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Assessing knowledge of Pediatric Diabetes Mellitus among Nurses at Turaif General Hospital, Saudi Arabia

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Abstract: This research aimed to explore the level of nurses' knowledge of pediatric Diabetes Mellitus (DM) at Turaif General Hospital, Saudi Arabia, and the knowledge deficits among nurses about this serious medical concern. Also, the job and demographic characteristics of the nurses are studied in relation to their knowledge of pediatric DM. This research used the descriptive approach. The questionnaire is used in this study as the main data collection tool. The population of this research consists of all pediatric nurses at Turaif General Hospital in Saudi Arabia whose number is (220) nurses. The duration of the study took about (1) month starting from 01 October 2022 until 02 November 2022. The results of the study showed that the overall mean of the participant's responses to items of the questionnaire is (3.04) which is a medium mean, indicating that the nurses have a moderate level of knowledge of diabetes mellitus in children. The nurses' knowledge of pediatric DM in terms of occurrence, risk factors, and nutrition was moderate. On the other hand, it was shown that there are statistically significant differences between the mean scores of the participant's responses to the items of the questionnaire due to the variable of years of experience and no difference due to job and educational level variables. The researchers recommended that special training further to essential nursing education will strengthen the knowledge and abilities of nurses.

Keywords: Pediatric Diabetes Mellitus, Knowledge, Nurses, Turaif General Hospital, Saudi Arabia

تقييم معرفة الممرضين بمرض السكري لدى الأطفال بمستشفى طريف العام، المملكة العربية السعودية

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المستخلص: هدف البحث الحالي هو دراسة درجة معرفة الممرضين بمرض السكري لدى الأطفال بـمستشفى طريف العام بالمملكة العربية السعودية، وكذلك الفجوات المعرفية لدى الممرضين حول هذا المرض الخطير. من ناحية أخرى، تمت دراسة الخصائص الوظيفية والديموغرافية للممرضات وعلاقتها بدرجة معرفتهم بمرض السكري لدى الأطفال. استخدم هذا البحث المنهج الوصفي وتم استخدام الاستبيان كأداة رئيسية لجمع البيانات. يتكون مجتمع هذا البحث من جميع ممرضي الأطفال في مستشفى طريف العام بالمملكة العربية السعودية وعددهم (220) ممرض. استغرقت مدة الدراسة حوالي (1) شهر ابتداءاً من 1 أكتوبر 2022 وحتى 2 نوفمبر 2022. أظهرت نتائج الدراسة أن المتوسط العام لإجابات المشاركين على بنود الاستبيان هو (3.04) وهي درجة متوسط تشير إلى أن الممرضين لديهن مستوى متوسط من المعرفة بمرض السكري عند الأطفال. كما تبين أن درجة معرفة الممرضين بمرض السكري لدى الأطفال من حيث الحدوث وعوامل الخطر والتغذية متوسطة. من ناحية أخرى، تبين وجود فروق ذات دلالة إحصائية بين متوسطات استجابات الممرضين على فقرات الاستبانة تعزى لمتغير سنوات الخبرة، وعدم وجود فروق تعزى لمتغيرات المستوى الوظيفي والتعليمي. وبناء على نتائج الدراسة، أوصى الباحثون أن الممرضين في حاجة إلى مزيد من التدريب الخاصة الإضافي في التمريض من أجل تعزيز معرفتهم بهذا المرض.

الكلمات المفتاحية: مرض السكري لدى الأطفال، المعرفة، الممرضين، مستشفى طريف العام، المملكة العربية السعودية.

1. Introduction

Diabetes Mellitus (DM) is one of the most significant and rapidly expanding health issues in the world (Khan et al., 2020). Approximately 537 million people between the ages of 20 and 79 live with DM worldwide. By 2030, this number is expected to increase to 643 million, and by 2045, it will reach an astounding 783 million (Sari et al., 2022). High financial burden, lowered quality of life, morbidity, and mortality from complications are all issues related to DM (Alshayban et al., 2020; Trikkalinou et al., 2017; Deshpande et al., 2008).

