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Assessing Awareness of Diabetes Mellitus in High School Students of Karachi : A Cross-Sectional Study

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ABSTRACT

Objective: This study was aimed to asses the awareness regarding Diabetes Mellitus in A levels students of Karachi and its effects among their peers. **Materials and Methods:** A team of six researchers conducted a cross-sectional study among 268 A-level students in Karachi, Pakistan, aiming to assess their awareness of diabetes mellitus (DM) and its impacts. The study focused on students aged 16-19, using a questionnaire to gather data on DM knowledge and demographics. Exclusion criteria included ages outside the specified range and students not enrolled in A-levels. **Results:** Among 268 A-level students in Karachi, the study revealed that while almost all were aware of diabetes, only about half were educated about it. Most received information from family and sources like books or teachers. Knowledge about gestational diabetes and insulin's role was limited. However, a good portion recognized the link between exercise and diabetes. Around half knew about diabetes prevention, while nearly half believed in various treatments, including diet, medication, exercise, and surgery.
Conclusion: This research highlights that formal education alone does not guarantee adequate knowledge and awareness of prevalent diseases like Diabetes Mellitus (DM). Even individuals from a high socioeconomic status (SES) with easy access to information may lack awareness of basic public health issues.
Keywords: Diabetes Mellitus, High School Students, Awareness, Physical Exercise, Insulin, Diet control

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INTRODUCTION

In recent years Diabetes Mellitus (DM) has become a chronic disease, caused by an increase in blood sugar levels which has developed into a wide spread disease taking a toll on a large proportion of the global population. Diabetes Mellitus is of three types; Type 1 that stems from deficiency in insulin production and is most common among children, Type 2 that is described by ineffective use of insulin by the body and is most commonly affecting adults and Type 3 DM is the diabetes effecting women during pregnancy (gestational).[1,2] Out of the three, Type 2 happens to be the most widespread, almost 90% of all cases of diabetes being affected by it.[3]

DM is hard to identify in its initial stages, which would explain why most people are unaware of it until they experience one of its more extreme complications. For instance, a poor management of DM can not only lead to blurred vision, renal failure, and nerve damage but also adds up to the risks of CVDs, cerebrovascular accidents, inadequate supply of blood to the peripheries (foot ulcers) and atherosclerosis. Complications, in particular macro-vascular illnesses that frequently occur in Type 2 Diabetes Mellitus, attribute to more than 70% of DM related expenditures. In 2017, 21.3 Billion USD was found to be spent for health care related to DM in the Middle East North Africa.[4-6]

International Diabetes Federation found 425 Million people globally to be living with Diabetes in 2017, half of which were undiagnosed. As elsewhere in the world, Diabetes is one of the major diseases causing an increased burden on health care in Pakistan. In 2017, 7.5 Million people in Pakistan were affected with Diabetes Mellitus, a figure that might increase to 16.1 Million by the year 2045. Out of the 7.5 Million, 4.6 Million people in Pakistan affected by Diabetes Mellitus (61.3%) were undiagnosed. With a rate this high, Pakistan ranks 6th among countries with undiagnosed diabetes.[7,8]

Education plays a vital role in ensuring improved treatment, control and prevention of diabetes along with the compliance in treatment.[9] Although regional studies related to Diabetes Mellitus have been done in Pakistan but there have been no initiatives taken on the national level to prevent, control and treat diabetes.[10] The need for educational programs is important in a manner that it will aid people to weigh the possible risks of diabetes and search for proper treatment.[11] Furthermore, it will help in prompt identification of DM and the effective handling of its associated effects as patients will be referred to the specialized units well before time. DM (type 2) is not only avoidable but one can also reduce its complications and control by just changing or altering the way of living with adequate physical activity along with a healthier diet.[11-14] U1vi et al., in his study stated that a large stratum of group in the lesser developed regions of the capital city of Pakistan, Islamabad, had limited know-how of Diabetes Mellitus. Widely called as "sugar" by a lay man and few of them even had no perception of the term whatsoever.[15] To highlight the actual understanding of this common disease among students of a high school in Karachi is the main objective of this particular study. It will educate students providing them with an increased awareness of DM and better knowledge of the measures that may be taken to reduce its affects.

MATERIALS AND METHODS

This cross-sectional study was performed on A-level students of Karachi, Pakistan in order to gauge their degree of awareness regarding diabetes mellitus and its effects among their peers. Data were collected from 268 conveniently selected students aged 16-19 years employing a self-administered questionnaire based on demographics and questions regarding the knowledge and awareness of DM and its effects. The questionnaire was validated for accuracy of face and content by the research team and external researcher in the institute. A pilot study was conducted initially on 20% of the total sample size to cover the errors in questionnaire, the internal consistency of items were analyzed with Cronbach alpha to check reliability of the questionnaire, an alpha value of 0.749 was recorded. Data of students have been collected who were present on the particular day. The information was gathered and then analyzed using SPSS version 25. Ethical approval was obtained and written informed consent was taken from all the students.

Inclusion Criteria

- Age groups (16-19 Years).
- Students who are not regular <50% attendance.

Exclusion Criteria

- Respondents below the age of 16 and above 19 Years.
- Individuals not studying in A-Levels.
- Those who are not willing to participate in the research.

