

A Need of Saudi Medical Students for Training on Diabetes Mellitus Health Care Literacy

Metrek Almetrek¹, Awadh Alsamghan¹, Safar Alshahrani¹, Fatimah Alahmary²,
Amnah Alahmary², Amal Alfaifi², Fatima Altalea², Alyah Alqarni²,
Amjad Bin Ghamiah², Sultanah Alajmi³, Nawal Haddadi⁴

¹Departement of Family Medicine, College of Medicine in King Khalid University, Abha - Saudi Arabia.

²Internship Dean, College of Medicine in King Khalid University, Abha - Saudi Arabia.

³Agency Assistance to Public Health, Ministry of Health, Riyadh, Saudi Arabia.

⁴Khamis Mushayte Maternity and Children Hospital, Khamis Mushayt, Abha, Saudi Arabia.

ABSTRACT

Background: Diabetes mellitus is found to be burdening disease worldwide and in every population and its prevalence is escalating exponentially, with a high frequency of morbidity, premature mortality. Patient education is always considered an essential element of inter-professional DM management. One of the important professional is medical students and graduated doctors. Insufficient knowledge of medical students and graduated doctors toward diabetes contributes to poor control of diabetes mellitus impact on patient outcomes.

Aim and Objectives: To evaluate the knowledge of diabetes mellitus, risk factors and management of last year students in college of Medicine in King Khalid University.

Methodology: A cross-sectional design conducted on 123 students in both level 11 and 12 of clinical years in college of Medicine in King Khalid University. self-administered questionnaire consisting of three sections, socio-demographic data, diabetes mellitus risk factors and the validated 24-item Diabetes Knowledge Questionnaire (DKQ-24).

Results: The response rate of the survey was 81%. The participants were 57% male students and 43% female students. In general, 62% of the participant had good knowledge ($\geq 80\%$ correct answers), 26% had borderline knowledge ($\geq 60 \leq 80\%$ correct answers) and 12% had poor knowledge ($< 59\%$ correct answers). All nine diabetes mellitus risk factors answered correctly by 89.7% of the students.

Conclusion: The health literacy of diabetes among the medical students found in the study ensures the good competencies for future doctors. Teaching inter-professional health care literacy should be addressed by medical education department for better level of knowledge in future, which can impact the quality of patients' literacy positively and the control of diabetes and its complications.

Key words: Diabetes Mellitus, Inter-Professional, Medical Education, Medical Students, Health Education, Risk Factors, Counseling, Screening, King Khalid University, Saudi Arabia.


*Correspondence to:

Dr. Metrek Ali Almetrek,
Department of Family Medicine,
College of Medicine in King Khalid University,
Abha - Saudi Arabia.

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INTRODUCTION

Diabetes mellitus, is found to be burdening disease worldwide and in every population and its prevalence is escalating exponentially, with a high frequency of morbidity, premature mortality.¹⁻² The epidemiological evidence suggests that, without effective prevention and control programs, diabetes will likely continue to increase globally.³ In Saudi Arabia, the prevalence of diabetes mellitus is estimated at approximately 24 per cent among Saudi adults.⁴ The management of diabetes mellitus (DM) includes sharing the patients in action plan.⁵ Patient education is always considered an essential element of DM management. However, many diabetics are lack sufficient knowledge about their disease

due to illiteracy.⁶⁻⁸ Inter-professional act on diabetes management is a very important role in improving the literacy of the diabetics and increase the rate of control of such chronic disease.⁹⁻¹¹ Because the medical students will work as health care providers and in health care literacy in future different healthcare setting (primary or secondary), it is important for them to have the required competencies as communicator, expert, advocator for the part of Diabetes Mellitus management (health education) in chronic diseases care.¹²⁻¹³

Medical students as health care providers in future will have a very important role in increasing awareness of the disease,

disease prevention and health promotion. Various studies conducted among medical students unfortunately showed an inadequate knowledge about diabetes.¹⁴

