Knowledge and Attitude of Diabetes Mellitus Type 2 among Health Sciences Students In UiTM Puncak Alam, Selangor.

Roslinda Isa¹, Nur Adzirah Abd Rahman¹, Nur Aida Zainal Abidin¹, Zetty Idlia Idris¹

¹Centre of Nursing Studies, Faculty of Health Sciences, Universiti Teknologi MARA, Cawangan Selangor Kampus Puncak Alam, 42300 Kuala Selangor, Selangor, Malaysia.

roslindaisa@uitm.edu.my, adzirah.rahman97@gmail.com, nuraidazainal96@gmail.com, zttyy97@gmail.com
Tel: 011-21826220

Abstract

Poorly controlled diabetes among young people poses a significant challenge to public health in the future since it will be affecting economic and become social burden. A survey was done to assess knowledge, attitude of DM Type 2 among health sciences students. A cross-sectional study using DKQ-24 and Attitude towards Diabetes Mellitus Questionnaire were used. More than half of the respondents scored moderate and good knowledge with 50% displaying positive attitude and proven statistically significant. Majority of the respondents shown satisfying knowledge and displayed a positive attitude towards DM.

Keywords: Diabetes Mellitus; knowledge; attitude; students

1.0 Introduction

Diabetes Mellitus is a chronic condition that develops either when the pancreas does not produce sufficient insulin or impaired ability to use the insulin effectively. Insulin serves as a receptor for the absorption of glucose by cells from the blood. Without insulin, the body unable to use or store glucose for energy. Thus, glucose remains in the blood (Cotton, 2019). For adults aged 18 years and over, the prevalence of diabetes in Malaysia has 15.2% diabetes in which 7.2% are confirmed to be diabetic and 8% are previously undiagnosed (Suzana et al., 2012). College students tend to become adults obese and are much more susceptible to diet-related chronic diseases such as cardiovascular disease, Diabetes Mellitus Type 2, some cancers, and high blood pressure (Brown, 2014). Mongiello (2016) stated that students in college develop a long-term diet and health behaviours associated with the increased lifetime risk of Diabetes Mellitus Type 2 since many university students underestimate the risk of diabetes. Therefore, a study on knowledge and attitude of Diabetes Mellitus Type 2 among health sciences students in UiTM Puncak Alam must be done to improve a better understanding of Diabetes Mellitus Type 2 among university students. This study will create awareness about Diabetes Mellitus Type 2 among university students. Students can enhance their knowledge and make better changes needed to improve eating habits and lifestyles. As the next generations of this country especially in the healthcare profession, it is crucial for them to be well-informed about Diabetes Mellitus Type 2; hence they can take the initiative in approaching primary health care concerns related to Diabetes Mellitus Type 2.

2.0 Literature Review

Diabetes Mellitus Type 2 is the most common form of diabetes which affects over 90% of the world's diabetic population (Valiyot et al.,
2013). Prevalence of diabetes mellitus in Malaysia has been steadily increasing over the last two decades and is presently at a high level of almost 18%. The sudden increase and current high prevalence of obesity and overweight in the state impacted nearly 50 percent of adults and 30 percent of school children for both developed and developing countries in all parts of the country (Tee, 2017). The known major risk factors for the development of Type 2 Diabetes include a family history of diabetes, obesity, and daily lifestyle. Mohamad et al., (2018) stated that eating habits play a very important role in deciding the health status and morbidity rate of diseases occurring in a population because any food that we consume can affect our well-being. Individuals with type-2 diabetes are at a high chance of developing a variety of serious complications such as heart disease, peripheral vascular disease, nephropathy, changes to the retina and blindness that can contribute to impairment and premature death (Asif, 2014). Changes in behaviour and lifestyle are the keys to effective self-management of diabetes. Health care practitioners such as pharmacists, nurses, and physicians should improve knowledge of diabetes mellitus through on-going education (Chinnappan, 2017). If healthier lifestyles can be improved among both the general population and those with a family history of diabetes, the progression of this preventable disease can be limit and significantly reduce its pressure on society (Tam et al., 2014). A study was carried out by Al-Sarayra (2012) in Al-Baqa Applied University in Jordan found that there is poor knowledge and lack of awareness of certain aspects of diabetes amongst college students even though the college consists of many scientific and administrative departments and specialties. Knowledge about diabetes mellitus is still at a minimal level in most of the college students, where they do not even know about signs and symptoms of this illness and its complications (Premkumar, 2018). Good knowledge of diabetes mellitus will increase and improve attitude and practice towards diabetes mellitus through a better educational program such as good healthy lifestyles (Ibrahim Abougalambou et al., 2019). Adequate knowledge and attitude can reduce the complications and as a preventive measure towards diabetes mellitus (Wajid et al., 2018). Kasahun et al. (2017) stated that being knowledgeable about diabetes possesses a better attitude towards diabetes contrary to those who are not knowledgeable. Mgbahurike et al. (2017) concluded that poor knowledge or deficiency of understanding of diabetes mellitus could be attributed to poor attitude such as diabetes mellitus is curable and regards to its complications and severity. Better knowledge of diabetes mellitus with good attitude and practices can be helpful in management for diabetes mellitus such seek for proper treatment and care on the complications of diabetes mellitus (Herath et al., 2017).

