Original Research Article

Assessment of knowledge, attitude and practice of diabetic people in Najran, Kingdom of Saudi Arabia

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ABSTRACT

Background: This cross-sectional hospital based study aimed at determining the level of knowledge, attitude and practice of diabetes among local people of Najran, Saudi Arabia.
Methods: We aimed to investigate the levels of knowledge, attitude and practice among diabetic people in Najran area.
Results: 10% of the participants scored >7, 28% scored >5 and 62% scored 5 and less in Knowledge questionnaire. None [0.00%] of the participants scored 7 or more out of the attitude questionnaire. 100% of the participants scored 5 and less out of 12. 100% of the participants scored >6 and 0% scored 12 or more in the practice questionnaire.
Conclusions: Our study revealed that the level of knowledge, attitude and practice of diabetes in the area of Najran is very poor. We suggest that a structured educational program to be adopted by the health authorities in Saudi Arabia.

Keywords: Attitudes, Diabetes, Dietary, Knowledge, Kingdom of Saudi Arabia, Practice Najran

INTRODUCTION

Diabetes mellitus is believed to be one of the most common and devastating chronic disease in human history. It has afflicted mankind for thousands of years and continues to do so at an exponential rate.[1] During the past three decades, the population of the Kingdom of Saudi Arabia has undergone tremendous changes in lifestyle, primarily leading to decreased physical activity and unhealthy eating habits and subsequent obesity.

These changes have had a considerable negative impact on the health of the society. Indeed, this lifestyle transformation is thought to be responsible for the epidemic of non-communicable diseases and anticipated dramatic increase in diabetes prevalence.[1-5] In Saudi Arabia, estimates of the prevalence of diabetes range between 34.1% in males and 27.6% in females.6 The WHO reported that around 890,000 persons in Saudi Arabia were affected with diabetes and by 2030, this number is expected to increase to 2,523,000.[7] This is

clearly shows that diabetes cases are in increase and this is likely to be linked to several environmental and genetic factors such as the differences in lifestyle, dietary habits and physical activity of the Saudi community associated with the socio-economic changes and fast urbanization.[8] These factors appear to make the Saudi people more vulnerable to the disease than other populations. Awareness and education of people with diabetes would be more effective if we know the level of knowledge attitude, practice. Appropriate dietary practices are a basic and integral part of treating and improving risk factors and clinical and metabolic outcomes, thus improving the quality of life.[9]

Therefore, proper education and awareness programmes developed according to the need of the society can improve the knowledge of patients and change their attitude and dietary practices. A study from Pakistan highlighted the fact that proper education and awareness programme can improve the knowledge of patients and changes their attitude as a large gap was found between knowledge and attitude.[10] A study from Malaysia shows good knowledge attitude and practice (KAP) of diabetic patients in this region.[11] These differences may be due to differences of literacy rate and information about diabetes.[12] Unfortunately, diet and lifestyle have been reported as a management domain with very low compliance among diabetics.[13,14]

Results from cross-sectional studies indicate low adherence to the dietary recommendations for macronutrient intake and fruit and vegetable consumption.[14,15] Almost no data exist regarding knowledge, attitude and practice of diabetic people in Najran, KSA and no information exists regarding their dietary pattern. The aim of this study was thus to assess the knowledge, attitude and practice of people diagnosed with diabetes in Najran city, Saudi Arabia towards Diabetes mellitus.

METHODS

This is a hospital based, cross-sectional study conducted in the outpatient clinics of Najran university hospital among patients with diabetes mellitus from 1st June-2nd November 2016. We applied the American diabetic association's criteria for the diagnosis and classification of diabetes among the participants who were already diagnosed with the disease. From the Outpatients clinic, a random selection of 350 patients with diabetes was made. All Diabetic people residing in Najran city willingly wished to participate were included, patients with major psychiatric problems were excluded.

