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KNOWLEDGE AND AWARENESS REGARDING TYPE 2 DIABETES MELLITUS RISK FACTORS IN PAKISTAN

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Abstract:

Objective: *Diabetes (DM) is an important public health problem in Pakistan and a risk factor for many co-morbidities. Therefore, the aim of this study was to assess awareness and understanding of the risk factors for type 2 diabetes (T2DM) in Pakistan.*

Methodology: *This study is a cross-sectional study conducted in the Medicine Unit II of Nishter Hospital, Multan for one-year duration from March 2019 to March 2020. Data of T2DM awareness was obtained from 1530 selectees.*

Results: *About 59% of 1,530 participants were male and 41% female. 60.8% of the 1,530 participants knew nothing about DM, and approximately 48% were unsure whether they knew anything about the symptoms of DM. In this study group, the lack of information on the relationship between obesity and diabetes was statistically significant, p <0.001.*

Conclusion: *The level of knowledge and awareness needed for a comprehensive awareness program to obtain reference information on DM in the Pakistani population is low. Women need more to be targeted in DM prevention and control programs.*

Keywords: *diabetes, obesity, lifestyle, awareness.*

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INTRODUCTION:

Diabetes mellitus (DM) is a serious and growing global health burden, and estimates of its prevalence are essential to properly allocate resources and monitor trends. Type 2 diabetes (DM2) is reported to affect one in 11 adults worldwide, and more than 80% of DM2 patients live in low- and middle-income countries. New estimates of health expenditure due to diabetes, deaths related to diabetes and diabetes pose a huge burden to the social, financial and health system worldwide. It is estimated that there are 451 million people (aged 18 to 99) in the world in 2017 with DM. These numbers are expected to rise to 693 million by 2045. It is estimated that almost half (49.7%) of people with diabetes are not diagnosed. In addition, it is estimated that 374 million people suffer from glucose intolerance (IGT), and approximately 21.3 million women give birth with some form of hyperglycemia during pregnancy. In 2017, approximately 5 million deaths worldwide were related to diabetes aged 20-99 years. Global health spending for people with diabetes is estimated at $ 850 billion in 2017.

However, the role of the overall diet, individual foods and nutrients, physical activity and other lifestyle factors in the development of T2DM is well known. Excess fat is an important risk factor for diabetes, so maintaining a healthy body weight and preventing it from gaining weight in adulthood is the cornerstone of diabetes prevention. Taken together, these ongoing large cohort studies provided convincing epidemiological evidence about a healthy diet as well as regular physical activity, maintaining a healthy body weight, consuming moderate alcohol consumption, and avoiding a sedentary lifestyle and smoking. most cases of type 2 diabetes are avoided.

The World Health Organization (WHO) reports that Saudi Arabia ranks second in the Middle East and seventh in the world for the incidence of diabetes. It is estimated that about 7 million of the population suffer from diabetes and almost 3 million are people with diabetes. The prevalence of DM2 in Saudi Arabia is 32.8%. However, the projected spread will be 35.37% in 2020; The time factor showed that the prevalence rate increased in 1982–2015. 40.37% in 2025 and 45.36% in 2030. Saudi Arabia has the highest incidence (32.8%) of type 2 diabetes and diabetes has been associated with high mortality, morbidity and vascular complications, and poor general health and lower quality of life. Saudi Arabia, which has become increasingly Western in recent years, has one of the highest rates of overweight and obesity, even in children. The adoption of modern cultural changes and economic prosperity has created an obese environment that promotes unhealthy nutrition, a sedentary lifestyle and weight gain.

In Pakistan, improving health awareness through healthy eating options and increased physical activity, especially among women, can make a difference. As a result, there is a great need for an epidemic control program that emphasizes the promotion of a healthy diet including weight control as well as exercise and an active lifestyle. Therefore, the purpose of this study is to assess the awareness and knowledge of DM2 risk factors in northern Saudi Arabia.

PATIENTS AND METHODS:

This is a cross-sectional study held in the Medicine Unit II of Nishter Hospital, Multan for one-year duration from March 2019 to March 2020. T2DM awareness data was obtained from 1530 patients. Participants were randomly selected by a simple draw, regardless of age, gender, education or profession.