3.0 Methodology

3.1 Sample
This research was a cross sectional study conducted among full-time students at the Faculty of Health Sciences. Purposive sampling was used for this study with a sample size of 400. The questionnaire was distributed among full-time degree and diploma students who meet the inclusion criteria and willing to participate in this study. The inclusion criteria for this study were the respondents must be health sciences students and full-time students. The exclusion criteria of this study will be non-health sciences students, part-time students will be excluded from this study, respondents who sick, on leave and already participate in the pilot study.

3.2 Instruments
3.2.1 Diabetes Knowledge Questionnaire 24
Open access questionnaire adapted from Diabetes Knowledge Questionnaire-24 (DKQ-24) by Qamar et al. (2017). The questionnaire consists of 24 questions. This questionnaire uses a Likert scale as this scale is brief and easy to administer to the respondent. Respondents are required to answer the questions from item 1 until 24 and tick the answer that describes how confident the respondents about knowledge on diabetes. Each question comprises the option "yes," "no," and "I don't know" that requires respondents to put a tick on the applicable column. Each correct answer was given the "1" mark while the "0" mark for the wrong and don't know the answer. The total score is categorized into three-level indicated by poor (0-6), moderate (9-16) and good (17-24). Higher scores represented more levels of knowledge about diabetes. A pilot study was conducted to test for validity and reliability of the questionnaire. Based on the feedback received from the sample of the pilot study, the acceptable reliability and validity with the analysis of Cronbach’s alpha for the Diabetes Knowledge Questionnaire 24 (DKQ-24) are 0.700.

3.2.2 Attitude towards Diabetes Mellitus
The questionnaire was adapted from Redhwan et al. (2017). The questionnaire consists of 9 questions. This questionnaire also use likert scale with each question comprises the option "strongly disagree," "disagree," "do not know," "agree" and "strongly agree" that requires respondents to put a tick on the applicable column. Respondents were required to answer the questions from item 1 until 9 and tick the answer that describes their attitude towards diabetes. For "strongly disagree," marks were given as 1, "disagree" as 2, "do not know" as 3, "agree" as 4 and "strongly agree" was given as 5. The minimum scores on the likert scale indicate an unfavorable attitude, while the maximum scores indicate a positive attitude towards Diabetes Mellitus Type 2. The pilot study was been done to test for validity and reliability. The tool has acceptable reliability and validity with the analysis of Cronbach’s alpha for the Attitude towards Diabetes Mellitus is 0.765.

3.3 Procedures
The data was collected among full-time students at the Faculty of Health Sciences through identifying participants that suit the inclusion
and exclusion criteria. Before the distribution of research instruments, a brief explanation of the research was given, and informed consent was acquired. The respondents were informed that they have the right to refuse from taking part in this study. The respondents answer the questionnaires within 20 to 30 minutes and the questionnaire was collected immediately by the researcher.