An Arabic version of a questionnaire which was developed by P and T Journal Multimedia (USA) was used for data collection covering four variables of the disease: 1. demographic factors, 2. Knowledge, 3. Attitude, 4. Practice of patients towards diabetes and 5. Frequency of food consumption. Questionnaires were

pre-tested with diabetic patients in 2 other hospitals at Najran and all medical jargons and unclear questions in the questionnaire were corrected. Physicians participating in the study who work in Najran University carried out the interviews. The interviewers did not in any way try to modify responses of the contributors. Outcome variables were Knowledge, Attitude and practice. The questionnaire had 57 questions (knowledge 10, attitude 12, practice 16 questions and frequency of food consumption 19). For knowledge, attitude and practice each correct answer was given a score of 'one' and each wrong answer was given a score of 'zero'. Responses were coded and analysed using SPSS-version 20 and descriptive statistics were used to study the characteristics of the study population. Microsoft office 2007, Window vista was used to perform descriptive analysis.

A sample size of 350 diabetic patients was our initial target but finally 301 patients agreed to participate. Knowledge was measured using a 10-item questionnaire Table1 relating to general knowledge of diabetes. Scores ranges from 7 to 10 indicate higher level of knowledge. Attitude was measured using a 12-item questionnaire Table2, scores ranges from 9 to 12 indicate higher level of attitude. Practice was measured using a 19-item questionnaire. Scores ranges from 12 to 19 indicating higher level of practice. The total score of KAP was classified into next five categories based on the quintile scores and coded as $\leq$ 20 % "highly insufficient", 21- 40 % "insufficient", 41-60 % "sufficient", 61-80 % "satisfactory" and >80 % "highly satisfactory".

Statistical methods: The statistical analysis was made using SPSS version 20 (SPSS Inc., Chicago, IL). Absolute and relative frequencies and means were used as descriptive statistics. The internal consistency of the questionnaire was checked by Cronbach's alpha and it was considered good (0.87 for dietary practice). In all cases completion of questionnaire was voluntary and done prior to departure from the outpatients' clinic at Najran University Hospital. All collected information was anonymous and did not contain patient's identity. Informed verbal consent was obtained. Contributors were also informed that the study had nothing to do with their management which will keep on going as routine. No any incentives or financial payments have been provided for the interviewed patients. Personal recognition was removed from the filled questionnaires and was assured for their confidentiality and dignity. Permission was obtained from the study setting and the study was approved by the ethical review committee of Najran University.

RESULTS

Knowledge questionnaire

Table 1 shows that response of the contributors to knowledge assessment questions.

Table 1: Participants' knowledge score.

Questions	Number	%
The major problem in diabetes is	151	50.2
The method to check blood sugar control in the long-term is	155	51.5
What are the components of a well-balanced diet?	146	48.5
What are the components of treatment of diabetes?	162	53.8
Type 2 diabetes mellitus is due to lack of insulin?	147	48.8
Type1 diabetes mellitus can be caused by obesity?	152	50.5
Diabetes Mellitus affect patients only in the short term?	156	51.8
It is not important to control blood sugar in a diabetic patient?	1	0.3
Diet, regular exercise and weight reduction do not improve blood sugar in diabetic patient?	160	53.2
Urine test do not help knowing the function of your kidney?	1	0.3

Participants' attitude score

Table 2 shows that response of the contributors to attitude assessment questions are as follows:

Table 2: Participants' attitude score.

Questions	Number	%
Do you feel confident in yourself modifying medication dose according to your blood sugar level?	150	49.8
Do you benefit from the results of measuring the level of sugar in your blood to modify your medication dose?	152	50.5
When was your HBA1C last time checked?	0	0.0
Have you had diabetes education before?	301	100.0
If yes, what was that?	0	0.0
What do you think you need to learn more from your GP to help you better care for your diabetes?	0	0.0
Have you ever met with a dietician about your diabetes meal plan?	164	54.5
Do you skip meals?	192	63.8
If yes, what was that?	0	0.0
Do you practice any type of Sports?	164	54.5
If yes, what was it?	0	0.00
How many times a week do you exercise?	0	0.00

Participants' practice score

Table 3 shows that response of the contributors to practice assessment questions are as follows:

Table 3: Participants' practice score.