A useful survey was designed and used to obtain the necessary data. The following information was obtained from each participant: age, gender and level of education. Questions on awareness of blood donation were also included:

1. Do you know how to get DM?
2. Do you know the symptoms of DM?
3. Do you think regular physical activity can reduce the risk of DM?
4. Do you think that uncontrolled eating habits can increase the risk of DM?
5. Do you do physical activity regularly?

Data analysis

The statistical package (SPSS version 16) for social sciences was used to perform the Pearson Chi-square test for analysis and statistical significance (p-value). A 95% confidence level and confidence intervals were used. A p value of less than 0.05 was considered statistically significant.

Ethical leave

Each participant was asked for written ethical acceptance during the survey. The form for informed consent to ethics was developed and approved by the Ethics Committee of the Medical Research Council (Hail University, Saudi Arabia).

RESULTS:

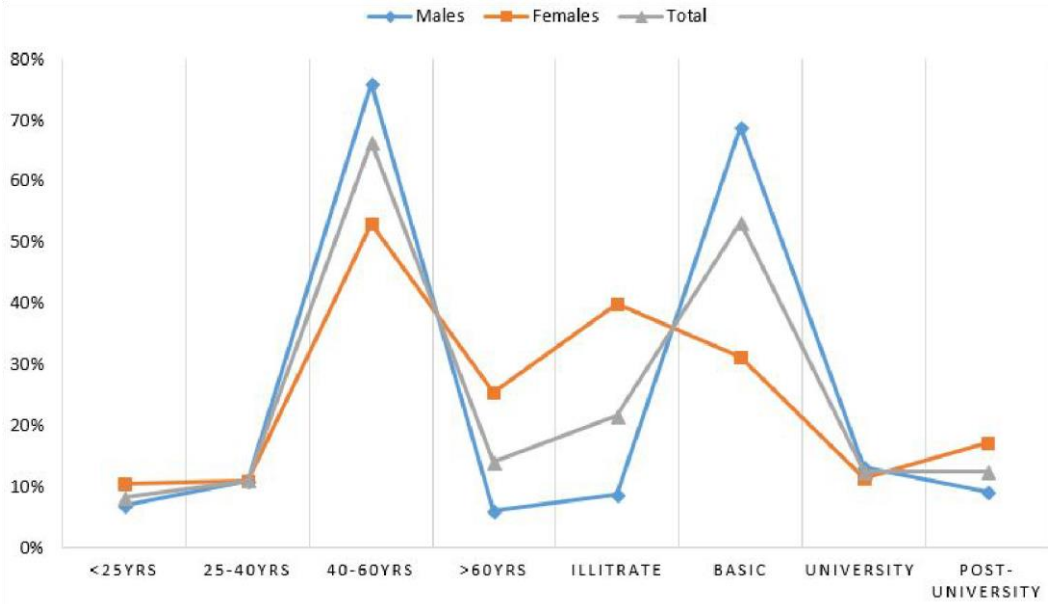
This study assessed the awareness and knowledge of T2DM risk factors in 1,530 volunteers aged 15 to 70 years. Of the 1,530 participants, 901/1530 (59%) were male and 629/1530 (41%) were female, giving males a ratio of 1.00: 1.43 to females. While the majority of respondents belonged to the age group 40-60 years, they belonged to the age group 60 years and older, representing it as 1015/1530 (66.3%) and 217/1530 (14.2%). In this order. The distribution of

men and women was relatively similar across age groups as shown in Table 1 and Figure 1.

Table 1 Socio-demographic data of the participants

Variables	Category	Males	Females	Total
Age in years	<25	62	66	128
	25-40	101	69	170
	40-60	683	332	1015
	>60	55	162	217
	Total	901	629	1530
Educational status	Illiterate	78	252	330
	Basic education	619	197	816
	University level	120	72	192
	Post-university	84	108	192
	Total	901	629	1530

Figure 1 Description of the study population by age, education status and sex



Information on the gender distribution of subjects and risk factors that may increase the risk of DM is provided in Table 2. "Do you have any information on how you obtained DM?" Most of the participants replied "No", representing 930/1530 (60.8%), 553/901 (61.4%) men and 377/629 (60%) women. Lack of knowledge about DM was 312/1530 (20.4%) of "Yes" answers, 186/901 (20.6%) men and 126/629 (20%) women, p <0.05. "Do you know the symptoms of DM?" To the question, most respondents answered "Maybe" at number 529/901, which is 738/1530 (48.2%). (58.7%) were men and 209/629 (33.2%) were women. The “Yes” answers of 396/1530 (26%) were 240/901 (26.6%) men and 156/629 (24.8%) women, as shown in Table 2 and Figure 2.

