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EDUCATIONAL INEQUALITIES AND THEIR IMPACT ON TYPE 2 DIABETES DIET AND MEDICATION ADHERENCE

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Abstract

Introduction: When dealing with chronic conditions like type 2 diabetes, it's essential to understand the complex connection between socioeconomic factors and health disparities. Effective management of T2D requires consistent healthy eating choices and adherence to medication planned to prevent future complications. However, the challenge lies in the unequal distribution of resources to accept healthier lifestyles and access reliable information. This inequality makes diabetes management particularly challenging for certain individuals, influenced by societal injustices and educational gaps. This summary explores the different ways in which these educational inequities affect the management of T2D.

Objective: This study's purpose is to examine the challenges faced in managing Type 2 diabetes among individuals with lower levels of education. By identifying barriers, the research offers valuable insights into the factors delaying optimal diabetes management and places the basis for targeted efforts to address these inequalities.

Methodology: This research examines the challenges individuals with varying educational levels face when managing their type 2 diabetes through a descriptive cross-sectional method. This study was conducted from June 2023 to November 2023. Adult volunteers from the Abbas Institute of Medical Sciences Hospital with a diagnosis of diabetes mellitus were selected by using a convenient sampling method. Statistical analysis was conducted by using IBM SPSS version 25. Among them were chi-square tests to evaluate possible correlations between educational level and diabetes treatment methods, frequency computations to find patterns in replies, and descriptive statistics to describe the gathered data.

Results: Seventy individuals, most of them female (85.7%), were studied on diabetes treatment at AIMS Hospital. Important results are a low smoking prevalence (95.7%), a strong family history of diabetes (47.1%), and varying lengths of diabetes mellitus and hypertension. While most individuals (80.0%) changed their diet, (61.4%) did not exercise regularly, underscoring the need for

interventions. Medication and diet compliance were connected with education level. Results emphasize the importance of customized programs to improve overall diabetes control and address exercise behaviors.

Conclusion: The therapy of diabetes must address educational differences. Knowing how these differences affect adherence to diet and medicine guides assistance plans for people from underprivileged groups. These results provide important new information to public health initiatives that seek to lower the diabetes burden and enhance the well-being of those who are impacted.

Keywords: Type 2 diabetes, educational disparities, diabetes diet, medication compliance

Introduction

In public health, the relationship between socioeconomic variables and health outcomes is a matter of great concern, especially when it comes to treating chronic illnesses like diabetes. Due to this metabolic disorder, the patient needs to regulate their diet and stick to proper dosages of medication to minimize the negative effects of the disease in the long term (Hernandez-Tejada et al., 2012). However, it is concerning that quality education and socio-economic differences play a major role in determining the capacity of an individual with diabetes to effectively manage it.

T2D is present in more than 90% of diagnosed diabetes patients and at this rate, is likely to affect 8.5%. Forecasts that by the year 2040, a new combined total of at least 12% of the world's population will be made up of individuals with one or more of the named long-term health conditions or disability. Hypertension holds 1 in 9 people as type 2 diabetes is one of the most extensive chronic illnesses affecting the global population, leading to 11 percent of total annual deaths. That is, study findings indicate that an increased prevalence of type 2 diabetes, especially in developing countries, amplifies the disparities affecting particular population subgroups (Cho et al., 2018; Zheng et al., 2018). Despite recognizing it as one of the most prevalent chronic diseases, which belongs to the group of cardiovascular diseases, T2D is still a significant public health concern due to the high mortality and morbidity rates (Sun et al., 2022; Khan et al., 2020; Zheng et al. , 2018).

Given that the initial medical expenses for patients suffering from diabetes are tremendously high and the disease keeps on progressing, the total amount of money spent on medical bills would be a lot higher than predicted. It is however a condition that will cost individuals who have it thrice more than those who don't have it (American Diabetes Association, 2008). Health literacy involves an individual's ability to get, understand, and use basic healthcare information to manage diabetes. In those with diabetes, low health literacy is linked to inadequate information, fewer self-care activities, and lower glycemic control (Gazmararian et al., 2006; Kalichman and Rompa, 2000; Williams et al., 1998).

