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Primary school teachers knowledge towards management of students with T1DM

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***Abstract*---**A descriptive cross-sectional study is conducted in Wasit Governorate, Numaniyah District. Out of 60 teachers were selected from 30 schools for each school 2 teachers, who were tested in a questionnaire related to type 1DM. The reliability of the questionnaire was achieved through a pilot study and then presented to experts to prove its validity. The total number of items included in the questionnaire was 30-items. The data was collected by using the self-report method and analyzed by applying a descriptive and inferential statistical data analysis approach .Out of 60 primary school teachers the mean age is 42.15±9.221, (53.3%) were female, (78.3%) were diploma graduated, (41.7%) had less than 5 years of experience, (81.7%) were exhibit no trained. The results of the study indicated that the (78.3%) of school teachers expressed deficit knowledge. There were significant differences in teachers knowledge with regards age groups, years of experience and training sessions ($p< 0.05$).

***Keywords*---**knowledge, primary school teachers, T1DM.

Introduction

Diabetes is a disorder of metabolism where the hormone insulin is deficient, ineffective or absent, resulting in abnormally high blood glucose levels and significant damage to the body's vascular system. The prevalence of type 1 diabetes for Unites States residents aged 0-19 years is 1.7 per 1000 (Alharthi et

al., 2019). Type 1 diabetes makes up an estimated 10–15% of all diabetes cases (Weng et al.,2018)., or 11–22 million worldwide (Patterson et al.,2014). In 2006 it affected 440,000 children under 14 years of age and was the primary cause of diabetes in those less than 15 years of age (Almehmad et al.,2018).It is slightly more common in males than in females (Tuomilehto,2013). Rates vary widely by country and region. Incidence is highest in Scandinavia, at 30–60 new cases per 100,000 children per year, intermediate in the U.S. and Southern Europe at 10–20 cases per 100,000 per year, and lowest in China, much of Asia, and South America at 1–3 cases per 100,000 per year (Saraswathi et al.,2016). In Iraq, the prevalence was 87 per 100,000 and it is lower than neighboring countries. The average annual incidence rate of type 1 diabetes was 7.4 per 100,000 which places Iraq in the intermediate group (Almahfoodh et al., 2017).

Despite the widespread proposals and promotion in regards to fitting consideration for kids with diabetes in the school, lacking diabetes educators' information, principle among diabetes kids (Leelapreechalert et al.,2018). In 2000, diabetes influenced an expected 171 million individuals around the world; by 2011 this had expanded to more than 366million and numbers are required to surpass 552million by 2030 (Alqahtani et al.,2021). Diabetes mellitus (DM) is certain of the most widely diagnosed recognized childhood illness (Perrettet al.,2019)For children, state funded schools are significant areas for auxiliary avoidance mediations to assist them with limiting their hazard for complications related with DM. The worldwide rate of type 1 diabetes in kids underneath 14 years is expanding with an expected by and large yearly increment of around 3% (Jackson et al.,2015).Therefore, thus study aimed at assess primary school teachers knowledge towards T1DM and associated socio-demographic factors in Wasit Governorate, Numaniyah District/ Iraq.

Method

A descriptive cross-sectional study is conducted in Wasit Governorate, Numaniyah District. Out of 60 teachers were selected from 30 schools for each school 2 teachers, who were tested in a questionnaire related to type 1DM. The researchers used two tools to collect data from study participants as following: First one is the personal characteristics data sheet as age, gender, education level, years of experience and training sessions related to DM. Second one is 30-question deals with management of students with type 1 DM which developed by the researchers according to the previous literature. Validity was given to a panel of 11 arbitrators were asked to offer their opinions and suggestions on each of the study questionnaire's components in terms of language appropriateness, association with the dimension of study variables to which it was assigned, and suitability for the study population. To assess the questionnaire's reliability, data were collected from nurses, and the test was administered to 10 subjects from the study population who were not part of the original sample. Cronbach's alpha was discovered to be 0.82. The SPSS version 20.0 software application was used to conduct statistical analysis. The information was evenly distributed. One-way analysis of variance and independent sample *t test* were used to examine variations in variables based on socio-demographic characteristics. For continuous variables, descriptive data is reported as mean standard deviation,

and for categorical variables, it is shown as number (percent). Statistical significance was defined as a p 0.05.

Result

Findings show participants age, the mean age for school teacher's is 41, the age 30-39 years old were recorded the highest percentage (36.7%). In regard with the gender, the female were constituted more than half of school teacher's (53.3%). Concerning education level, the diploma degree were predominated among school teacher's (78.3%). Respect to the years of experience, most of school teacher's were less than 5 years of experience (41.7%). In terms of training, it is obvious among study findings that the teacher's no attend training sessions (81,7%) (table 1).