About 294/1530 (19%) of respondents believe obesity may increase the risk of developing diabetes, so the remaining 1236/1530 (81%) do not believe obesity plays a role in DM. Lack of information on the relationship between obesity and DM was statistically significant in this study group, p <0.001. Of the 1,236 participants who did not believe the link between obesity and diabetes, 703 (78.7%) were male and 527 (83.8%) were female, as shown in Table 2 and Figure 2.

About 720/1530 (47%) of the respondents believed that physical activity could reduce the risk of diabetes, while the remaining 810 (53%) believed that physical activity did not play a role in the course of diabetes. Of the 810 participants who did not believe the relationship between exercise and DM, 390/901 (43.3%) were male and 420/629 (66.8%) were female, as shown in Table 2 and Fig. 2. Questions asked to participants about their own physical activity found only 192/1530 (12.5%)

regular physical activity. These results show a profoundly immobile lifestyle with a statistically significant p <0.0001.

About 516/1530 (33.7%) of respondents believed that uncontrolled eating habits could increase the risk of developing diabetes, so the remaining 1014/1530 (66.3%) did not think that uncontrolled eating habits played a role. DMI. 703/901 (78%) of the 1,014 participants who did not believe in the relationship between uncontrolled eating habits and diabetes were male, 311/629 (49.4%) were Table 2 and Figure 2.

Table 2 Distribution of the study subjects by sex and knowledge on factors expected to increase the risk of DM

Questions	Answers	Males	Females	Total
Do you have information on how one' gets DM?	Yes	186	126	312
	May be	162	126	288
	No	553	377	930
	Total	901	629	1530
Do you know the symptoms of DM?	Yes	240	156	396
	May be	529	209	738
	No	132	264	396
Do you think Obesity can increase the risk of DM?	Yes	192	102	294
	No	709	527	1236
Do you think regular physical activity can decrease the risk of DM?	Yes	511	209	720
	No	390	420	810
Do you think uncontrolled nutritional habits can increase the risk of DM?	Yes	198	318	516
	No	703	311	1014
Do you practice regular physical activity?	Yes	126	66	192
	Sometimes	114	60	174
	Rarely	294	180	474
	No	367	323	690

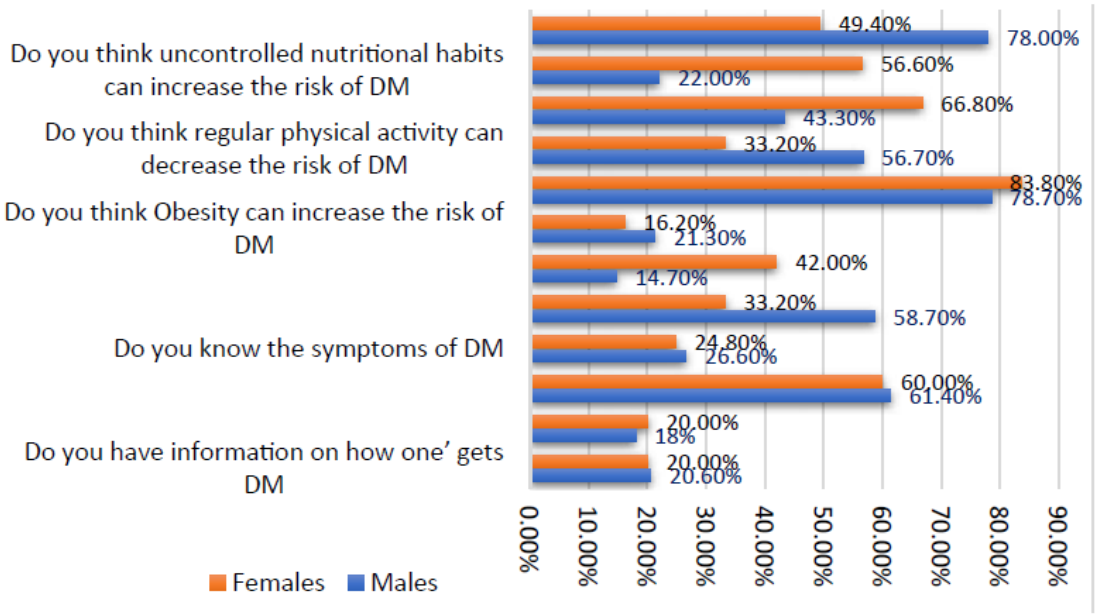


Figure 2 Description of the study subjects by sex and knowledge on factors expected to increase the risk of DM