Diabetes mellitus as competency challenging for undergraduate medical students require more than one discipline to address issues regarding it teaching an education.¹⁵⁻¹⁷ Before enrolling the medical students in health education programs during their clerkship, it is necessary to assess their knowledge, attitudes, and practices towards diabetes. Several studies showed the effects of health education processes on controlling the diabetes mellitus and its complications.¹⁸⁻¹⁹ Practicing well health education and counseling for diabetes among type 2 diabetic patients is associated with better outcomes such as their dietary plan, physical exercise, adherence to medication, HbA1c and depression.²⁰ Poor knowledge and misconception of medical students regarding diabetes considered as poor competencies and can lead to malpractice and poor control of diabetes mellitus for their patients in future.²¹⁻²⁴ The present study aimed to assess the knowledge toward diabetes mellitus (risk factors, clinical presentations of DM and its complications, treatment, controlling and prevention) among the last year medical students in King Khalid University.

METHODOLOGY

The study was a Cross-sectional designed. The targeted population included students in both level 11 and 12 of clinical years in college of Medicine in King Khalid University. They are around 123 students in last year of medical college. The tool of self-administered questionnaire assessing the socio-demographic data and knowledge determining factors was utilized. The self-constructed section consisted of true or false responses to nine (9) diabetes mellitus risk factors and part consisted of the 24-item Diabetes Knowledge Questionnaire (DKQ-24), developed and validated by Garcia et al.²⁵ It has twenty-four (24) true and false statements relating to diabetes mellitus knowledge and has been used in several international studies.^{26,27} The DKQ-24 has demonstrated internal consistency with reliability coefficient of 0.78.

The following criteria for knowledge categories were used: poor for ≤ 59%, borderline ≥ 60-79% was and good for ≥80% correct answers. The setting and place of study were in college of

Medicine in King Khalid University. This study was conducted from 1st to 31st of April, 2016. Data were collected after getting approval from the research ethical committee in Aseer Region. Data were collected in the following steps. First, official letter describing aims, objectives and processes of the study was sent to college of Medicine in King Khalid University. After obtaining the permission, the questionnaires were sent to them by the linked messages through SMS, emails and whatsapp through their group leaders. Starting letters informing the participants about the aims of the study and asking them their permission to participate before the survey. The participants were informed that confidentiality and anonymity would be respected.

The Statistical Package for Social Sciences (SPSS version 22) was used for data entry and analysis. Descriptive statistics were computed in the form of frequency and percentage for categorical data and in the form of measures of central tendency (arithmetic mean and median) and measures of dispersion (standard deviation and range) for continuous variables. Differences were considered as statistically significant when the p-value is less than 0.05.

RESULTS

Out of 123 students in last clinical years in College of Medicine in King Khalid University, 100 (81 %) responded to the study survey. The personal characteristics of the participants; mean age was 25.57 ± 2.69. 57% male students and 43% female students. Figure 1 shows the response to the 24 item Diabetes knowledge questionnaire. The general result showed that 62% of the participant had good knowledge (≥ 80% correct answers), 26% had borderline knowledge (≥60 & ≤ 79% correct answers) and 12 % had poor knowledge (<59% correct answers). Table 1 shows the answered 24 item diabetes knowledge (correct and incorrect) for each item. Figure 2 shows the knowledge of DM risk factor. All the nine diabetes mellitus risk factors answered well by 89.7% of the medical students.

The majority of the medical students answered the theses risk factors correctly as diabetes risk factors: obesity (99%), unhealthy diet (96%), impaired glucose levels (98%), raised fasting blood glucose levels (99%), high blood pressure (91%) and physical inactivity (98%) high cholesterols (78%) smoking (82%) as diabetes risk factors.