3.4 Data Analysis
Data was analyzed using IBM Statistical Programme Package for Social Sciences (SPSS) version 25.0. Descriptive statistics was used to determine level of knowledge and attitudes on Diabetes Mellitus Type 2 among health sciences students. Pearson’s Correlation test was used to determine relationship between knowledge and attitudes on Diabetes Mellitus Type 2 among health sciences students.

3.5 Ethical Consideration
The design and procedure of this study were reviewed in advance and given full approval by the UiTM Ethics Committee. The researcher seeks consent from the respondents among the health sciences students in UiTM Puncak Alam to collect the information about their knowledge and attitude towards Diabetes Mellitus Type 2. Permission to use questionnaire from original author was gain before use.

4.0 Result

4.1 Demographic data

<table>
<thead>
<tr>
<th>Variables</th>
<th>N (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>1.86 (0.347)</td>
</tr>
<tr>
<td>Male</td>
<td>56 (14)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>344 (86)</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td></td>
<td>4.5 (2.294)</td>
</tr>
<tr>
<td>Nursing</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Optometry</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Medical Laboratory and Technology</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Nutrition and Dietetics</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Environmental Health and Safety</td>
<td>50 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>1.02 (0.14)</td>
</tr>
<tr>
<td>Degree</td>
<td>392 (98)</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>8 (2)</td>
<td></td>
</tr>
<tr>
<td>Family History</td>
<td></td>
<td>1.477 (0.50)</td>
</tr>
<tr>
<td>Yes</td>
<td>209 (52.3)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>191 (47.8)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows the descriptive analysis of demographic data of this study. There was a total of 400 participants in this study. Majority of the population survey respondents were females, comprising 344 (86%). The other 56 (14%) respondents were male. The majority of the respondents participated in this study were degree students with 392 respondents (98%) followed by diploma students with eight respondents (2%) which consist of eight different health sciences courses with 50 respondents (12.5%) respectively contributed in this study. A total of 209 of respondents (52.3%) stated that they have family members with a history of diabetes mellitus and 191 (47.8%) respondents reported having no family members with a history of diabetes mellitus.

4.2 Knowledge of Diabetes Mellitus Type 2 among Health Sciences Students

<table>
<thead>
<tr>
<th>No.</th>
<th>General Knowledge of DM</th>
<th>N (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Eating too much sugar and other sweet foods are a cause of diabetes.</td>
<td>7 (1.8)</td>
<td>1.98 (0.13)</td>
</tr>
<tr>
<td>2.</td>
<td>The usual cause of diabetes is lack of effective insulin in the body.</td>
<td>364 (91.0)</td>
<td>1.09 (0.29)</td>
</tr>
<tr>
<td>3.</td>
<td>Diabetes is caused by failure of the kidneys to keep sugar out of the urine.</td>
<td>190 (47.5)</td>
<td>1.53 (0.50)</td>
</tr>
<tr>
<td>4.</td>
<td>Kidneys produce insulin.</td>
<td>305 (76.3)</td>
<td>1.23 (0.43)</td>
</tr>
<tr>
<td>5.</td>
<td>In untreated diabetic, the amount of sugar in the blood usually increases.</td>
<td>377 (94.3)</td>
<td>1.06 (0.23)</td>
</tr>
<tr>
<td>6.</td>
<td>If I am diabetic, my children have higher chance of being diabetic.</td>
<td>352 (88.0)</td>
<td>1.12 (0.33)</td>
</tr>
<tr>
<td>7.</td>
<td>Diabetes can be cured.</td>
<td>229 (57.3)</td>
<td>1.43 (0.50)</td>
</tr>
<tr>
<td>8.</td>
<td>A fasting blood sugar level of 11.7μmol/L (210mg/dL) is too high.</td>
<td>265 (66.3)</td>
<td>1.34 (0.47)</td>
</tr>
<tr>
<td>9.</td>
<td>The best way to check my diabetes is by testing my urine.</td>
<td>262 (65.5)</td>
<td>1.35 (0.48)</td>
</tr>
<tr>
<td>10.</td>
<td>Regular exercise will increase the need of insulin or other diabetic medication.</td>
<td>200 (50.0)</td>
<td>1.5 (0.50)</td>
</tr>
<tr>
<td>11.</td>
<td>There are two main types of diabetes: Type 1 (insulin-dependent) and Type 2 (non-insulin dependent).</td>
<td>370 (92.5)</td>
<td>1.07 (0.26)</td>
</tr>
</tbody>
</table>
12. An insulin reaction is caused by too much food. 156 (39.0) 1.61 (0.49)
13. Medication is more important than diet and exercise to control my diabetes. 339 (84.8) 1.15 (0.36)
14. Diabetes mellitus is treatable. 411 (10.3) 1.36 (0.48)
15. Cuts and abrasions on diabetes heal more slowly. 366 (91.5) 1.09 (0.27)
16. Diabetics should take extra care when cutting their toenails. 325 (81.3) 1.19 (0.39)
17. A person with diabetes should cleanse a cut with iodine and alcohol. 21 (5.3) 1.95 (0.22)
18. The way I prepare my food is as important as the foods I eat. 360 (90.0) 1.10 (0.30)
19. Diabetes can damage my kidneys. 320 (80.0) 1.20 (0.40)
20. Diabetes can cause loss of feeling in my hands, fingers, and feet. 332 (83.0) 1.17 (0.38)
21. Shaking and sweating are signs of high blood sugar. 146 (36.5) 1.64 (0.48)
22. Frequent urination and thirst are signs of low blood sugar. 186 (46.5) 1.53 (0.50)
23. Tight elastic hose or socks are not bad for diabetes. 158 (39.5) 1.61 (0.49)
24. A diabetic diet consist mostly of special foods. 105 (26.3) 1.74 (0.44)

