

ORIGINAL RESEARCH

AWARENESS AND KNOWLEDGE OF DIABETES MELLITUS AMONG SCHOOL TEACHING STAFF IN TAIF CITY

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ABSTRACT

Diabetes is one of the most common chronic diseases, usually appears during childhood or adolescence; however, it can also develop in adults. The objective of this study was to evaluate the knowledge and awareness about diabetes among teaching staff in Taif province of Saudi Arabia. A cross sectional study, using a structured pre-tested questionnaire, was conducted in Taif. Our study involved 50.5% males and 49.5% were females. The age of participants ranged from less than 30 years old to more than 50 years old. Our results showed that the majority of teaching staff in our sample study are aware of diabetes and how to deal in case of low blood glucose level. However, the knowledge of causes, symptoms, risk factors, complications of diabetes and signs of low blood glucose level was not as high as expected. Therefore, training is required for the teaching staff as more than half of our sample study had taught a diabetic child.

KEY WORDS: Diabetic Mellitus, Awareness, Knowledge, Type 1, Taif, Saudi Arabia

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INTRODUCTION

Type 1 diabetes, known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which a little/not enough insulin produced by pancreas. [1] Insulin is a hormone needed to allow sugar (glucose) to enter cells to produce energy. On the other hand, juvenile diabetes occurs in genetically predisposed persons as a result of immune-mediated destruction of pancreatic islet beta cells that secrete insulin.[2] Although type 1 diabetes usually appears during childhood or adolescence, it can also develop in adults. Lack of insulin causes an increase of the blood glucose due to subsequent reduction in glucose moving into cells. The classical symptoms are frequent urination, increased thirst, increased hunger, and weight loss. [1] Additionally, other symptoms may include blurry vision, feeling tired, and poor healing. [3] Symptoms typically develop over a short period of time. [4] Diabetes mellitus is characterized by recurrent or persistent hyperglycemia and is diagnosed by demonstrating any of the following; elevated fasting plasma glucose (≥ 126 mg/dl), casual plasma glucose (≥ 200 mg/dl), glycated hemoglobin (HbA1C $\geq 6.5\%$) along

with associated symptoms of hyperglycemia. [5] Less frequently, a glucose tolerance test may help in diagnosis with plasma glucose level ≥ 200 mg after two hours of oral glucose load (75 g). [6] Regarding treatment, Injections of insulin—either via subcutaneous injection or insulin pump—are necessary for those living with type 1 diabetes because it cannot be treated by diet and exercise alone. [7] Type 1 diabetes makes up an estimated 5–10% of all diabetes cases [8] or 11–22 million worldwide.[9] In 2006, it affected 440,000 children under 14 years of age and was the primary cause of diabetes in those less than 10 years of age.[10] The incidence of type 1 diabetes has been increasing by about 3% per year.[10] with rates varying widely by country. In Finland, the incidence is as high as 57 per 100,000 per year; while in Japan and China, it's much lower with 1 to 3 per 100,000 per year. In Northern Europe and the U.S., an intermediate of 8 to 17 per 100,000 per year.[11,12]. In the United States, type 1 diabetes affected about 208,000 youths under the age of 20 in 2015. Over 18,000 youths are diagnosed with Type 1 diabetes every year. Every year about 234,051 Americans die due

to diabetes (type I or II) or diabetes-related complications, with 69,071 having it as the primary cause of death. [13] In the same context, there was a clear evidence that the incidence is high in many Arab countries particularly in the gulf areas, which had been classified in the high and intermediate category of World Health Organization Diamond study classification. [14,15]. In 2008, the prevalence of type 1 diabetes mellitus in Saudi Arabian children and adolescents was estimated as 109.5 per 100,000. [16]

At least, a pediatric diabetes specialist nurse should visit the school immediately after a child is diagnosed with type 1 diabetes and provide training to the child's teacher and other key workers.[17]

Children spend most of their day in school, it is essential that all aspects of type 1 diabetes management can take place there [17]. Modern insulin regimens can be complex and challenging for children, meaning they often require support from teachers and other school staff.[18] For example, 68% of primary school children report needing assistance with insulin injections.[19] Poor glycemic control is associated with life-threatening acute and chronic complications as well as potentially impacting negatively on a child's academic achievement; in terms of both cognitive function and ability to engage in learning processes.[20,21]

There's a lack of contemporary survey to assess teachers' knowledge about diabetes and its management in young people in schools. Therefore, this study aims to assess type 1 diabetes awareness and knowledge of teachers in Taif province of Saudi Arabia.