Table 1
Sample Characteristics

Factors	Class	No.	%
Age /years (M ± SD=42.15±9.221)	20-29 years old	5	8.3
	30-39 years old	22	36.7
	40-49 years old	15	25.0
	50 and older	18	30.0
Gender	Male	28	46.7
	Female	32	53.3
Education Level	Diploma	47	78.3
	Bachelor's	13	21.7
Years of experience	<5yaers	25	41.7
	5-10years	12	20.0
	>10years	23	38.3
Training	Yes	11	18.3
	No	49	81.7

Findings in table (2) illustrated that the (78.3%) of school teacher's expressed a poor level of knowledge (M ± SD=*36.68 ± 6.953*) with regard type I diabetes mellitus.

Table 2
School Teacher's Knowledge about Type I DM

Knowledge	*Responses*		
	Freq.	%	*M ± SD*
Poor (*M=30-40*)	47	78.3	*36.68 ± 6.953*
Fair (*M=41-50*)	10	16.7	
Good (*M=51-60*)	3	5.0	
Total	60	100.0	

"M: Mean of total Scores, SD: Standard Deviation for total scores

Findings in table (3) demonstrated there were significant differences in school teachers knowledge with regards their age (p=0.002).

Table 3
Significant Differences in Knowledge and School Teacher's Age (n=60)

Age	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Knowledge	Between Groups	.730	3	.243	5.583	.002
	Within Groups	2.440	56	.044		
	Total	3.170	59			

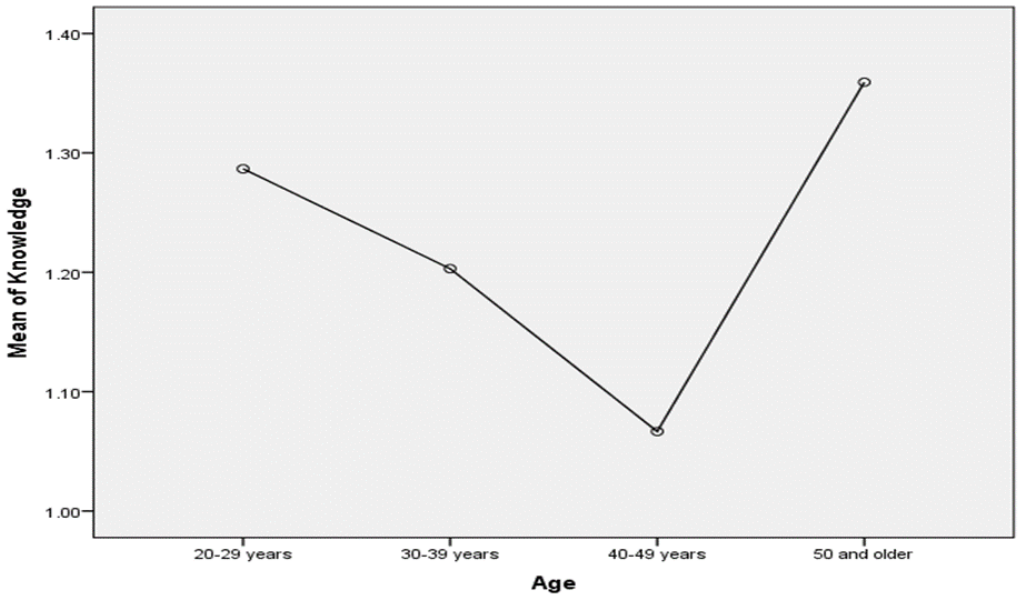

Figure 1. Distribution of Knowledge according to age groups

Findings in table (4) demonstrated there were no significant differences in school teachers knowledge with regards those who are male and female (p=0.938).

Table 4
Significant Differences in Knowledge and School Teacher's Gender (n=60)

	Gender	Mean	S.D	t-value	d.f	*p≤ 0.05*
Knowledge	Male	1.22	.22705	0.079	58	*0.938*
	Female	1.22	.23947			

Findings in table (5) demonstrated there were no significant differences in school teachers knowledge with regards their education level (p=0.726).

Table 5
Significant Differences in Knowledge and School Teacher's Education (n=60)

Education	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Knowledge	Between Groups	.007	1	.007	.124	.726
	Within Groups	3.163	58	.055		
	Total	3.170	59			

Findings in table (6) demonstrated there were significant differences in school teachers knowledge with regards their years of experience (p=0.025).