Total Mean Score 14.98 (3.35)

Table 2 shows the correct answers of respondents on the Diabetes Knowledge Questionnaire. The mean score (±SD) of correct DKQ answers was 14.98 ± 3.55 with a range of 5 to 22 with a median score of 15, which suggests a moderate level of knowledge for participating respondents. From the results, the respondents had moderate knowledge regarding the disease. 92.5% knew that diabetes can be cured (57.3%). The respondents know the range of fasting blood sugar (0-16), the best way to diagnose diabetes (65.5%), and exercise will increase the need for insulin or other diabetic medication (50.3%). A high number of respondents had a correct answer about complications of diabetes such as diabetes often causes poor circulation (66%). However, it is alarming when 98.2% of the respondents wrongly presume that excessive intakes of sugar are the main cause of diabetes. The respondents frequently wrongly assume that diabetic patients need to cleanse a cut with iodine and alcohol (94.5%). Even though high numbers of the respondents understand that the preparation of food for a diabetic patient is as important as the foods they eat, nevertheless 73.8% wrongly believed that the diabetic diet consists mostly of special foods.

4.3 Level of diabetes knowledge

Table 3 shows the descriptive analysis of the level of diabetes knowledge. More than half of the respondents (n=234, 58.5%) scored moderate knowledge (0-8), while a total of 147 respondents (36.8%) obtained good knowledge (9-16). Remaining of the respondents (n=19, 4.8%) acquired poor knowledge (17-24).

4.4 Attitude of Health Sciences Students towards Diabetes Mellitus Type 2

Table 4 shows the descriptive analysis of attitude towards diabetes mellitus. The mean score (±SD) of correct answers was 37.47 ± 5.17.
with a range of 9 to 45 with a median score of 38, which suggests a positive level of attitude for participating respondents. A total of 400 respondents contributed to this study. More than half of the respondents agree and strongly agree that diabetes mellitus was preventable which are 160 (40.0%) and 187 (46.8%) respectively. Majority of respondents were agreed and strongly agree which are 124 (31.0%) and 71 (17.8%) that diabetes mellitus was treatable. Most of the respondents acknowledge that regular exercise can help controlled diabetes mellitus where 199 (49.8%) respondents agree and 151 (37.8%) respondents strongly agree. Controlled and planned diet, respondents agreed that it can help in controlling the progression of diabetes mellitus with results showed that 170 (42.5%) respondents agreed and 215 (53.8%) respondents strongly agreed. Respondents showed a positive result on knowledge about regular checking blood sugar level with 143 (35.8%) respondents agreed and 246 (61.5%) respondents strongly agreed as well as keep in touch with a physician and negative effect on disease control when missed medications. 171 (42.8%) respondents agree and 193 (48.8%) respondents strongly agree about the necessity to take medications properly and regularly. However, there are slightly some respondents with eight (2%) strongly disagree, four (1%) disagree and 24 (6%) do not know about the necessity to take medications properly and regularly. Majority of the respondents agree and strongly agree that smoking habits increase the complications which are 147 (36.8%) and 156 (39.0%) respectively.

