j. port. sci. res.
ISSN: 2616-7441 (Online)
ISSN: 2616-6232 (Print)
ISSN: 2616-7220 (USB)
INTERNATIONAL IDENTIFIER FOR SERIALS

Journal port Science Research
Available online www.jport.co
Volume 6, No:1. 2023

Relationship between Self-Care Practices of Secondary School Students with Type 1 Diabetes Mellitus and Their Socio-Demographic Data

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Abstract Diabetes in adolescence is a global public health issue that is getting more and more attention. It is a long-term metabolic condition defined by a partial or total lack of the hormone insulin. The key to effective control of diabetes is adherence to the complicated collection of chores that go into diabetic self-care practices. The adolescents spend (5-6) hours in school and during this time they are outside of parental care, so we need to monitor self-care practices of students with T1D. The aim of the study was to find out the relationship between self-care practices of secondary school students with type 1 diabetes mellitus and their sociodemographic data. Methods A descriptive (cross sectional) research design was used in this study. Sample size consist of (200) secondary school students. A non-probability (purposive) technique was used to collect data. Developed interview instrument was used in collect data. Data was gained in the al najaf center for diabetic and endocrine.

Crossref 10.36371/port.2023.1.8

Keywords: *Self-care, practice, school students, diabetes*

1. INTRODUCTION

Type 1 diabetes mellitus (T1DM) is a chronic autoimmune disease characterized by increased blood glucose levels (hyperglycemia), which are due to the insulin deficiency that occurs as the consequence of the loss of the pancreatic islet β-cell(1). The exact reasons of this destructive process are unknown, but it is likely that an autoimmune reaction is caused by a confluence of genetic vulnerability (a trait transmitted by a large number of genes) and an environmental trigger, such as a viral infection. Some food components or toxins have also been linked to this (Atlas 2019).

This type of diabetes is a highly prevalent and an important public health problem especially in childhood and adolescent's stages (2). Childhood is a crucial time in a person's life because it is a period of growth during which a number of difficult and interconnected developmental tasks are mastered. These changes can be physical, emotional, psychological, or social changes that will affect a person's personality for the rest of his or her life. While the physical development of school-age children progresses slowly, their social and developmental growth speeds up and becomes more complicated. Their environment shifts from being mostly about family to including instructors, classmates, and other external influences (Hockenberry n.d.). According to the International Diabetes Federation , the number of children aged 0 to 14 years with T1DM was 542, 000 worldwide (Edition 2015) In Iraq, there's lack of information concerning prevalence of T1DM among adolescents; since the latest prevalence of diabetes is 12% of the population(3) Self-care practices are essential for regulating blood sugar levels. According to studies, the patient or their family generally provides as much as 95% of the self-care. Children and young adults with diabetes had excellent medication compliance, but only fair compliance with food and self-glucose monitoring, and the least compliance with exercise. (Nezamodini, et al, 2017). Teenagers' living conditions and self-worth may be negatively impacted over time by T1DM and associated complications. The regular monitoring of blood sugar levels may be hampered by irresponsibility, challenges in achieving autonomous control, and a poor level of sickness acceptance. Since they are responsible for their own care and no longer rely on their parents or other caregivers for support, adolescents are generally more robust to accepting the sickness than younger children. (Ketan K Dhatariya and Umpierrez 2017). Patients who have sufficient self-management have healthier outcomes, live longer, appreciate a higher quality of life and feel pain of fewer symptoms & negligible complications (Jacobsen, Haller, and Schatz 2018). In disparity, inadequate diabetic self-

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management remains a big drawback facing health care providers and populations in all settings. It has a bearing on the patient's morbidity, mortality plus increasing the costs of medication and laboratory tests, time consuming and effort of the care providers (Wang et al. 2017).

2. MATERIALS AND METHODS

2.1 Design of the Study:

A descriptive Cross-Sectional Design used in the current study to achieve the study objectives. The study started from September 19th, 2022 until June 15th, 2023 .

2.2 Setting of the Study:

The study is conducted at Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate - Al-Sadder Medical City (Najaf Canter for Diabetes and Endocrine).

2.2 Ethical Considerations

This is one of the most basic principles before gathering the data, to keep the patient's values and self-respect. The researcher achieved this agreement from the Ethical committee at the Faculty of medicine / University of Kufa. The researcher promised to keep the patient's information confidential, and use this data for the purpose of study only then she explained the purpose of this study to each participant without affecting the routine visiting and care. In addition, the researcher told each participant that this is a voluntary work, and they can leave any time even when the interview process is not completed

2.3 Sample of The Study:

A Non-Probability (Purposive Sample) of (200) secondary school students with type I Diabetes Mellitus , those who visit Al-Sadder Medical City / Al-Najaf Canter for Diabetes and Endocrine, are included in the study sample.

2.4 Study Instrument:

An assessment tool is adopted and developed by the researcher to assess self-care practices of secondary school students with type 1 diabetes mellitus. The complete instrument of the study consists of (3) parts:

Part one: Demographic Data:

This part consists of (11) items, which included age, gender, number of classes , monthly income, residency, Number of family members, his/r number between children, Father age, father education, mother age, mother education.

Part two: Clinical Data:

This part consists of (7) items, including duration of disease since diagnosis, attendance of training classes about diabetes, chronic disease, Family history of diabetes, attending to diabetes doctors, type of insulin used, and instructions from doctor.

Part three: self-care practices

This part consist of five domains , including insulin administration, which measures through (7) items, reflects evidence that those patients follow administration of insulin that help them to maintain the management of their diabetes, blood glucose monitoring, which consist of (7) questions that clarify adherence patient's about monitor blood glucose level to continue management, diet, This assesses through (5) items, provides evidence that those individuals practice eating habits that support their ongoing diabetes control, exercise, composed of (5) questions measuring physical activity and other activities linked to physical fitness, and follow up with doctor, which measures by (2) questions .

