Awareness and Knowledge of Diabetes among the Students in Chennai – A Questionnaire Survey

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Abstract:
Introduction
Diabetes and its complication have become a major health concern worldwide. It is a metabolic disease characterized by hyperglycemia caused due to reduced insulin secretion, insulin action, or both. This study aimed to assess the awareness and knowledge of Diabetes among the students.

Method
A total of 357 were included in the study. The questionnaire consisted of an information sheet with the consent form and the main questionnaire consisting of 18 closed-ended questions. The questionnaire was distributed to students.

Results
From the survey it is evident that most (50.7%) of the students who participated in this were aware of the condition known as Diabetes. 58.8% of the study population was aware of the gestational diabetes. 64.9% of the participants felt that obesity was one of the important causes of diabetes and 66.3% (237/357) listed that family history could be a causative factor for DM. 60.5% of the students opted that the risk factor of DM was decreased physical activity and 39.5% were unaware of this cause. The survey states that excessive sugar intake (69.7%) as a risk factor for DM, excessive urination (68.6%) is the most common symptom for DM. And only 52.3% were aware that weight loss was a symptom of DM. More than 50% of the total students in the survey were aware that diabetes could be prevented, and treatment could help the affected individual.

Conclusion
This study indicates the need for increasing diabetes awareness activities in the form of mass media campaigns, social media campaigns, public lectures, and door to door campaigns on a massive scale.

Key words: awareness, control, diabetes mellitus

Introduction
Diabetes and its complication have become a major health concern worldwide. It is a metabolic disorder characterized by hyperglycemia caused due to reduced insulin secretion, insulin action, or both. Chronic diabetes can cause dysfunction in various organs, including the eyes, kidneys, heart, nerves, and blood vessels. According to the recent World Health Organization report (WHO), India leads the world with over 32 million diabetic patients, and this number is projected to increase to 79.4 million by the year 2030². The oral cavity shows diabetic complications like periodontitis, fungal infection, xerostomia, dental caries, and oral ulcers³. Periodontal disease is the sixth most common complication of Diabetes mellitus⁴. As it is a common prevalent health concern awareness of the disease at an early age can help in preventing and managing the disease better, reduce complications, and achieve a better prognosis. This study aimed to assess the awareness and knowledge of Diabetes among college students.

Materials and Methods
The questionnaire-based study was conducted in Sathyabama Institute of Science and Technology Chennai. The study population included students from first year to the final year. The sample size was calculated was 282. We distributed 400 questionnaires to the students. Out of which 43 questioners were found incomplete and excluded from the study. The remaining 357 responses were analysed.

The questionnaire consisted of an information sheet with the consent form and the main questionnaire consisting of 18 closed-ended questions.

Composite score for knowledge of diabetes
The answers obtained from the questionnaire were analysed and the scoring was used as follows:
a) For the questions 1-4 and 11-18, the answers were graded as “1” for each correct answer and “0” for each incorrect answer.
b) For questions 5-10, based on the causative factors, the score was awarded as “4” for the cause of DM as obesity, family history and decreased physical activity. The score “3” was given for excessive sugar intake. And score “2” and “1” was awarded for the causes, weight loss and excessive urination, respectively.
c) The least score “0” was given to the questionnaires which had “NO” to the questions.

Results
RESULTs
The study population consisted of 357 students from the first year to final year. The result obtained are as follows.

Knowledge about Diabetes

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From the survey it is evident that most (50.7%) of the students who participated in this were aware of the condition known as Diabetes. About 49.3% of the participating students were unaware that DM is a chronic disease. Nearly 48.4% of students knew that among the two types of diabetes, the typical type of DM is type 2 DM, and about 51.6% were unaware of it.

**Knowledge about the prevalence of Diabetes**
The survey indicates that DM is prevalent among pregnant women, which is known as gestational diabetes, and 58.8% of the students were aware of this or conversely, 41.2% of the students who participated in this survey were unaware of this gestational diabetes. It is evident that type 2 diabetes can occur in adolescents, with 51.5% of students acknowledging its prevalence, while 48.5% believed it was not prevalent.