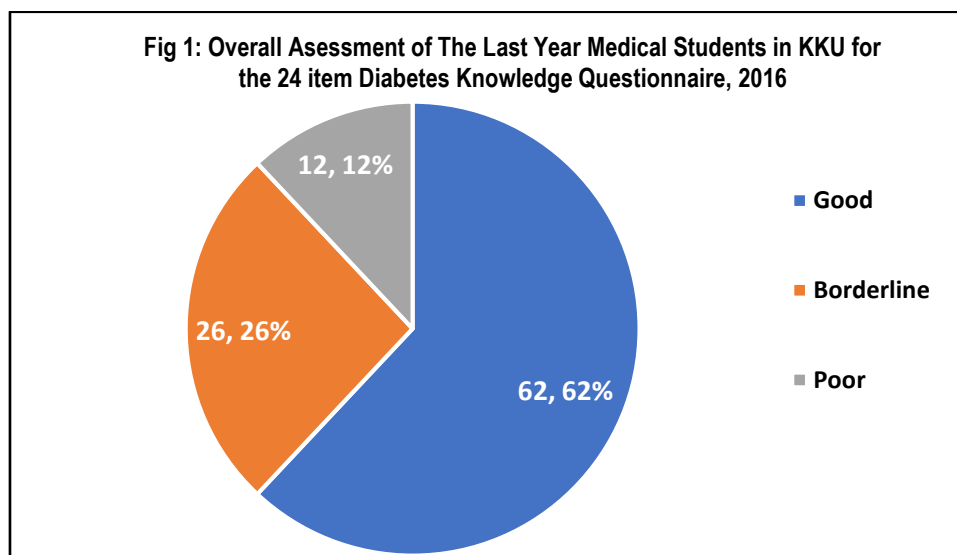
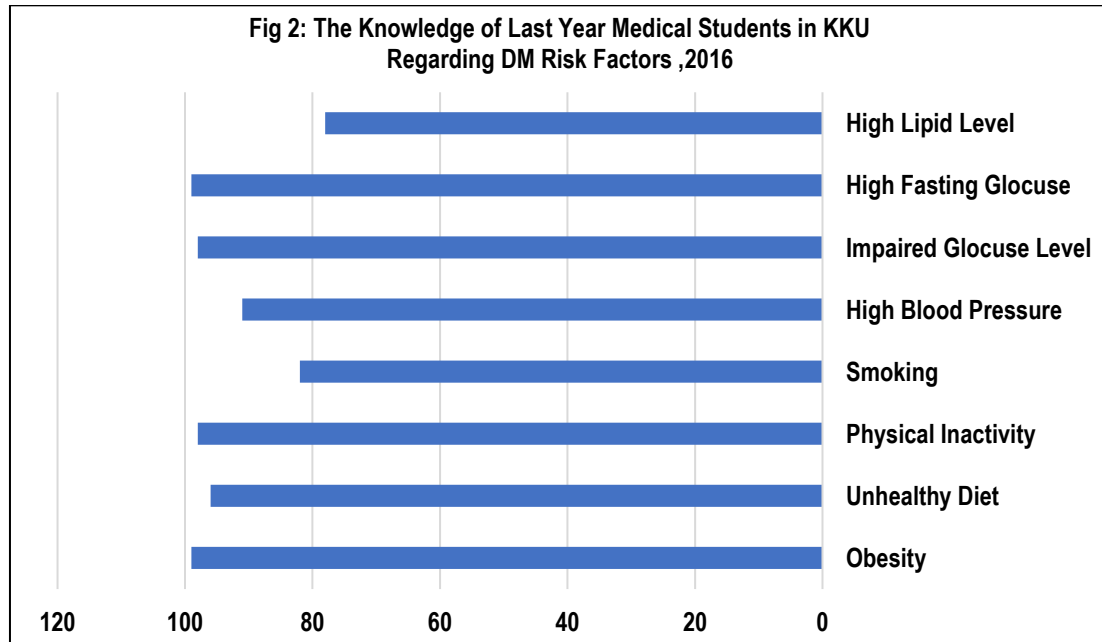


Table 1: Answers of Medical Students for the 24 item Diabetes knowledge questionnaire in King Khalid University, 2016