Table 6
Significant Differences in Knowledge and School Teacher's Years' Experience (n=60)

Experience	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Knowledge	Between Groups	.385	2	.193	3.942	.025
	Within Groups	2.785	57	.049		
	Total	3.170	59			

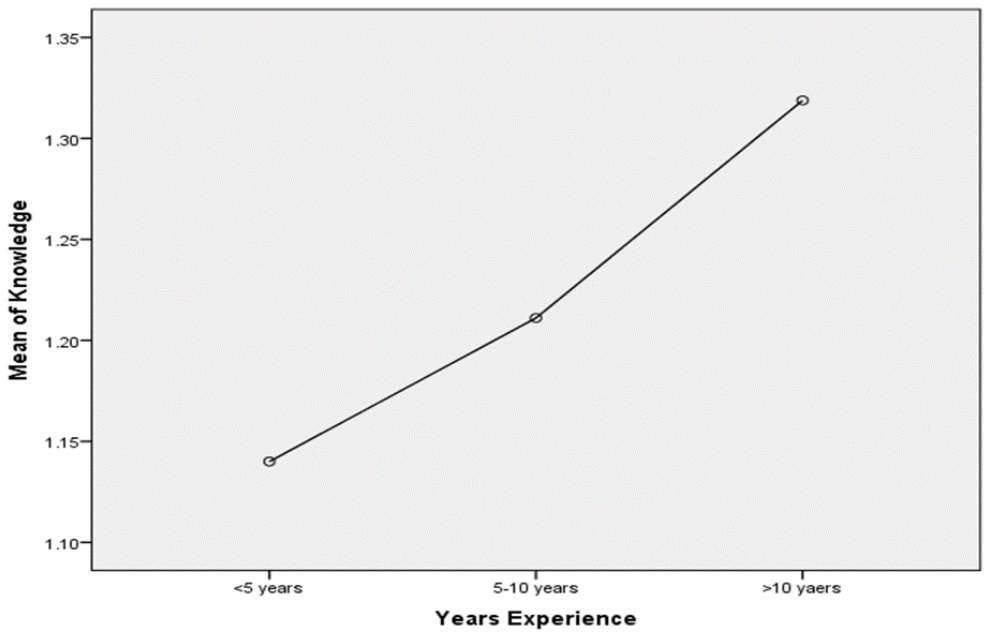

Figure 2. Distribution of Knowledge according to Years of Experience

Findings in table (7) demonstrated there were significant differences in school teachers knowledge with regards their training sessions (p=0.001).

Table 7
Significant Differences in Knowledge and School Teacher's Training (n=60)

Training	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Knowledge	Between Groups	.530	1	.530	11.654	.001
	Within Groups	2.640	58	.046		
	Total	3.170	59			

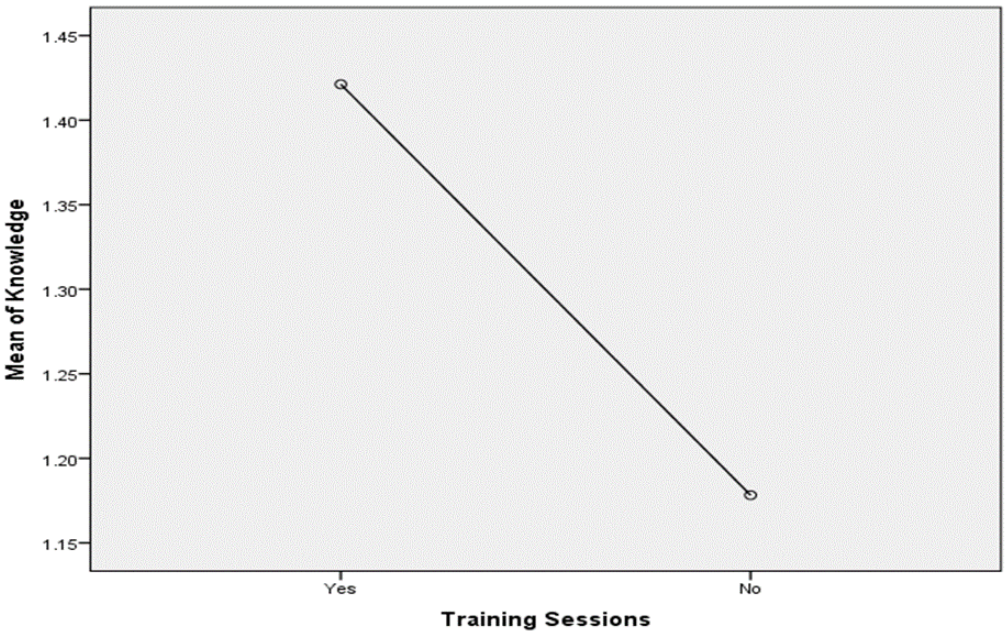

Figure 3. Distribution of Knowledge according to Training Sessions

Discussion

Result showed that highest percentage of participants were female, and that agree with study done by Tuoma, and Khalifa,(2021)which show that highest percentage (65.6%) of participants were female. Regarding level of education highest percentage were with diploma and this result agree with study done by Mohammed and Abas (2013) which show that highest percentage*62.5%) of participants were with Nursing Institute. It is well-known that micro- and macro vascular complications of DM can be prevented through a well-managed metabolic control (Nathan et al.,2012). Good metabolic control can be only achieved with a comprehensive training. Schools are the major application areas of training in childhood diabetes and school professionals can play a critical role in the management of the disease. The 'Managing Diabetes at School Program' aims to increase the awareness of the teachers on diabetes. To increase the awareness of childhood diabetes, it is critical to expand the management strategies to every area, other than healthcare institutions, to which children attend.