RESULTS

A total of 268 students volunteered to be a part of this research. A majority of three quarters belonged to AS Level and around one quarter were from A2 level. Overall 57.8% were males and 42.2% were females. Figure 1

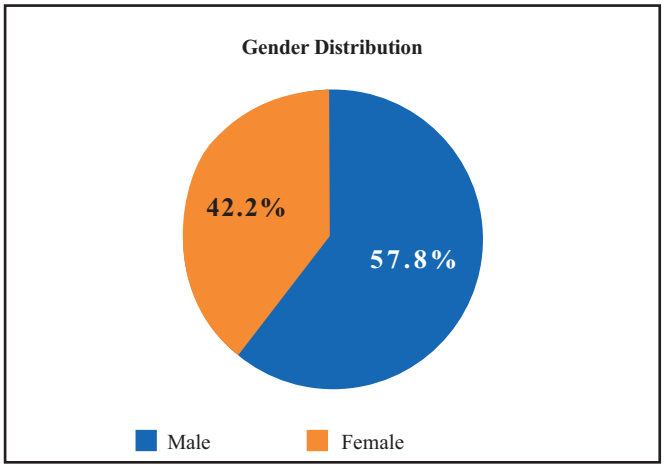

Figure 1: Distribution of participants from both sexes

When asked the respondents about diabetes, almost all (92.9%) have heard about diabetes but only 57.1% of them have been educated on it. mostly being educated through their family (29.7%) and the rest being informed by sources such as teachers (22.8%), books (23.4%), social media (12.4%), doctors (5%) and the rest being educated through other unknown sources (6.3%).

When tested upon the pre-existing knowledge on diabetes, it was found that (75.4%) did know that Gestational diabetes existed and only (22%) people knew what it is. Out of a total 268, (51.1%) believe that Type 2 was the most common one in adults and (32.5%) believe that Type (Gestational) is the most common type in children The participants were then questioned about Insulin 64 9% were aware that Insulin is a hormone while 19 8% believed it to be an enzyme, 5.6% considered it a nutrient and 6.3% considered it to be all three of the above. However, a significant 92.6% were aware with the role of Insulin in the body.

The pupils were also asked about the relation between exercise and diabetes. Surprisingly, (76.9%) of the participants did believe that diabetes and exercise are related. Out a total of 268 students 182 did exercise and out of these (66.9%) exercised on a regular basis.

Precaution and cure

The respondents were also asked about prevention of diabetes and almost haff of them (53.5%) were aware of the precautions to be taken. When asked about the cure, approximately half of them (43.8%) did believe that it can be cured through diet (29.9%), medication (33.3%), exercise (24.9%), and surgical treatment (12.0%).

DISCUSSION

Diabetes is considered a hidden epidemic that has impacted a vast majority of the globe. Numerous surveys have found that the onset of DM can be prevented or efficiently controlled if approached with a standard of knowledge and awareness.[8,9]

This research provides an insight of the level of understanding and familiarity of D M and its effects among A-Levels students in Karachi.

92.9% of respondents of this study were aware of the term "Diabetes", which contrasts to the findings of Muninarayna et al16, according to which more than 50% of the study population had no knowledge of diabetes. This was also shown in similar studies conducted in Kenya9 and India17. This study discovered that 53% of the respondents were aware of the methods of prevention of diabetes. This is similar to the finding of M. Deepa et al (17) that is 60%. Most of the study population, 92.9 % knew about diabetes being caused by the lack of insulin which is in contrast to Unadike et al who stated that hardly anyone in Uyo (Nigeria) have an understanding of this.(18). About the methods and ways to prevent diabetes such as regular exercise, a good majority of participants (76.9%) of this research population agreed with this concept unlike the study of Mafomekong Ayuk Foma et al. (20) (5.6%). According to the result, 34.7% of the participants were unaware of the diseases associated with diabetes. However, 75% of the ones who did know were not aware that DM could affect vital organs such as the heart and kidney. This is comparable to (18,19) which found that over 50% of the participants were unaware of these diseases. The limitations of this study involved a small sample size, which was not representative of all high schools of Karachi. Respondents were unwilling and often hesitant to fill questionnaires and a lot of time had to be spent verbally convincing them. Most of the participants belong to a high SES hence the sample was restricted to particular status of respondents. Few students showed lack of a serious

attitude in filling the questionnaire and attempted in a casual manner. In some cases students even left incomplete questionnaire.

The questionnaire that was drafted for this particular research comprised of questions that were not open-ended questions, resulting in a limited variation in the data gathered.

The study's strengths lie in its relevance to public health by addressing diabetes awareness among a specific age group (16-19 years) and educational level (A-level students), employing a diverse data collection approach that covers various facets of diabetes knowledge. The comparison with previous studies enhances cross-cultural insights, while identifying specific knowledge gaps, like gestational diabetes understanding, offers a foundation for targeted educational interventions. Future recommendations include increasing sample size, adopting a longitudinal design, incorporating qualitative methods for richer insights, engaging with communities for better recruitment, implementing and evaluating educational interventions, and regularly updating the study to capture evolving health dynamics. The inclusion of open-ended questions in future research could provide a more nuanced understanding of participants' perspectives, contributing comprehensively to the field of diabetes awareness among young adults.

CONCLUSION

Diabetes has emerged as a significant public health concern, with its increasing threat intricately linked to the level of awareness within the general population. This research highlights that formal education alone does not guarantee adequate knowledge and awareness of prevalent diseases like Diabetes Mellitus (DM). Even individuals from a high socioeconomic status (SES) with easy access to information may lack awareness of basic public health issues. This alarming scenario emphasizes the urgent need to integrate healthcare education into school curricula and implement diverse educational programs. Addressing this gap can be pivotal in not only halting but also effectively controlling the spread of DM, ultimately reducing the overall disease burden.

Authors contribution

MHS, SA, MAH, IG, KB, NA: Conception of idea, Literature search, data collection, result interpretation, and manuscript writing.

MAH, IQ, SA, MHS, KB: Revised the article, data collection of study, analyzed the data, and literature search.

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Institutional ethical board approval

Ethical approval for this study was obtained from the Institutional board of Dental College, Ziauddin University, Karachi.

Informed Consent

The written consent was obtained from all participants in this study.

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Conflict of interest

No conflict of interest.

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