Compliance is the capacity to take the medicine as recommended by the physician exactly and to know when to take it (Porter and Kaplan, 2011). A key public health subject is medication compliance as it prevents adverse effects including hypoglycemia, worsening of patients' conditions, and lower medical costs (Sokol et al., 2005). In Japan, where lifestyle and demographic changes are driving an increasing prevalence of type 2 diabetes, addressing medication compliance among senior patients is a major problem. The aging of the population makes diabetes management more difficult because of things like deteriorating cognitive function and quality of life. Prevention of problems and improving health conditions depend on patients taking their medicine as healthcare providers prescribe. Adapting to treatments to encourage adherence requires medical doctors to comprehend the exceptional challenges that older people face. By managing these complications medical practitioners play an important role in public health efforts. The main purpose is to reduce the burden of diabetes improving the quality of life (QoL) for those who are affected (Wakui et al, 2022). Maintenance of a good healthy diet and regular exercise are important components of treating Type 2 diabetes (T2D). Taking medicine at a time prescribed by a healthcare provider is of great importance. The large difference is due to factors like age, period of disease, and also socioeconomic factors. (Xie et al., 2020; Elsous et al., 2017).

By the intersection of educational accomplishments with socioeconomic factors, it creates a complex barrier that inhibits people from managing diabetes. Sticking to dietary recommendations and following medicinal instructions are essential features of diabetes care (Ngoatle, 2021; Nyirongo, 2017; Wang et al., 2018).

According to the study result, people who suffered from diabetes were more likely to stick to the medication plan rather than dietary plans. Medicinal adherence, which also avoid problems significantly influences glycemic indexes and other therapy effects. Data shows that various groups adhere to treatment to varying degrees of 10% to 74%. This large variation may thus indicate obstacles or effects of associated variables such as age, socioeconomic level, and duration of the disease on diabetes patients' adherence to treatment (Elsous et al., 2017)

Targeted treatments require a knowledge of the complex link between diabetes management and educational inequalities. Through clarification of how these differences affect food choices and medication adherence, legislators and medical professionals may create more efficient plans to help people from underprivileged groups manage their diabetes. The multidimensional character of educational differences and their impact on diabetic diet and medication adherence are examined in this research. By a thorough analysis of the body of research and empirical data, we hope to clarify the intricacies of this relationship, pinpoint the main obstacles encountered by those with restricted educational options, and offer doable suggestions to enhance the results of diabetes management.

Methodology

The study, which uses a descriptive cross-sectional methodology, looks at how individuals visiting clinics at Abbas Institute of Medical Sciences (AIMS) Hospital adhere to food and pharmaceutical recommendations according to their education level. Adults aged 18 and above with diabetes diagnosis will be included in the study through a suitable sampling method. Provided they can give informed consent. The analysis includes participants who met the criteria of providing informed consent and having a confirmed diabetes diagnosis. This study was conducted from June 2023 to November 2023.

Participants who did not have the reasoning ability to give precise details were not part of the study to guarantee that only individuals with diabetes contributed to the study. Those who had significant reasoning challenges or did not have a diabetes diagnosis were not eligible to take part.

Only seventy participants were included in the study who met the criteria. These individuals formed the sample group from which data was gathered and analyzed to examine the impact of educational disparities on adherence to diabetes medication and dietary guidelines. Various factors such as age, gender, smoking habits, duration of diabetes and hypertension, level of education, dietary changes, exercise habits, and foot care were amongst the key variables for which information was gathered through structured interviews and surveys. Notable was also the socioeconomic level and level of education obtained. Medical records provide information on diagnosis, drug use, nutrition, and patient results.