METHODS

This is a cross-sectional study conducted in Taif province of Saudi Arabia. The study enrolled 401 school teachers that were chosen randomly. The survey was approved by the research ethics committee of Taif University. Structured pre-tested self-administered questionnaire was

utilized to collect information for this study. Questionnaire was divided into three parts; the first part was about the demographic information of the participant, the second part was asking about type 1 diabetes knowledge and awareness and the third part was on the source of information regarding diabetes.

All collected data were transferred into a spreadsheet for further analysis. Standard descriptive measures were calculated for each question/item individually. For data analysis, SPSS 22 for Windows (SSPS Inc., Chicago, IL, USA) were used. Independent t test or ANOVA were used to measure the significance of difference between different groups according to type of data.

RESULTS

Our study involved 406 participants; males represent 50.5% (205) of the sample study, and 49.5% (201) were females. Our study sample covered the age range (<30 - >50) years old with 10.8% (44) were in the aged less than 30 years old, 34% (138) were in the age group (>30 - <40), while 41.9% (170) were between forty to fifty years old, and 13.3% (54) were teachers aged more than fifty years old. Of the participants, 65% (264) were Saudis, and 35% (142) were Non-Saudis.

Regarding the education level of the participants, the majority (87.2%) were university graduates, while 6.2% were having diploma education level, and 6.7% were postgraduate. Most of the participating teachers were high school teachers 47.8% (194), and 29.8% (121) were primary school teachers, with 22.4% (91) were intermediate school teachers. Upon asking the participants whether they are diabetic or not, 87.4% (355) were not diabetic, and 12.6% (51) were diabetic patients. 56.2% (228) of the participants admit having a diabetic relative (a father, brother or son), while 43.8% (178) did not have a diabetic relative. There were no significant differences among different groups when compared; except for being diabetic or having a diabetic relative item (Figure 1).

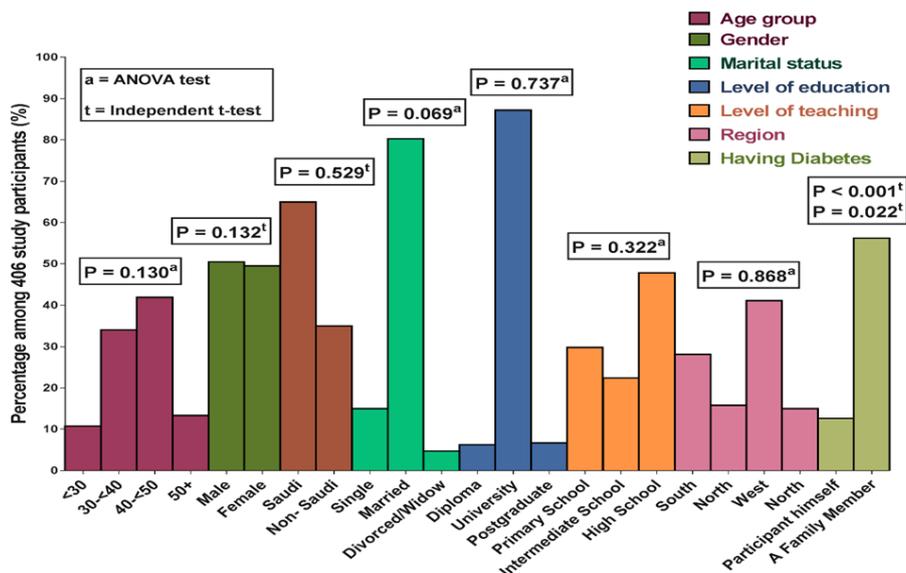


Figure 1: Demographic Data

Assessing participants knowledge, 48.3% of the participants knew that there are 2 types of diabetes. On the other hand, 30.8% didn't know the number of diabetes types and 14% said that there are 3 types of diabetes, with

6.9% thought there is only one type of diabetes. In the same context, 23.2% only said they have enough information about diabetes, and 22.9% admit not having enough information about it, while 53.9% admit not

knowing whether they have enough information about diabetes or not.