2.5 Rating and Scoring

The rating and scoring of items are according to three points Likert scales are applied for rating students self-care practices items as always (daily), sometimes (weekly), and never (monthly or more). The three points type Likert scale are scored as (3) for always, (2) for sometimes, and (1) for never.

3. RESULTS

Table (1) *The Socio-demographic characteristic of the Secondary School Students with Type 1 Diabetes Mellitus (n=200):*

Socio-demographic Data		Freq.	%
Age groups (Years)	<= 13	40	20
	14 – 16	105	52.5
	17 and More	55	27.5
	Mean ± SD	15.3 ± 1.97	
Gender	Male	83	41.5
	Females	117	58.5
Residence	Urban	114	57
	Rural	86	43
Stage of class	1	32	16

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	2	34	17
	3	70	35
	4	27	13.5
	5	22	11
	6	15	7.5
Number of family members	<= 5	59	29.5
	6 – 8	130	65
	9 and More	11	5.5
	Mean ± SD	6.02 ± 1.49	
Your number between children	<= 2	152	76
	3 – 4	39	19.5
	5 and More	9	4.5
	Mean ± SD	2.12 ± 1.07	
Monthly income	Sufficient	47	23.5
	Semi sufficient	73	36.5
	Insufficient	80	40
Total		200	100%

Table (1) display the statistical distribution of the study sample by their socio-demographic data, it states that the highest percentage of the students' subgroup are: students with ages between (14-16) years old (52.5 %), females students (58.5%), those living in urban areas (57%), those who are third Stage of class (35%), those living with their families members between (6-8) members (65 %), and their number between children equal or less than 2 (76%) and those with insufficient monthly income (40%).

Table (2): *The Mean of scores for assessment of self-care practices among the students (n=200):*

Overall Items		Freq.	%	MS	Assess.
Self-Care practice	Low	67	33.50	1.85	Moderate
	Moderate	128	64.00		
	High	5	2.50		

MS: Mean of Scores; Low: MS =<1.66; Moderate: MS = 1.67-2.33; high: MS ≥ 2.34.

Table (2) provides the descriptive statistics of student's subgroups according to their Self-Care practice assessment. They reveals that the majority of students have (moderate) level of Self-Care practice (64.32%); while (33.17 %) of them have (low) level of Self-Care practice; finally (2.51%) of them have (high) level of Self-Care practice (see figures 4.1).

Table (3) *the differences between Self Care practices overall scores and students' demographic.*

Demographic data		Mean	SD	F Test (df)	P-value
Age groups (Years)	<= 13	1.80b	0.27	6.771 (2)	0.034
	14 – 16	1.89ab	0.27		
	17 and More	1.80a	0.24		
Gender	Male	1.81	0.28	3.199 (1)	0.074
	Females	1.88	0.25		
Residence	Urban	1.86	0.26	1.017 (1)	0.313
	Rural	1.83	0.27		
Stage of class	1	1.83 a	0.30	25.494 (5)	<0.0001
	2	1.77 b	0.28		
	3	1.96 abcd	0.21		
	4	1.73 c	0.28		

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	5	1.86	0.22		
	6	1.74 d	0.22		
Number of family members	<= 5	1.82	0.26	5.820 (2)	0.054
	6 – 8	1.87	0.26		
	9 and More	1.73	0.26		
Your number between children	<= 2	1.87	0.26	3.439 (2)	0.179
	3 – 4	1.79	0.28		
	5 and More	1.78	0.26		
Monthly income	Sufficient	1.85	0.27	1.591 (2)	0.451
	Semi sufficient	1.88	0.28		
	Insufficient	1.82	0.24		

Note: only similar letters were statistically different.

Table (3) there is a significant relationship between overall assessment of Self Care practices and the following demographic data: Age, and Stage of class, while other data were statistically not significant.

4. DISCUSSION

Self-care is essential for reducing the physical and psychological effects of diabetes, especially in developing children. They should be encouraged to develop their ability for self-care and autonomy. In order to improve glycemic control and avoid or even slow the development of diabetes complications, need-based self-care education is crucial.(4)

Our study indicated that most of the studied diabetic secondary school students had moderate (64%) and low (33.50%) total self-care practices whereas (2.50 %) of them had good self- care practices. This can be ought to the young age of the sample studied 52.5%, who were between the ages of 14 and 16 years , were early adolescence period stage , making them vulnerable to peer pressure and external influences on their health habits during this formative time of adolescence. There are more than three studies represents for the same findings and give the power for this results. The first study conducted by (5) that indicated most of the diabetic students studies (53.3%) had poor self-care practices while (29.7%) of them had poor self-care practices , and (17%) had good self-care practices . The second study conducted by(6) they represents that the most of Chinese children with diabetes had poor self-care practices. The third study conducted by (7) they found inadequate diabetes self-care practices among the Australian diabetic adolescence they studied. The result of the study represents that there is a high significant relationship between students overall self-care practices and their (Age, and Stage of class) while other data were statistically not significant .Identical findings were portrayed by two novel studies. First,(8) indicated that greater glycemic control, fewer reported occurrences of hypoglycemia, higher age, and more years of school attendance were all connected with young people's ability to manage their T1DM on their own. Second, (9) represents that age was significantly correlated with self-care practices score of diabetes.

5. CONCLUSION

The results of the present study concluded that the highest percentage of the studied diabetic secondary school students have either moderate or low self-care practices in all aspects of T1D self-care practices; insulin administration, blood glucose monitoring, diet, exercise, and follow up. There is a significant relationship between overall assessment of Self Care practices and the following demographic data: Age, and Stage of class, while other data were statistically not significant.

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