Using SPSS version 27.0.1, descriptive analysis, frequency computations, cross-tabulation, and chi-square tests were used in statistical analysis to evaluate the relationships between education level and adherence to medicine and diet. With results shown in tables and figures to make understanding and distribution easier, the study seeks to provide insightful information about the function of education in diabetes treatment.

Results

The 70 participants in the research about diabetes management at AIMS Hospital are broken down in great depth in the frequency tables.

There were just a few male participants (14.3%) and most of them were female (85.7%). Participant ages also varied, from 30 to 85, with distinct frequency in each age group. The 50–year–old group had the highest frequency (18.6%), followed by the 60–year–old group (11.4%) **(Table 1).**

Table 1: The demographic distribution of participants

Age (in years) Adults aged 18 years and above		
Gender	**No. of Patients**	**Percentage**
Male	10	14.3
Female	60	85.7

In the study, participants' ages ranged from 30 to 85 years, with notable peaks in the 50-year-old and 60-year-old groups. This distribution underscores the importance of addressing diabetes management in older adults **(Figure 1).**

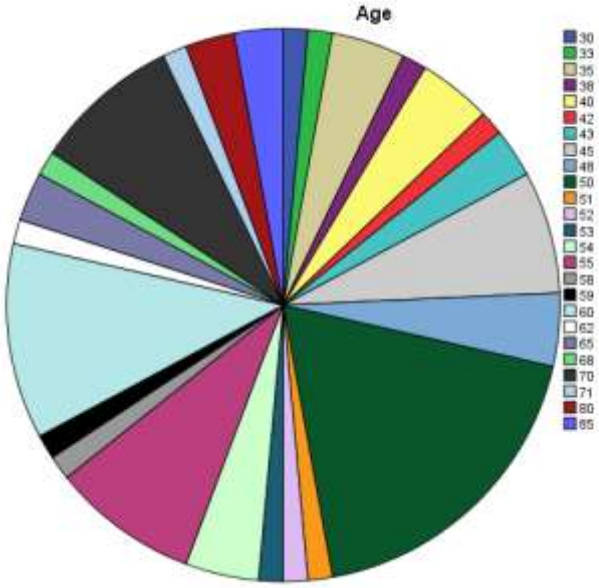

Figure 1: Age range of participants

A family history of diabetes is depicted in Table 2. Almost half of the participants (47.1%) reported having a family history of diabetes, indicating a significant genetic predisposition to the disease within the sample population **(Table 2).**

Table 2: The family history of diabetes

	No. of Patients	**Percentage**
Yes	33	47.1
No	36	51.4
Nil	11	1.4

The vast majority of participants (95.7%) reported not smoking, reflecting a low prevalence of smoking behavior among individuals with diabetes attending AIMS Hospital clinics **(Table 3).**

Table 3: Smoking status of diabetes

	No. of Patients	**Percentage**
Yes	3	4.3
No	67	95.7

Participants had varying durations of diabetes mellitus, with the highest frequency observed in the 10-year duration category (7.1%), indicating a diverse range of disease durations within the sample **(Figure 2).**

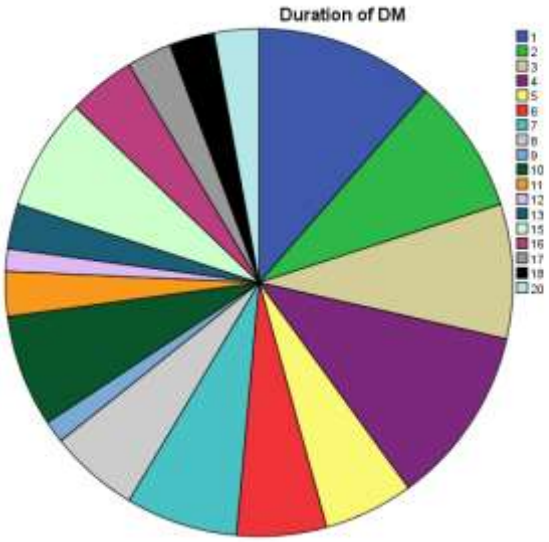

Figure 2: Durations of diabetes

Similarly, participants exhibited variability in the duration of hypertension (HTN), with the highest frequency observed in the 0-year duration category (28.6%) **(Figure 3).**