Moreover, the majority of our sample study (91.6%) knew that diabetes isn't an infectious disease and only 2% of the whole sample study thought it's an infectious disease. Additionally, 6.4% of the participants did not know if it's

infectious or not with 60.8% of the participating teachers did not know what the glycosylated hemoglobin is. Of the participants, 54.9% answered that old people is most likely to have type 1 diabetes, while 15.8% thought that children and young people are more likely to have type 1 diabetes (Figure 2).

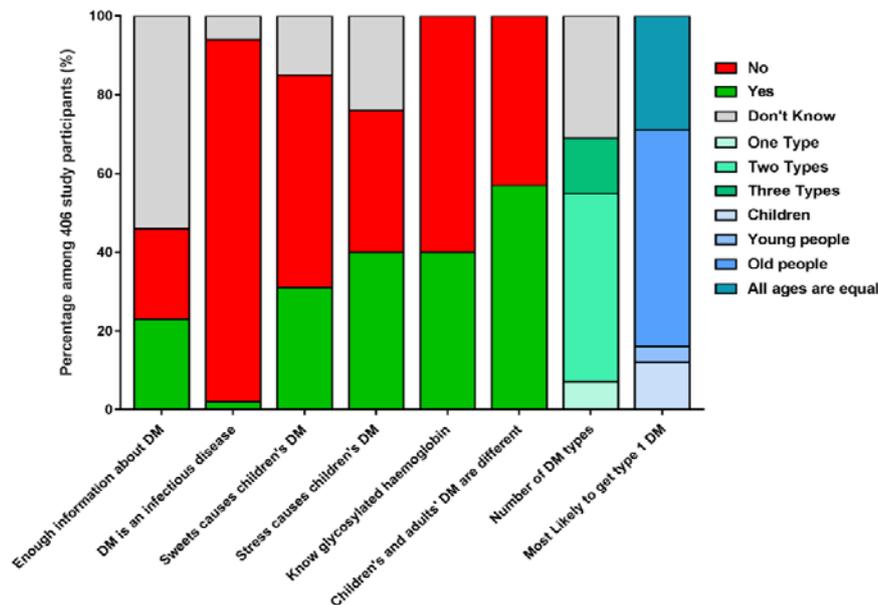


Figure 2: Percentage of the participants' general knowledge and causes of DM.

Group two of questions were concerned more about diabetes mellitus. Teachers were asked about the low level of blood glucose. 54.7% answered correctly that less than 70mgs is low blood glucose level, 9.4% thought it's less than 100mgs, and 6.7% said that it's below 120 mgs, while 29.3% did not know when to said the person is having low blood sugar level. 90.4% of the participants though that the

diabetic patient can help himself, while 47.8% did not think the diabetic patient can help himself. 52.2% of our sample study admit knowing the necessary procedure that should be taken if one of the students exposed to high blood glucose, while 47.8% did not know what to do in this situation (Figure 3).