Questions	Correct %	Incorrect %
1 Eating too much sugar and other sweet foods is a cause of diabetes. (False)	38	62
2 The usual cause of diabetes is lack of effective insulin in the body. (True)	78	22
3 Diabetes is caused by failure of the kidneys to keep sugar out of the urine. (False)	87	13
4 Kidneys produce insulin. (False)	97	3
5 In untreated diabetes, the amount of sugar in the blood usually increases. (True)	83	17
6 If I am diabetic, my children have a higher chance of being diabetic. (True)	66	34
7 Diabetes can be cured. (False)	89	11
8 A fasting blood sugar level of 135 mg/dl is high. (True)	54	46
9 The best way to check my diabetes is by testing my urine. (False)	41	59
10 Regular exercise will increase the need for insulin or other diabetic medication. (False)	29	71
11 There are two main types of diabetes: Type 1 (insulin-dependent) and Type 2 (non-insulin-dependent). (True)	88	12
12 An insulin reaction is caused by too much food. (False)	39	61
13 Medication is more important than diet and exercise to control diabetes. (False)	66	34
14 Diabetes often causes poor circulation. (True)	79	21
15 Cuts and abrasions on diabetics heal more slowly. (True)	82	18
16 Diabetics should take extra care when cutting their toenails. (True)	87	13
17 A person with diabetes should cleanse a cut with iodine and alcohol. (False)	39	61
18 Advise the diabetics that the way I prepare my food is as important as the foods I eat. (True)	87	13
19 Diabetes can damage my kidneys. (True)	89	11
20 Diabetes can cause loss of feeling in my hands, fingers, and feet. (True)	78	22
21 Shaking and sweating are signs of high blood sugar. (True)	42	58
22 Frequent urination and thirst are signs of low blood sugar. (False)	86	14
23 Tight elastic shoes or socks are not bad for diabetics. (False)	67	33
24 A diabetic diet consists mostly of special foods. (False)	51	49



DISCUSSION

Medical education core competencies among undergraduate medical students is one of the concern to education stakeholders.²⁸ A goal of controlling diabetes mellitus should take most important determinants of the medical students when dealing with diabetes mellitus management plan.²⁹ Diabetes mellitus is burdening illnesses in Saudi Arabia.³⁰ Improved health care literacy on modifiable risk factors of diabetes is reasonable to minimize the diabetic epidemic globally.³¹ Medical students in

future will have critical deals as health care providers dealing with diabetic patients in the health care institutes and play a vital role in health care literacy who considered a key source of information for patients suffering from diabetes mellitus.³²⁻³⁵ It was found that these medical students, who will be part of health education and promotion in future and will act on health education programs for diabetes and other chronic disease for mostly diabetic and chronic disease patients, have good, and insufficient knowledge (borderline and poor). If these areas of knowledge well mastered

by the future doctors, it will lead to better level of education for the patients for the prevention of diabetic complications by modification of risk factors such as obesity and physical inactivity, education on wound care.³⁶

This study highlights that medical students in King Khalid University, demonstrate accepted to need to good knowledge of diabetes mellitus and its risk factors with almost 88% of the participants while only 12% having poor to borderline knowledge of diabetes mellitus. This could have a positive impact on the knowledge of them in future if got continues and improved. Acknowledgement of the risk factors of diabetes mellitus plays a pivotal role in its prevention. It is importance that medical students should be able to identify well-known risk factors for diabetes mellitus in order to correctly inform their patients regarding the modifiable risk factors. The levels of knowledge of diabetes risk factors of the them are promising as seven of the nine risk factors were readily identified by 88% of medical students.

The results of this study is promising as 98% of the medical students know about the key role physical activity plays in the prevention of diabetes and its complications.

LIMITATIONS

The findings are relevant to only last medical students in King Khalid University. However, the present findings lay the groundwork for similar studies amongst other students in all years and levels.

CONCLUSION AND RECOMMENDATIONS

Education health care literacy in form of inter-professional medical education is important for medical students in order to graduate them competent to deal with diabetes mellitus. Although the results of the study revealed that almost 62 -88% of the medical students in King Khalid University have adequate knowledge of diabetes mellitus. The borderline of basic knowledge could influence the effectiveness of patient education in future if not improved and therefore have dangerous consequences for the patient diagnosed with diabetes mellitus who are involved in the health care literacy. The medical education department should put a training programs for improving the knowledge and skills about diabetes mellitus health education and promotion to keep such good impressive level in future , as well as population-based health promotion programs for patients with diabetes and health promotion activities to raise awareness among healthy people for prevention of the diabetes.

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