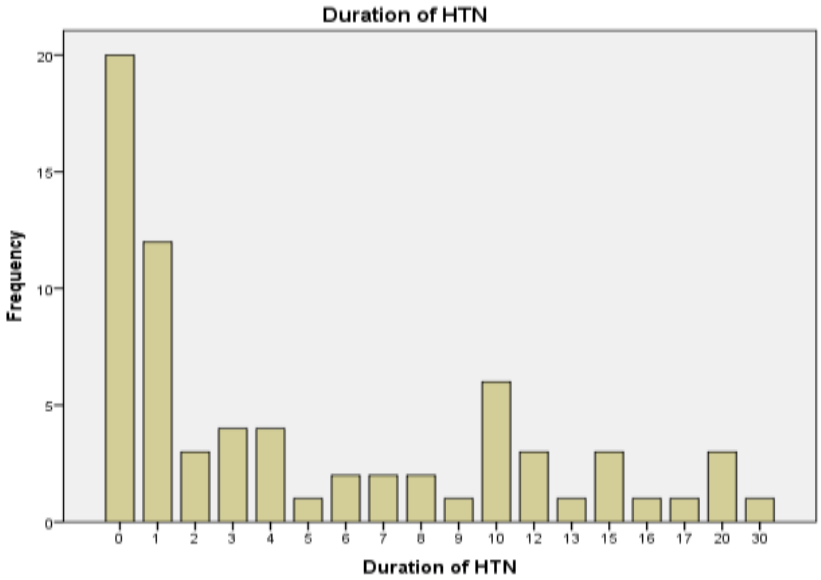

Figure 3: Duration of hypertension

The majority of participants (45.7%) reported having no formal education, while others reported being able to read (17.1%), matriculate (22.9%), or graduate (12.9%) **(Table 3).**

Table 3: Education level of diabetes

	No. of Patients	**Percentage**
Able to read	12	17.1
Matriculate	16	22.9
Graduate	9	12.9
Nil	32	45.7

Most participants (80.0%) reported making modifications to their diet as part of their diabetes management, indicating a high level of adherence to dietary recommendations **(Table 4).**

Table 4: Diet modification of diabetes

	No. of Patients	Percentage
Yes	56	80.0
No	14	20.0

A significant portion of participants (61.4%) reported not engaging in regular exercise, highlighting a potential area for intervention to improve physical activity levels among individuals with diabetes **(Table 5).**

Table 5: Effect of Exercise on diabetes

	No. of Patients	Percentage
Yes	26	37.1
No	43	61.4
Nil	1	1.4

Just over half of the participants (52.9%) reported practicing foot care as part of their diabetes management, underscoring the importance of preventive measures to reduce the risk of diabetic foot complications.

Table 5: Foot Care of Diabetes

	No. of Patients	Percentage
Yes	37	52.9
No	33	47.1

Discussion

The study conducted at Abbas Institute of Medical Sciences (AIMS) Hospital sheds light on key aspects of diabetes management among older adults, reinforcing the need for a tailored and nuanced approach, as emphasized in the passage. Among the 70 participants, a majority were female (85.7%), reflecting the gender distribution often observed in healthcare-seeking populations. The age range varied from 30 to 85 years, with peaks in the 50-year-old and 60-year-old groups, highlighting the relevance of managing diabetes in older adults. The people's history of diabetes revealed a family history of the condition at 47. 1% of participants diagnosed with the condition indicated that their family had diabetes, which is an indication of the genetic role in developing the disease in the studied sample. Moreover, the majority of participants [95 (95. 7 %)] confirmed not to smoke and this does not meet the recommendation for diabetic patients since smoking is strictly discouraged. This is in according with other studies that have been done by Georges et al. (2019) and Zubizarreta et al. (2017) which show that smoking is still low in participants; this may mean that diabetes patients are benefiting from programs that have been developed to help them quit the habit of smoking thus meaning that the burden of these complications is decreasing.