Questions	Number	%
Do you see your doctor to check your diabetes?	270	89.7
If yes, how often?	0	0.00
Do you test your blood sugar at home?	201	66.8
If yes, how often?	0	0.00
What do you do if you start feeling with symptoms of hypoglycemia?	0	0.00
Do you test your urine proteins?	195	64.8
If yes, what was the percentage of the proteins in your urine?	0	0.00
Do you examine your feet in a regular basis?	0	0.00
If yes, how often?	0	0.00
Do you check your eye back annually?	0	0.00
Have you ever had an ECG or an exercise?	173	57.5
Do you have any social commitments that affect how you manage / care for your diabetes?	196	65.1
Have you bought any special diabetic food in the last 3 months?	17	5.6
If yes, what type of food was that?	0	0.0
Do you use diet sugar (low calories sugar) in your food and drinks?	86	28.6
What kind of fat do you most often use for cooking?	0	0.0

Frequency of food consumption

For full description of frequency of food consumption among the participants please refer to table 4.

63% of the participants consume vegetables on daily basis and 1.7% never eat vegetables. 45.8% of the contributors consume fruits daily and 1.7% never eat fruits. Rice is consumed daily by 62.8% and those who never consume rice are 1.7%. Those who eat whole bread wheat are 48.2% and those who never eat it are 11%. White bread is consumed by 42.2% on daily basis and 10.6% never eat white bread.

4.7% eat meat daily and those who are vegetarians are 7%. Fish and other types of sea food are consumed daily by 4.7% and those who never eat are11.6%. 60.1% consume chicken daily and 3.7% do not eat chicken at all. 8.0% eat eggs on daily basis and3.7% do not eat eggs at all.

Table 4: Frequency of food consumption.

Type of food						
Frequency of food consumption	Daily	Once a week	1-3 times a week	Once a month	Never	Response Total
Vegetables	63.5% (191)	6.6% (20)	25.6% (77)	2.7% (8)	1.7% (5)	301
Fruits	45.8% (138)	12.6% (38)	38.2% (115)	1.7% (5)	1.7% (5)	301
Rice	62.8% (189)	7.3% (22)	26.6% (80)	1.7% (5)	1.7% (5)	301
Whole wheat bread	48.2% (145)	8.6% (26)	27.9% (84)	4.3% (13)	11.0% (33)	301
White bread	42.2% (127)	12.0% (36)	29.9% (90)	5.3% (16)	10.6% (32)	301
Meat- camel/beef/lamb	15.0% (45)	15.6% (47)	48.8% (147)	13.6% (41)	7.0% (21)	301
Fish – sea fish /freshwater fish	4.7% (14)	20.9% (63)	27.6% (83)	35.2% (106)	11.6% (35)	301
Chicken	60.1% (181)	5.6% (17)	27.9% (84)	2.7% (8)	3.7% (11)	301
Eggs - Shakshooka	8.0% (24)	18.6% (56)	33.2% (100)	20.9% (63)	19.3% (58)	301
Fast food – French fires/pizza	2.3% (7)	9.0% (27)	19.6% (59)	32.9% (99)	36.2% (109)	301
Lentils/Beans/ Legumes	13.3% (40)	20.9% (63)	46.8% (141)	10.6% (32)	8.3% (25)	301
Pasta – spaghetti, lasgna	6.0% (18)	21.9% (66)	31.2% (94)	21.9% (66)	18.9% (57)	301
Date	56.8% (171)	10.0% (30)	23.9% (72)	5.6% (17)	3.7% (11)	301
Saudi Kabsa – meat/chicken	56.1% (169)	9.0% (27)	24.9% (75)	5.0% (15)	5.0% (15)	301
Najran traditional dishes-Ragash/Hamash/Radefa/Bur wasaman	4.3% (13)	11.0% (33)	20.6% (62)	29.2% (88)	34.9% (105)	301
Full fat milk/cheese	52.5% (158)	8.6% (26)	22.3% (67)	6.0% (18)	10.6% (32)	301
Sodas drinks- Cola/Pepsi	6.3% (19)	9.6% (29)	19.3% (58)	18.9% (57)	45.8% (138)	301
Sweets/desserts- Arabic /candy bars	3.3% (10)	14.0% (42)	15.9% (48)	20.6% (62)	46.2% (139)	301
Tea/ coffee/ juicies – with sugar	56.1% (169)	7.0% (21)	14.6% (44)	6.6% (20)	15.6% (47)	301
					answered	301
					skipped	0