**Knowledge about the risk factors for Diabetes**
The causative factors of DM listed in this survey were obesity, family history, decreased physical activity, excessive sugar intake, weight loss, and excessive urination. From the survey, it is apparent that 64.9% of the participants felt that obesity was one of the important causes of diabetes and 66.3% (237/357) listed that family history could be a causative factor for DM. 60.5% of the students opted that the risk factor of DM was decreased physical activity and 39.5% were unaware of this cause. The survey states that excessive sugar intake (69.7%) as a risk factor for DM. Excessive urination (68.6%) is the most common symptom for DM. Only 52.3% (187/357) were aware that weight loss was a symptom of DM.

**Awareness of complications of Diabetes**
Nearly half of the participants have reported that diabetes can cause complications in other organs. The most opted complication of DM was that which may be seen in kidneys (59.1%), and the least complicated opted was eyes (47.6%). Among the participants, 170/357 had opted that the complication of DM may be seen in the eyes also.

**Knowledge about the prevention of Diabetes**
More than 50% of the total students in the survey were aware that diabetes could be prevented, and treatment could help the affected individual. Students felt that type I and type II diabetes can be prevented and treated. 60.5% of the students reported that the mode of treatment in type 1 DM is weight reduction and diet therapy. Of that, 55.1% of the students stated that diet therapy means not eating carbohydrates. And 53.5% stated that the mode of treatment for type 2 DM is insulin alone. 54.6% of the students have reported that DM in pregnancy can be treated by insulin and hypoglycemic drugs. In general, 51.8% of the students stated that the control for diabetics is by measuring HbA1c.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Question</th>
<th>YES (%)</th>
<th>NO n=357 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>DM is a chronic disease</td>
<td>181(50.7)</td>
<td>176(49.3)</td>
</tr>
<tr>
<td>2.</td>
<td>Among the two types of diabetes, commonest type of DM is type 2</td>
<td>173(48.4)</td>
<td>184(51.6)</td>
</tr>
<tr>
<td>3.</td>
<td>DM maybe present in pregnant women</td>
<td>210(58.8)</td>
<td>147(41.2)</td>
</tr>
<tr>
<td>4.</td>
<td>Type 2 DM can be found in adolescent</td>
<td>184(51.5)</td>
<td>173(48.5)</td>
</tr>
<tr>
<td>5.</td>
<td>Risk factors of DM is obesity</td>
<td>232(64.9)</td>
<td>125(35.1)</td>
</tr>
<tr>
<td>6.</td>
<td>Risk factors of DM is family history</td>
<td>237(66.3)</td>
<td>120(33.7)</td>
</tr>
<tr>
<td>7.</td>
<td>Risk factors of DM is decreased physical activity</td>
<td>216(60.5)</td>
<td>141(39.5)</td>
</tr>
<tr>
<td>8.</td>
<td>Risk factors of DM is excessive sugar intake</td>
<td>249(69.7)</td>
<td>108(30.3)</td>
</tr>
<tr>
<td>9.</td>
<td>One symptom of DM is weight loss</td>
<td>187(52.3)</td>
<td>170(47.7)</td>
</tr>
<tr>
<td>10.</td>
<td>One symptom of DM is excessive urination</td>
<td>245(68.6)</td>
<td>112(31.4)</td>
</tr>
<tr>
<td>11.</td>
<td>Complication of DM maybe seen in kidneys</td>
<td>211(59.1)</td>
<td>146(40.9)</td>
</tr>
<tr>
<td>12.</td>
<td>Complication of DM maybe seen in eyes</td>
<td>170(47.6)</td>
<td>187(52.4)</td>
</tr>
<tr>
<td>13.</td>
<td>Complication of DM maybe seen in nerves</td>
<td>205(57.4)</td>
<td>152(42.6)</td>
</tr>
<tr>
<td>14.</td>
<td>Mode of treatment in type 2 DM is insulin alone</td>
<td>191(53.5)</td>
<td>166(46.5)</td>
</tr>
<tr>
<td>15.</td>
<td>DM in pregnancy can be treated by insulin and hypoglycemic drugs</td>
<td>195(54.6)</td>
<td>161(45.4)</td>
</tr>
<tr>
<td>16.</td>
<td>Control of Diabetes by measuring HbA1c</td>
<td>185(51.8)</td>
<td>172(48.2)</td>
</tr>
<tr>
<td>17.</td>
<td>Mode of treatment in type 1 DM is weight reduction and diet therapy</td>
<td>216(60.5)</td>
<td>141(39.5)</td>
</tr>
<tr>
<td>18.</td>
<td>Diet therapy means not to eat carbohydrates</td>
<td>197(55.1)</td>
<td>160(44.9)</td>
</tr>
</tbody>
</table>