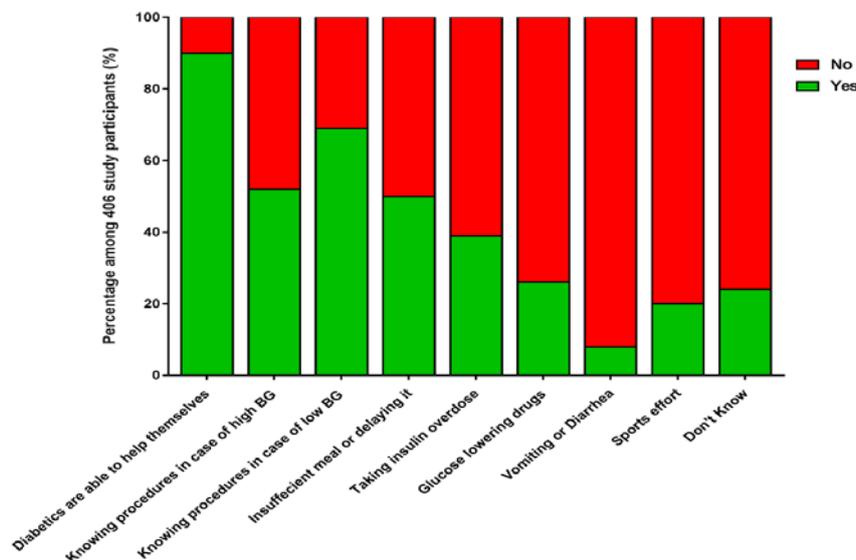


Figure 3: Specified questions of DM lifestyle and practice in the community.

Teachers were then asked about the symptoms of low glucose levels in the blood. 53.2% answered that (headache -dizziness- feeling hungry -shivering) are signs of low glucose level. 21.7% said that palness and blurred vision are the signs of low sugar level in the blood. And 9.1% thought that too much urination is a sign of low glucose level in the blood. With 16% of the sample study

did not know which the right answer is. 77.8% know the first proper action that should be taken in case of blood glucose level student. While 12.3% admit not knowing the proper action that should be taken in this situation, and 5.2% said that eating a snake is the first action that should be taken first, with 4.7% said that stop taking glucose-

lowering drugs or insulin injection is the first proper action to be taken in case of low blood glucose level.

Of the 406 participant, 62.6% of teachers have a diabetic student in their classroom, while 37.4% did not know diabetic student in their classroom. Unfortunately, 80.8% of those having a diabetic student did not know how to deal with them. And only 19.2% knew how to deal with their diabetic students.

64.3% of the participants admit that the school doesn't offer special meal for diabetic patients, and only 6.9% said that the school do offer special meal for its diabetic students, while 28.8% did not whether their school do offer special meals or did not for their diabetic students (Table 1).

Upon asking the participating teachers if low blood glucose level would kill the student if he doesn't receive the proper fast treatment, 79.8% answered that yes it would kill the student, while 15.8% did not know if this

would kill the student or not, with 4.4% thought that it wouldn't kill the diabetic student.

Teachers were asked how they would deal if they see an unconscious diabetic student and did not have a glucose meter. 46.8% of the teachers answered that they would give the diabetic student a juice or a sugary solution, while 27.8% did not know what to do in this situation, and 3.4% answered that they would give the diabetic student glucose-lowering drug or insulin injection, with 6.2% said that they would wait until they get an insulin meter (Table 1).

Teachers were asked about their source of information. 79.1% said they have had their information from a physician, 41.6% Media was their source of information about diabetes, 28.1% got information from social media, and 27.3% got their information about diabetes from an educational campaign (Figure 4).

Table 1: Teachers' awareness of DM type 1 among students in Taif City.

Characteristics	No	%
What are the symptoms of low blood glucose?		
Feeling hungry, headache, dizzy, shivering	216	53.2
Paleness, unclear vision	88	21.7
Too much urination	37	9.1
I did not know	65	16.0
What is the first step you take in case of low blood glucose?		
Drinking juice or sugary water	316	77.8
Eating a snack	21	5.2
Stop taking glucose-lowering drugs or insulin injection	19	4.7
I did not know	50	12.3
Do you know diabetic students in your classroom?		
No	152	37.4
Yes	254	62.6
Do you read the medical report of diabetic students to know how to deal with?		
No	328	80.8
Yes	78	19.2
Are you ready to have a diabetic student in your classroom?		
No	63	15.5
I did not Know	90	22.2
Yes	253	62.3
Can the health supervisor at school measure glucose and give insulin injection?		
No	71	17.5
I did not Know	218	53.7
Yes	117	28.8
Does the school offer special meals for diabetic students?		
No	261	64.3
I did not Know	117	28.8
Yes	28	6.9
Do you think that low blood sugar can kill students if they did not receive fast treatment?		
No	18	4.4
I did not Know	64	15.8
Yes	324	79.8
If you see an unconscious diabetic student and you have no glucose meter, how do you deal with him/her?		
Giving him juice or sugary solution	190	46.8
Giving him glucose-lowering drug or insulin injection	14	3.4
Waiting till you get glucose meter	25	6.2
Waiting till a doctor arrives	64	15.8
I did not know	113	27.8