Knowledge, attitude and practice of diabetic people in Najran

Percentage of participants who scored from 0-10 in knowledge Figure 1.

10% of the participant scored > 7, 28% scored >5 and 62% scored 5 and less in Knowledge questionnaire. Percentage of participants who scored from 0-12 in Attitude Figure 2 none [0.00%] of the participants scored 7 or more out of the attitude questionnaire. 100% of the participants scored 5 and less out of 12.
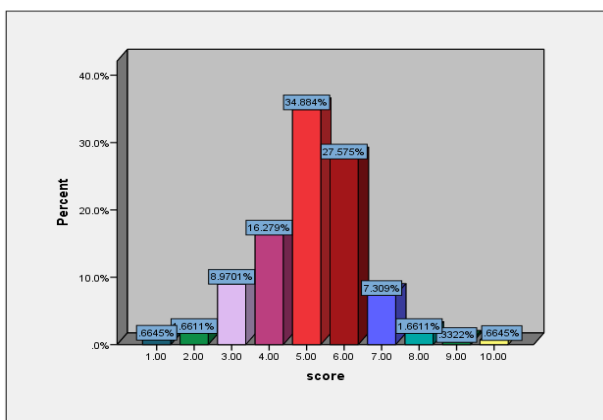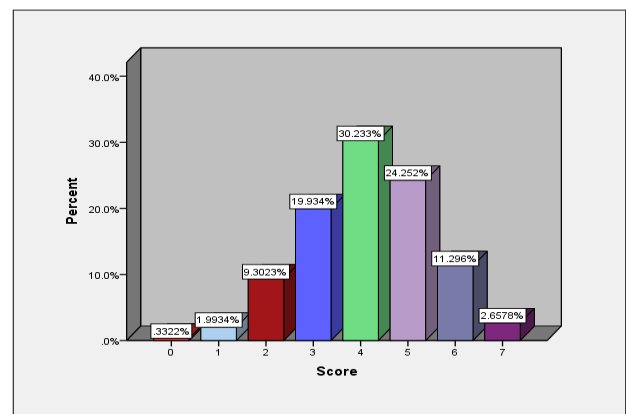

Figure 1: Knowledge, attitude and practice of diabetic people in Najran-knowledge-percentage of people who score from 0-10 in knowledge.

Figure 1: Knowledge, attitude practice of diabetic people in Najran- practice percentage of people who score from 0-7 in practice.

Percentage of participants who scored from 0-19 in Practice Figure 3.
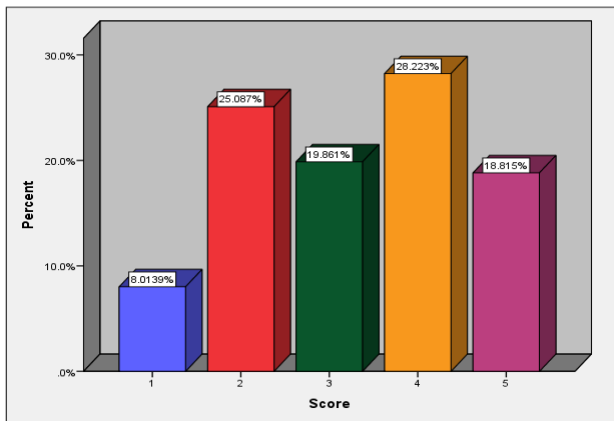

Figure 3: Knowledge, attitude practice of diabetic people in Najran- attitude percentage of people who score from 0-5 in attitude.