It can be seen that the findings of this work are compatible with other studies concerning multiple aspects of diabetic management (Chaki et al., 2022; Hernandez-Jimenez et al., 2011). This link supports other studies that highlighted the benefits of cocoon-like care in reducing stress related to the condition, reducing ER admissions, and improving overall health prospects. The study emphasizes the need to resolve discrepancies among demographic groups to improve diabetes care initiatives, even if it did not particularly for both biological and social consequences of hormone use are address gender differences (Correa-de-Araujo et al., 2006). As pointed out by Vari et al. (2016), some of the factors contributing to the gender difference mainstreamed in the current study involve such as hormonal factors, lifestyle choices, and socioeconomic conditions. The study also underlines the importance of employing preventive measures and carrying out frequent examinations for the identification of uncontrolled diabetes and early effective control of the illness in minimizing or delaying complications (Correa-de-Araujo et al., 2006).

The participants' ages, sex, BMI as well as the duration of the diseases varied from one participant to another showing the different progress of the diseases and their complexity. This range depicts how patients require individualized target goals for glycemia based on age, the length of the illness, and other risks such as hypoglycemia arising from the disease. In addition, most participants (80.0%) said they had changed their diet, which suggests a high degree of self-care behavior—which is essential for promoting medication adherence, as the article notes. But a sizable percentage (61.4%) said they didn't exercise regularly, pointing to a need for action to raise the amount of physical activity among those with diabetes (Katula et al., 2017).

At the same time, participants responded that half (52. 9%) cared for their feet, which calls for more precautions that could reduce the risk of diabetes foot issues. In one way, because of presenting the traits and actions of the participants at a particular period of the research, the study underlines the need for assessing and updating the treatment plans to ensure that the existing programs are appropriate for each participant's current health status. The outcomes of the study are in line with the effectiveness of the plurality approach to managing diabetes where every client is considered individually concerning their comorbidities, frail state, or any other special circumstance to help enhance diabetes management among the elderly population (Sinclair et al., 2019).

Thus, diabetes management, particularly if the patients are elderly and feeble, calls for a specialized and complex approach. As such, assessing frailty more dynamically and repeatedly is crucial for guiding the management and interventions targeted toward such patients. Hence, it remains to say that definite glycemic targets should be set with a view on life expectancy and hypoglycemia risk. To reduce the possibility of side effects—hypoglycemia in particular— therapeutic regimens may need to be simplified, switched, or de-escalated. Glycemic control can be much improved by medication adherence support, particularly at a later age. Treatment plans must be regularly reviewed and modified to be sure they continue to be suitable for the patient's health condition. Comorbidities should be taken into account by healthcare providers when developing glycemic management algorithms. Optimizing diabetes treatment in older persons requires all things considered, individualized care that takes into consideration fragility and unique situations (Strain et al., 2021).

All things considered, the results of this study support and broaden current understanding of diabetes management, offering useful information to medical practitioners to customize therapies and enhance the quality of diabetes treatment and results.

Conclusion

Finally, this study carried out at Abbas Institute of Medical Sciences (AIMS) Hospital clarifies several aspects of diabetes management among its subjects. The patterns noted, like the preponderance of women, the age group distribution, and the frequency of diabetes in the family, are consistent with the body of current research and highlight the necessity of customized therapies aimed at various demographic groups. Remarkably, participants' high degree of diet modification and low smoking prevalence point to good adherence to health-promoting practices. The results, meantime, also point to areas that require work, most notably the need to encourage regular exercise and improve diabetic foot care habits. By realizing this information, medical professionals may hone their plans to maximize diabetes treatment and eventually raise patient results. To explore the long-term ramifications of these results and assess how well-focused treatments improve diabetes control in comparable healthcare environments, more study is needed.

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