude and practice on care of children with type 1 diabetes at school, Al-Jouf, Saudi Arabia. *Sudan Journal of Medical Sciences*, *12*(1), 33-45.
20. Elbadawi, A., Mahzari, A., Alshahrani, S., Alawaji, H., Khubrani, A., & Albalawi, A. (2016). Knowledge and Attitude of School Teachers toward DM Complications in Tabuk City. *International Journal of Health care Sciences*, *4*(2), 1742-1745.
21. Christie, D., Strange, V., Allen, E., Oliver, S., Wong, I. C. K., Smith, F., ... & Elbourne, D. (2009). Maximising engagement, motivation and long term change in a Structured Intensive Education Programme in Diabetes for children, young people and their families: Child and Adolescent Structured Competencies Approach to Diabetes Education (CASCADE). *BMC pediatrics*, *9*(1), 1-10.
22. Deeb, L. C. (2008). Diabetes technology during the past 30 years: a lot of changes and mostly for the better. *Diabetes Spectrum*, *21*(2), 78-83.
23. Ramachandran, A., Das, A. K., Joshi, S. R., Yajnik, C. S., Shah, S., & Prasanna Kumar, K. M. (2010). Current status of diabetes in India and need for novel therapeutic agents. *Journal of Association of Physicians of India*, *58*(JUN), 7-9.
24. Abdul-Rasoul, M., AlOtaibi, F., Abdulla, A., Rahme, Z., & AlShawaf, F. (2013). Quality of life of children and adolescents with type 1 diabetes in Kuwait. *Medical principles and practice*, *22*(4), 379-384.
25. Alfadhli, E. M., Osman, E. N., Basri, T. H., Mansuri, N. S., Youssef, M. H., Assaaedi, S. A., & Aljohani, B. A. (2015). Gestational diabetes among Saudi women: prevalence, risk factors and pregnancy outcomes. *Annals of Saudi medicine*, *35*(3), 222-230.

26. Wadaani, F. A. (2013). The knowledge attitude and practice regarding diabetes and diabetic retinopathy among the final year medical students of King Faisal University Medical College of Al Hasa region of Saudi Arabia: a cross sectional survey. *Nigerian journal of clinical practice*, *16*(2), 164-168.
27. Tannous, A. G., Khateeb, J. M., Khamra, H. A., Hadidi, M. S., & Natour, M. M. (2012). Jordanian school counselors' knowledge about and attitudes toward diabetes mellitus. *International Journal for the Advancement of Counselling*, *34*(2), 136-142.
28. Amissah, I., Barnes, N. A., Craymah, J. P., & Eliason, S. (2017). Knowledge of diabetes mellitus and management practices among senior high school teachers in Ghana. *International Journal of Science and Research*, *6*(1), 1090-1095.
29. Alanazi, F. K., Alotaibi, J. S., Paliadelis, P., Alqarawi, N., Alsharari, A., & Albagawi, B. (2018). Knowledge and awareness of diabetes mellitus and its risk factors in Saudi Arabia. *Saudi medical journal*, *39*(10), 981.
30. Al-Aboudi, I. S., Hassali, M. A., & Shafie, A. A. (2016). Knowledge, attitudes, and quality of life of type 2 diabetes patients in Riyadh, Saudi Arabia. *Journal of pharmacy & bioallied sciences*, *8*(3), 195.
31. Almalki, T. M., Almalki, N. R., Balbaid, K., & Alswat, K. (2018). Assessment of diabetes knowledge using the Michigan brief diabetes knowledge test among patients with type 2 diabetes mellitus. *Journal of Endocrinology and Metabolism*, *7*(6), 185-189.