100% of the participants scored >6 and 0% scored 12 or more in the practice questionnaire.

DISCUSSION

The knowledge questionnaire revealed that the mean score for the knowledge of the participants is only 40.79%, this indeed reflects a poor knowledge of diabetes among our participants. Culprit factors of poor knowledge may include: 1. Poor communication of health care providers with the diabetic patients. 2. Lack of integrated systems to provide the necessary non-pharmacological issues of diabetes management such as offering advices regarding the nature of the disease, its complications and what role can be played by the patient to control their disease.3. Lack of motivation to encourage self-care and management of diabetes. A study performed by Al-Maskari et al found the same result of low levels of knowledge in the UAE.[16]

The attitude questionnaire showed that the mean score for the attitude of the participants is only 31.05%, this is even less than the score of the participants in knowledge. There are some socio-demographic factors such as age, education, income that underpin the attitude of patients in urban community as in Najran community. It seems that the attitude towards diabetes is universally unsatisfactory, in a study held in Kenya by Maina WK et al, it was shown that the level of attitude towards diabetes was very poor.[17]

The participants managed to score a mean of 23.63% in the practice questionnaire, this emphasizes the need to improve our patient's practice of diabetes care. This can be attributed to the fact that practice is strongly linked to education, age and attitude towards diabetes even among educated people together with careless thoughts and overconfidence. Gul N, in a recent study in Islamabad

(Pakistan) proved that knowledge, practice and attitude for diabetes were low.[18] The need for educational efforts and effective communication with diabetic patients are essential for better understanding and therefore control of diabetes.

It is stated by the WHO that at least 400 g (5 portions) of fruits and vegetables should be consumed daily.[19] It was found by our study that 63% of the participants eat vegetables and 45.8% eat fruits on daily basis. Our study showed that more than half of the contributors consume rice on daily basis, the amount of which could not be determined by our study, but it is important that patients should know that consumption of carbohydrates should be well tailored to their body mass index and their activities. The American diabetes association clearly stated that the consumption of white bread should not exceed one slice and consumption of whole wheat bread is 1.9 slice per day. We found that two fifth of the participants consume white bread on daily basis.[20]

Fish oil is rich of omega-3 fatty acids. This medicine is used along with diet and lifestyle changes for the management of hypertriglyceridemia, which is a common lipid disorder among the diabetics, therefore it is recommended that fish should be a major component of a healthy diet for the diabetics.[21] We found that the percentage of those who eat fish or other sea food on daily basis is only 4.7% among the participants.

Our target score of 7-10 in the knowledge was not achieved by any of the participants.

None of the participants could reach the target of 9-12 of the attitude score. Our study showed that none of the contributors achieved the goal of scoring 12-

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REFERENCES

1. Aldasouqi SA, Alzahrani AS. Terminology in diabetes; an example of resistance to change. Saudi Med J. 2004;25(9):1289-91.
2. Al-Nozha MM, Arafah MR, Al-Mazrou YY, Al-Maatouq MA, Khan NB, Khalil MZ, et al. Coronary artery disease in Saudi Arabia. Saudi Med J. 2004;25(9):1165-71.
3. Al-Daghri NM. Diabetes mellitus type 2 and other chronic non- communicable diseases in the central

region, Saudi Arabia: A decade of an epidemic. BMC Medicine. 2011;9:76-81.

4. Al-Hamdan N, Kofi M, Abuzaid L, Saeed A, Bhanassy A, Abdalla A. Distribution of diabetes mellitus among Saudi adult population-a national survey. Middle East J. Family Med. 2012;10:22-8.

5. Mohieldein A, Alzohairy M, Hasan H. Risk estimation of type 2 diabetes and dietary habits among adult Saudi non-diabetics in Central Saudi Arabia.Glob. J. Health Sci. 2011;3:123-33.

