



Adolescents' knowledge and awareness of diabetes mellitus in Kuwait



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Abstract *Background and aim:* Diabetes mellitus is a major public health problem in Kuwait. This study aimed to evaluate the awareness and the knowledge of diabetes in adolescent about the disease which, will be of a great help to reduce the risk of developing diabetes and its complications. *Methodology:* A cross-sectional survey was done to evaluate the general knowledge of diabetes. The survey was introduced randomly to the students of 30 secondary public and private schools in Kuwait. The questionnaire was divided into eight main sections, with each section focusing on different aspects of diabetes mellitus, namely General knowledge about diabetes, Knowledge of risk factors of diabetes, Knowledge of symptoms, Knowledge on complications, Knowledge about treatment and available medications, Knowledge about lifestyle and non-medical measures, Things diabetics should not do, and Knowledge of management of diabetes.

Results: A total of 4333 students contributed. The main score obtained by the students was 63.2% of the maximum total score. For “General knowledge about diabetes” section’s scores were 71.0%, “Knowledge of risk factors of diabetes” 63%, “Knowledge of symptoms and complications” 55.8%, “Knowledge about treatment and management” 62.7%, and “Knowledge of monitoring diabetes” 72.3%.

Conclusion: The students contributed in this study have good general information about diabetes except for a few areas. Our study will clarify these areas to help in designing educational programs to treat these deficiencies of knowledge about the disease and increase the awareness.

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1. Introduction

Diabetes mellitus (Type 1 and Type 2) is one of the most commonly encountered diseases by the healthcare professionals.¹ Worldwide, it was estimated that the prevalence rate among adults was 4% in 1995 and this is expected to increase to 5.4% by 2025. Compared to other parts of the world,

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Kuwait has a higher prevalence of diabetes.²⁻⁵ In 2010 a study was done and showed that 20% of Kuwaiti population are diabetic. The complications associated with diabetes besides significant mortality are, diabetes-related morbidities such as diabetic retinopathy⁶, neuropathy, and cardiovascular disease. These complications result in a significant morbidity and mortality rate which have placed a heavy financial burden on the society. Healthcare professionals as well as public policy makers are well aware of the public health impact of diabetes.⁷

Diabetes is a silent disease, many sufferers became aware that they have diabetes only when they develop one of its life-threatening complications. Knowledge of diabetes mellitus can assist in early detection of the disease and reduce the incidence of complications. This can be achieved by improving the knowledge of the general population of the disease at early stage of life.

The main objective of this study was to identify areas of weakness in knowledge regarding the disease and its presentation and complication which might require additional educational efforts in young adolescent. This knowledge would allow improvements of the current programs to address areas of knowledge deficiency and misconceptions, thus achieving maximum efficiencies with the finite resources devoted to adolescents. The awareness of adolescent about the disease can be of a great help to reduce the risk of developing diabetes in future.

2. Methodology

A cross-sectional survey was introduced to the students of secondary public and private schools in Kuwait. The instructions of the survey were explained to them before starting to answer the questions. The students must answer all the questions of the pre-tested questionnaire using a 'Yes', 'No' or 'Unsure' as the response. The questionnaire was divided into eight main sections, with each section focusing on different aspects of diabetes mellitus, namely General knowledge about diabetes (eight questions), Knowledge of risk factors of diabetes (four questions), Knowledge of symptoms (six questions), Knowledge on complications (five questions), Knowledge about treatment and available medications (two questions), Knowledge about lifestyle and non-medical measures (five questions), Things diabetics should not do (four questions), and Knowledge of management of diabetes (three questions).

The survey included 4333 secondary school students (2120 males and 2193 females) who were selected using the multi-stage stratified random sampling method. A total of 30 secondary schools were involved in this study. Five secondary schools were selected from each of the 6 governorates. Two governorate schools, Arabic language (one male and one female), two private Arabic language schools (one male and one female), and one private English language school (male and female).

The questionnaire was distributed to all students in level 11 and 12 in the selected schools.

Statistical analyses were performed using the Statistical Package for Social Sciences, version 20.0 (SPSS Inc., Chicago, USA). Data are presented as number (%) for categorical variables and mean (standard deviation) or median (range) for continuous variables.

A total score was calculated by adding the scores for all 37 questions after giving score 1 for correct answer and 0 for

wrong or not sure answers. We excluded the students who marked all questions as "Yes" or all as "No". Domain scores were also calculated for the 5 domains: general knowledge, risk factors, symptoms and complications, treatment and management, and monitoring.

3. Results

3.1. Demographics of respondents

As shown in Table 1, a total of 4333 students answered the questionnaire. 271 responses were not included in the analysis due to poor answers (all questions were marked as "Yes" or all marked as "No"). A total of 4062 questionnaires were included in the analysis, 1955 (48.1%) were male and 2107 (51.9%) were female. 116 (2.9%) students were diabetic and 1888 (46.5%) students had family history of diabetes (a member of his/her family with diabetes). There was no significant difference in the overall correct answer of younger (age 15–17 years) students with that of older (age 18–20 years) students (62.8% vs 64.5%, $p = 0.628$ by independent t -test).

3.2. Overall Knowledge Level

Table 2 shows the responses of the participants for different items of the questionnaire. The lowest percentage of correct answer was for "Diabetes is a condition of the body not responding to insulin" (40.4%) in the general knowledge section, "Pregnancy" (32.3%) in risk factors section, "Loss of sensation in arms and legs" (41.7%) in complications section, and "Diabetics should not wear tight shoes" (34.3%) in lifestyle section. The distribution of total score obtained (out of 36) is shown in Fig. 1. The distribution was negatively skewed with a mean of 25.0 and standard deviation of 7.1.

Table 1 Demographic characteristics of respondents ($n = 4062$).

Characteristics	Number (%)
<i>Gender</i>	
Male	1955 (48.1)
Female	2107 (51.9)
<i>Nationality</i>	
Kuwaiti	1991 (49.0)
Non-Kuwaiti	2071 (51.0)
<i>Age in years</i>	
15	111 (2.7)
16	1277 (31.4)
17	1996 (49.1)
18	568 (14.0)
19	79 (1.9)
20	31 (0.9)
<i>Diabetic</i>	
No	3946 (97.1)
Yes	116 (2.9)
<i>Family history of diabetes</i>	
No	2174 (53.5)
Yes	1888 (46.5)

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