A total of 30 multiple choice questions were used to measure the knowledge of respondents regarding students with type I DM and the mean score was 51-60 as a greater level, 41-50 as moderate level and 30-40 as a lower level. In current study findings, teachers expressed a poor level of knowledge with regard type I DM (M ± SD=*36.68 ± 6.953*). This is a worrying finding given the importance of management of students with type I DM and its essentiality in school environment. The school teachers influenced by teachers age the older age groups (50 years and more) were significantly increased knowledge (Fig. 1). Were see the knowledge scores significantly increased with years of experience teachers had more than 10 years were better knowledge that those who are less than 10 years (Fig. 2). Training teachers and education professionals on diabetes is crucial for full-time monitoring of diabetic children in schools, teachers who responses (yes) previous training were significantly increased knowledge scores (Fig. 3).

In agreement with current findings, Greco (2018), investigated the school teachers knowledge with type I diabetes mellitus and depicted that the level of knowledge about different aspects of diabetes among school teachers was extremely poor. Teachers who had previous experiences with children with diabetes showed a much higher level of knowledge than those who did not (Greco,2018). The level of knowledge regarding pediatric diabetes among Greek teachers were extremely unsatisfactory and the school environment is threatened by health aspects. It is It is evident that there is an urgent need for providing further information, as well as practical training to schoolteachers with emphasis being placed on the initial symptoms of diabetes and also in the detection and management of diabetic emergencies (Chatzistougianni et al.,2020).

Within the scope of the managing diabetes at school program. Aycan et al. (2012), confirmed that the school teachers have limited knowledge on diabetes. We believe that their knowledge levels can be improved by widespread training programs (Aycan et al.,2012). Teachers in female elementary schools in Northern Saudi Arabia need to improve their knowledge about diabetes in children, especially recognizing and management of diabetic emergencies. Training programs are crucially needed to empower teachers with knowledge and self-confidence in helping students with diabetes (Alshammari, & Haridi,2021). An overview of parents' perceptions of identifying the special needs of children with Type 1 diabetes in the school setting. The training sessions on Type 1 diabetes, an increase in the number of nurses, better availability of resources from diabetic associations to schools and improved communication between school personnel and parents were identified as key factors that may improve the full integration of the diabetic child in this setting (Amillategui et al.,2017).

The poor level of knowledge in school environment as being the school teachers of educational institutions believe they have not been particularly trained in the care of students living with T1DM and point out that their educational institutions in the city of Melilla are not prepared to help in diabetic emergencies (Luque-Vara et al.,2018). In order to improve a healthy school environment, training sessions are a very important factor in terms of training teachers or students. The training and management of DM should target behavioral changes in the patients, in the parents and other caring individuals (Dhada & Blackbeard, 2014) A well-established relationship should be built among the patient, his/her parents and

teachers. In a study, it was reported that teachers were incapable of making connections between a specific problem and the reasons underlying the problem, unless they were aware of the medical condition of the student (Bridges ,2013).

Sentenac et al. (2011) reported that a higher number of children with chronic diseases were exposed to unfriendly behaviors at school with diminished communication with their peers (Sentenac et al.,2011). Also, it was shown that children with an impaired blood glucose regulation and non-compliance to the dietary recommendations were neglected by their teachers (Peters et al.,2008). Children with diabetes spend a considerable amount of their time at school and it is not unreasonable to expect their teachers to have a basic working knowledge of diabetes for a safe management of their schooling. This study shows a poor sensitivity of the school institution about diabetes and a very superficial level of knowledge of the different aspects of diabetes among school teachers. Specific training sessions for school personnel can represent a key factors in bringing children with diabetes to a full integration, so improving control of their glycaemic status as well as their quality of life.

Conclusion

Training the primary school teacher's staff by the implementation of periodic education program which indeed helps to develop their knowledge. Ministry of Health and Education should try to consider teachers benefits. It should adjust training on managing diabetes at school program' aims to increase the awareness of the teachers on diabetes.

Ethical clearance

"All experimental protocols were approved under the Wasit Education Directorate, Iraq and all experiments were carried out in accordance with approved guidelines".

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