6. Alqurashi KA, Aljabri KS, Bokhari SA. Prevalence of diabetes mellitus in a Saudi community. Ann Saudi Med. 2011;31(1):19-23.

7. WHO Department of Non-Communicable Disease Surveillance, "Diagnosis and classification of diabetes mellitus and its complications," WHO, 1999. Available from: http://whqlibdoc.who.int/hq/1999/ WHO NCD NCS 99.2.

8. Majeed A, El-Sayed AA, Khoja T, Alshamsan R, Millett C, Rawaf S. Diabetes in the Middle-East and North Africa: an update. Diabetes research and clinical practice. 2014;103(2):218-22.

9. Alajlan A. Diabetic scenario in Arabs. Saudi Med. J. 2007;28:473-475.

10. Shera AS, Jawad F, Basit A. Diabetes related knowledge, attitude and practices of family physicians in Pakistan. J PakMed Assoc. 2002;52(10):465-70.

11. Ambigapathy RA, Ambigapathy SU, Ling HM. A knowledge, attitude and practice (KAP) study of diabetes mellitus among patients attending Klinik Kesihatan Seri Manjung. NCD Malaysia. 2003;2(2):6-16.

12. Shrestha L, Nagra JS. Knowledge, attitude and practice(KAP) study on diabetes mellitus among Nepalese diabetic patients. Nepal Med Coll J. 2005;7(1):51-3.

13. Pi-Sunyer FX, Maggio CA, McCarron DA, Reusser ME, Stern JS, Haynes RB et al. Multicenter randomized trial of a comprehensive prepared meal program in type 2 diabetes. Diabetes Care. 1999;22(2):191-7.

14. Kulkarni K, Castle G, Gregory R, Holmes A, Leontos C, Powers M, et al. Nutrition practice guidelines for type 1 diabetes mellitus positively affect dietitian practices and patient outcomes. The Diabetes Care and Education Dietetic Practice Group. J Am Diet Assoc. 1998;98(1):62-70.

15. Thanopoulou A, Karamanos B, Angelico F, Assaad-Khalil S, Barbato A, Del Ben M, et al. Nutritional habits of subjects with type 2 diabetes mellitus in the Mediterranean Basin: Comparison with the non-diabetic population and the dietary recommendations. Multi-Centre Study of the Mediterranean Group for the Study of Diabetes (MGSD). Diabetologia. 2004;47(3):367-76.

16. 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.

17. Maina WK, Ndegwa ZM, Njenga EW, Muchemi EW. Knowledge, attitude and practices related to diabetes among community members in four provinces in Kenya: a cross-sectional study. Pan African Medical Journal. 2010;7(1).

18. Gul N. Knowledge, attitudes and practices of type 2 diabetic patients. J Ayub Med Coll Abbottabad. 2010;22(3):128-31.

19. Cooper AJ, Sharp SJ, Lentjes MA, Luben RN, Khaw KT, Wareham NJ, et al. A prospective study of the association between quantity and variety of fruit and vegetable intake and incident type 2 diabetes. Diabetes care. 2012;35(6):1293-300.

20. Guenther PM, Kirkpatrick SI, Reedy J, Krebs-Smith SM, Buckman DW, Dodd KW, et al. The Healthy Eating Index-2010 is a valid and reliable measure of diet quality according to the 2010 Dietary Guidelines for Americans. J Nutri. 2014:113.

21. Karlström B, Vessby B, Asp NG, Boberg M, Gustafsson IB, Lithell H, Werner I. Effects of an increased content of cereal fibre in the diet of type 2 (non-insulin-dependent) diabetic patients. Diabetologia. 1984;26(4):272-7.

22. Järvi AE, Byberg L, Berglund LG, Vessby BO. Fatty fish in the diet of patients with type 2 diabetes: comparison of the metabolic effects of foods rich in n− 3 and n− 6 fatty acids. Amer J Clinical nutrition. 2011;94(1):26-33.