Table 3 provides information on the distribution of study topics by education and the factors that may increase the risk of DM. "Do you have information on obtaining DM?" Most respondents answered "NO", which was 930/1530 (60.8%) in writing 204/330 (61.8%), 534/816 (65.4%) and 192/384 (50%). and levels of higher education. "Do you know the symptoms of DM?" When asking the question, the majority of respondents answered "CAN IT BE", and 66/330 (20%), 600/816 (73.5% respectively) and 72/384 (18.8%) are illiterate, people with primary education and higher education levels. "Do you think obesity may increase the risk of DM?" When you ask this question, the majority of participants are between 270/330 (81.8%, respectively), 702/816 (86%) and 120/384 (31.3%) illiterate, elementary and higher education. "Do you think that regular physical activity can reduce the risk of DM?" When asking questions, the majority of participants are 318/330 (96.4%), 516/816 (63.2%) and 0.00% illiterates, representing 834/1530 (primary and higher education) between levels. "Do you think uncontrolled eating habits can increase the risk of DM?" The respondent answered "NO" to the question, which corresponds to 1080/1530 (70.6%), i.e. 258/330. (78%), 360/816 (44%) and 192/384 (50%) illiterates belong to primary and higher education. "Do you exercise regularly?" When asking the question, the answer "NO", representing 690/1530 (45%), mainly 264/330 (80%), 294/816 (36%) and 132/384 (34.4%) belong to the elementary levels of education and tertiary education, as shown in Table 3 and Figure 3, respectively.

Table 3 Distribution of the study subjects by education and knowledge on factors expected to increase the risk of DM

Variables	Category	Illiterate	Basic education	Higher education	Total
Do you have information on how one gets DM?	Yes	60	60	192	312
	May be	66	222	0	288
	No	204	534	192	930
	Total	330	816	384	1530
Do you know the symptoms of DM?	Yes	60	156	180	396
	May be	66	600	72	738
	No	204	60	132	396
Do you think Obesity can increase the risk of DM?	Yes	60	114	264	438
	No	270	702	120	1092
Do you think regular physical activity can decrease the risk of DM?	Yes	12	300	384	696
	No	318	516	0	834
Do you think uncontrolled nutritional habits can increase the risk of DM?	Yes	72	186	192	450
	No	258	630	192	1080
Do you practice regular physical activity?	Yes	0	60	132	192
	Sometimes	0	174	0	174
	Rarely	66	288	120	474
	No	264	294	132	690

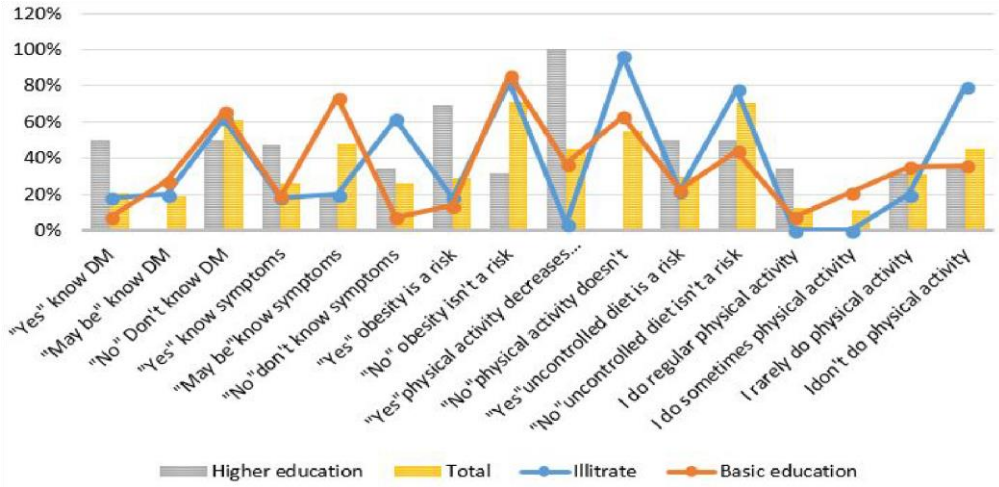


Figure 3 Description of the study subjects by education and knowledge on factors expected to increase the risk of DM