DISCUSSION

This study represents the first investigation about teacher's knowledge and awareness about diabetes in Taif province in Saudi Arabia. This study has produced an up-to-date tool to assess type 1 diabetes awareness and knowledge among teaching staff.

The results highlight the poor knowledge of the teachers about diabetes, and that 62.8% of the sample study respondents had already taught a young person with

diabetes. However, 41.6% of participants had received training from an educational campaign, with much of this being informal and most probably from people or relatives they knew who were diabetics. Overall knowledge and awareness were poor, 17.9% of respondents achieving a "satisfactory" score, this was higher than the scores reported in other study done in England were 18% of the participants were with satisfactory degree of awareness. (22)

In our study, there were 111 participants (41.6%) who reported that they had received training on type 1 diabetes, and this was associated with improved overall knowledge and awareness. This ratio was much higher than those reported by study done in UK where 20.5% of the sample study.

Of our sample study, about 70% of the participants reported that internet and media were the two major sources of their information. This was similar to findings of a study done in Tanzania where the majority of the sample study got their information from the social media and internet. (23) this may be due to the fact the participants in our study were teaching staff who uses internet frequently. In our study, 79.1% of the participants

got their information about diabetes from physicians, which act as an important source of health education, this was similar to the results reported by the study done in Tanzania, and higher than that was reported from a study in Singapore. (24)

The majority of the involved teaching staff in our study though were aware of diabetes, however the knowledge of the causes, signs and symptoms was not as high as expected.

Our study revealed the importance of introducing training programs for teaching staff. It is also recommended that the evaluation of type 1 training to assess knowledge and awareness takes place yearly (25).

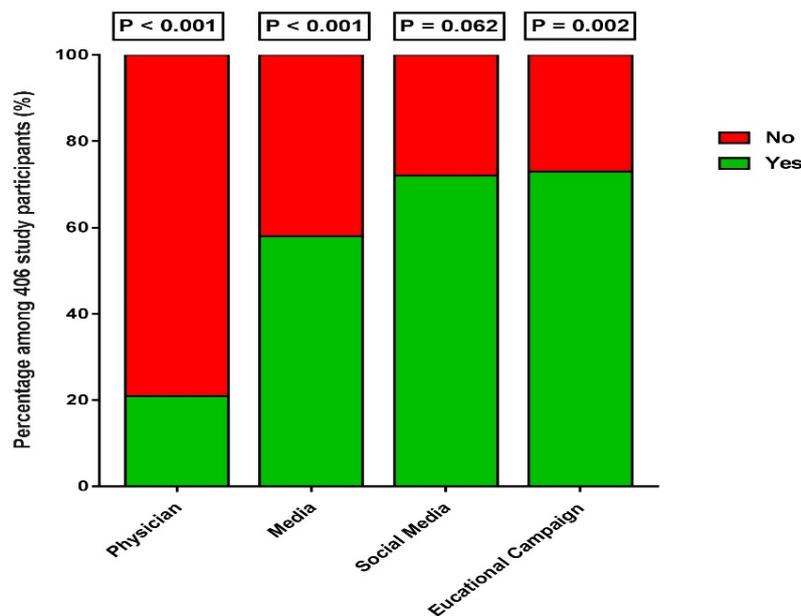


Figure 4: Sources of education about DM among the community.

CONCLUSION

Our study provides evidence that information or training significantly increases awareness and providing this information or training across Saudi Arabia could have many benefits in terms of identifying the condition as early as possible. Training to improve awareness of chronic conditions such as diabetes in schools perhaps should be included at university.

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