4.5 Relationship between Knowledge and Attitude of Diabetes Mellitus Type 2 among Health Sciences Students

Table 5. Correlation between score of ‘Knowledge’ and scores of ‘Attitude’ (N=400)

<table>
<thead>
<tr>
<th>Knowledge Score</th>
<th>Attitude Score</th>
<th>r</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.210*</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Table 5 shows a result of the relationship between knowledge and attitude of diabetes mellitus among health sciences students. A Pearson Correlation was conducted to examine the relationship between the level of knowledge and attitude among health sciences students. The correlation between knowledge score and attitude score is significant which is p-value <0.01.

5.0 Discussion

5.1 Knowledge of Diabetes Mellitus Type 2 among Health Sciences Students

This study clearly showed a good result regarding the level of knowledge among health sciences students. The findings of this study indicated that half of the respondents scored a good and moderate knowledge of Diabetes Mellitus Type 2. As expected and consistent with the findings of other studies, knowledge of the respondents would be satisfying due to the reason that the respondents were among the health sciences field. Similar findings were documented by other studies where the respondents showed a high level of knowledge in answering the questions regarding diabetes since the respondents were health sciences university students (Khamaiseh, 2019). The unexpected outcomes of this study were the pharmacy students were unaware of the terms HbA1C for pre-diabetes (Hussain, 2017). Apart from that, Shilpashree et al. (2018) found that high school students had a satisfactory awareness of diabetes in some aspects, even though there were many gaps in other fields of knowledge.

5.2 Attitude of Health Sciences Students towards Diabetes Mellitus Type 2

The findings of this study indicated that majority of respondents had a positive attitude towards Diabetes Mellitus Type 2 for about 98% of respondents scored more than 50 percent of the total score. This finding was supported by a previous study by Redhwan et al. (2017) in which about 97.5% of respondents scored more than 50 percent of the total score. The finding of this study was higher compared to the study done by Herath et al. (2017), where 88% of the respondents portrayed a poor attitude towards diabetes which might be that it was done among general public whereas this present study was done among health sciences students who have a higher educational level

5.3 The Relationship between Knowledge and Attitude of Diabetes Mellitus Type 2 among Health Sciences Students

There was significantly correlation between knowledge and attitude of respondents. Redhwan et al. (2017) similarly reported that a weak and positive correlation between knowledge and attitude of respondents towards diabetes mellitus. Ambigapathy et al. (2003) also reported there was a positive association between knowledge and good attitude among respondents. Fatema et al. (2017) indicated knowledge score was satisfactory and majority of respondents aware of good attitude and practice relating to diabetes mellitus such as eating habits and smoking.

6.0 Conclusion and Recommendation

In conclusion, this study showed that the majority of the respondents had a good and moderate level of knowledge in diabetes mellitus and displays a positive attitude towards diabetes mellitus. Prevention of diabetes is a major focus of public health efforts, thus education on diabetes risk factors such as obesity, poor diet, and an inactive lifestyle is important to reduce disease-related complications. It is important for young adults especially among university students to obtain sufficient information, can make a healthy decision, and follow
a healthier lifestyle. For future studies, the researchers recommend to use a larger sample size by including other settings, such as non-health sciences students at a different university.

Acknowledgement
Our appreciation goes to the Universiti Teknologi MARA Puncak Alam for permitting this study to be carried out without engaging with any ethical problems throughout the time. Much obliged to the Centre for Nursing Studies for enabling us to conduct this study, the Knowledge and Attitude of Diabetes Mellitus Type 2 among Health Sciences Students at UiTM Puncak Alam, Selangor.

References