DISCUSSION:

DM is an important public health problem in Saudi Arabia and is a risk factor for many comorbidities. The alarming increase in the burden on DM in Saudi Arabia requires a great deal of effort, including exposing the public to this serious concern. However, the prevalence of DM is higher nationwide, but there may be some differences between different regions of Pakistan. Therefore, the purpose of this study is to assess awareness and knowledge of DM2 risk factors in Pakistan. In this study, some risk factors associated with DM are discussed in this study to provide some information and data on awareness of the subject in northern Saudi Arabia. The main focus of attention is on some risk factors for DM and their relationship to gender, level, and / or education. "Do you have any information on how to get DM?" When asked, approximately 60.8% knew nothing about DM and that it was statistically significant ($p < 0.05$). This ignorance about DM is relatively the same among men and women. While most of the reports in this context have looked at patients with diabetes, these results have been relatively similar to some of Saudi Arabia's reports on the matter. In a previous primary care study in Saudi Arabia, only 50% of participants knew about DM risk factors and preventive measures.

"Do you know the symptoms of DM?" When asked about this question, the majority of respondents answered "Maybe" and stated that they were not sure of their knowledge on the subject. Men were more reluctant than women. The symptoms most frequently mentioned by the respondents were symptoms related to hyperglycemia, such as polyuria, polydipsia, weight loss, and polyphagia. In this study, no information about the relationship between obesity and DM was statistically significant in this study group, $p < 0.001$. It is well known that obesity is a risk factor for T2DM. In Saudi Arabia, established habits, low levels of physical activity among young people, and unhealthy eating habits are important factors causing obesity in children and adolescents attending school, college and university. Fast food consumption / weekly frequency is increasing in major sectors of the Saudi community. As a result, implementing balanced mediators to intensify the consumption of fast food, especially among Saudi children, requires more evidence-based research into practices related to fast food consumption habits and increased childhood obesity. Careful government understanding is required to discover the importance of a healthy lifestyle, improve overall activity levels, and avoid a sedentary lifestyle. In the current study, around 47% of respondents believe that physical activity can reduce DM risk, so the remaining 53% do not think physical activity plays a role in DM. Two weeks of exercise training improves beta cell function in people with pre-diabetes or type 2 diabetes, and reduces pancreatic fat regardless of basal glucose tolerance. Sufficient initial levels of physical activity and transient increases are associated with a lower risk of diabetes in a large and relatively healthy cohort. Physical training, especially aerobic and combined exercise, improves endothelial function in patients with type 2 diabetes, but this development appears to be impaired compared to non-diabetic people.

On the other hand, when participants were asked about their physical activity, only 12.5% had regular physical activity. These results show a profoundly immobile lifestyle with a statistically significant $p < 0.0001$. A sedentary lifestyle was more common among women. Various reports from Saudi Arabia prove a low rate of physical activity among people living in Saudi Arabia in general and the Saudi community in particular. However, when assessing the variable under study beforehand, men are more aware of DM control than women, which can be attributed to better advertising for men than women. They probably lead a sedentary lifestyle. In addition, in this study, awareness and knowledge of DM showed a positive correlation with the level of education, and better educated people had better awareness and level of knowledge. Such arrangements have been previously reported in Saudi Arabia. As a result, there should be more emphasis on improving their attitudes and knowledge about overall DM control in Saudi Arabia among less educated people.

CONCLUSION:

Little knowledge and awareness of basic information about DM among the people of North Saudi Arabia is required, which requires a comprehensive information program. Women must be more the target of DM prevention and control programs. Conscious health policy insight in this regard is a prerequisite for a better and healthier lifestyle, leading to the eventual reduction of the burden of DM in Saudi Arabia.

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