**Figure 1:** Knowledge about Diabetes
Figure 2: Knowledge about its prevalence

- DM is a chronic disease: 50.7% Yes, 49.3% No
- Among the two types of diabetes, commonest type of DM is type 2: 48.4% Yes, 51.6% No

Figure 3: Knowledge about the risk factors for Diabetes

- DM maybe present in pregnant women: 58.8% Yes, 41.2% No
- Type 2 DM can be found in adolescent: 51.5% Yes, 48.5% No

- Risk factors of DM: obesity (64.9% Yes, 35.1% No), family history (66.3% Yes, 33.7% No), decreased physical activity (60.5% Yes, 39.5% No), excessive sugar intake (69.7% Yes, 30.3% No)
- Symptoms of DM: weight loss (52.3% Yes, 47.7% No), excessive urination (68.6% Yes, 31.4% No)
Discussion
The maximum increase in prevalence of DM is occurring in low- and middle-income countries\(^5\) including Asia and Africa, affecting most of its population by 2030\(^6\). The level of knowledge and awareness of diabetes was assessed in specific aspects of diabetes, namely, diabetes symptoms, treatment, and complications. Overall, findings showed that although on average, about half of the participants made correct responses, there was poor knowledge and awareness of the specific aspects of diabetes measures. Participants had more knowledge and awareness of diabetes treatment than diabetes symptoms and complications. This is consistent with studies of Al Shafae et al\(^7\), al sarayra and Khalidi\(^8\) which explained that the students lack knowledge and awareness in certain aspects of Diabetes causes and complications.

From the survey, in the present study 64.9% of the participants felt that obesity was one of the important causes of diabetes and 66.3% felt that family history could be a causative factor for DM. This is in coordination with Kesha Baptiste-Roberts et al study which was examined in the African American adults to show that people were more aware as family history as a risk factor of diabetes\(^9\).

In our study we saw that 60.5% of the population was aware that lack of physical activity as a risk factor for diabetes. In a study by Ghadah Alkhaldi et al\(^10\) it was shown that the general declining trend in the level of DM knowledge and no change in that of physical activity which is not in accordance with the present study. When considering the symptoms of diabetes, it was seen that in our study population 68.6% were aware that excessive urination is the most common symptom for DM. Only 52.3% were aware that weight loss was a symptom of DM. In a study by Kuba Sękowski, it demonstrated insufficient public awareness of diabetes among adults in Poland\(^11\). In our study nearly half the population was aware of the complication in diabetes which is in coordination with the study of Yitayeh Belsti et al\(^12\). In our study we saw that 59.1% of the study population was aware of kidney disease as the most common complication of diabetes. In our study nearly half the population was aware of prevention and treatment of diabetes.

The awareness in our study could be contributed to the education levels of the study population. In the present study we see that half the study population was aware of diabetes and its risk factors, complication, and prevention. This
could be contributed to the educational level and their residing location being city the awareness levels are better. But we see still half the population is not aware of diabetes.

**Conclusion**

In conclusion, we see that still, half the population had less knowledge and awareness about Diabetes. This emphasizes the need for increasing diabetes awareness activities in the form of mass media campaigns, social media campaigns, public lectures, and door to door campaigns on a massive scale.

**Reference**