The most prevalent chronic non-communicable metabolic disorder in children is diabetes mellitus (Moawad et al., 2014). Like many other non-communicable diseases, childhood type 1 diabetes mellitus is becoming more common, and its complications can be fatal (Yarhere & Tamunopriye, 2016; Op de Beeck & Eizirik, 2016; Chen et al., 2019; Yahiya et al., 2020; Ahmed et al., 2020; Jensen & Dabelea, 2018).

The Kingdom of Saudi Arabia (KSA), the largest nation in the Middle East, is home to more than 33.3 million people, 26% of whom are under the age of 14. It takes up almost four-fifths of the Arabian Peninsula. According to the Diabetes Atlas (8th edition), 35,000 children and teenagers in Saudi Arabia have T1DM, placing the country eighth globally in terms of the total number of TIDM patients and fourth globally in terms of the incidence rate (33.5 per 100,000 people) of TIDM (Robert et al., 2018). The quantity of research initiatives on the prevalence, incidence, and sociodemographic aspects of T1DM, however, pales in comparison to those in industrialized nations.

Given the high frequency of pediatric diabetes mellitus, healthcare professionals must treat the condition properly to prevent amputations brought on by DM complications. Nursing staff are responsible for managing wound care and are expected to offer children with diabetes with high-quality treatment (Ahmed et al., 2020; Jensen & Dabelea, 2018; Nikitara et al., 2019). Consequently, it is critical that nurses possess adequate expertise and a good outlook (Cashen & Petersen, 2019). Nursing care for diabetic foot ulcers should be based on knowledge in order to avoid amputation (Redondo et al., 2018). According to studies, nurses who possess good attitudes and knowledge are more likely to help treat diabetic foot ulcers (Alkhatieb et al., 2022).

In general, nurses are aware of the necessity of having knowledge of type 1 diabetes in order to provide children with the disease with the proper treatment. For instance, it's crucial to know what to do if the glucose content is too high or too low. According to this perspective, nurses who are unsure of their diabetes expertise believe they cannot successfully help kids with type 1 diabetes (Thorstensson et al., 2015). Additionally, Peery et al. (2012) showed that parents of children with type 1 diabetes frequently notice an improvement in the self-management of the disease when nurses educate their children. Similarly, to this, when nurses visit classes and educate on diabetes, they frequently notice improvements in self-management (Peery et al., 2012).

It could be challenging for medical professionals to stay up with the ongoing developments in type 1 diabetes treatment and patient monitoring techniques. Numerous assessments of the knowledge of

nurses, medical students, and other medical personnel regarding diabetes have revealed various deficiencies (Drass et al., 1989; Mogre et al., 2015; Alotaibi et al., 2017; Chrysoula et al., 2016; Thomas, 2004; Tawalbeh and Gharaibeh, 2014; Abduelkarem and El-Shareif, 2013). However, to our knowledge, no research has evaluated nurses' understanding of type 1 diabetes, despite the fact that the American Diabetes Association, for instance, suggests such an evaluation (Alotaibi et al., 2016; American Diabetes Association, 2018).

Nursing care must recognize the potential of health education as a complete approach that combines risk prevention and health promotion through actions that motivate the interested population to participate and enable an approximation with their daily contexts. In this way, kids and their families can learn about and impart information about health and quality of life (Redondo et al., 2018). As a result, the purpose of this study is to evaluate nurses' knowledge of childhood diabetes mellitus at Turaif General Hospital in Saudi Arabia.

Statement of the Problem

The rate of diabetes prevalence in Saudi Arabia is among the highest in the Middle Eastern area, which itself has the highest rate in the world (Ahmed et al., 2021). It has been stated that 18.5% of adult Saudi Arabians currently suffer from diabetes, and this number is expected to rise (Abdirahman, 2022). The rate of diabetes in Saudi Arabia is the second-highest in the Middle East and the seventh-highest in the world (Mahzari et al., 2022). Rising diabetes rates can be attributed to a lack of awareness, education, and treatment (Alkhatieb et al., 2022).

The Ministry of Health in Saudi Arabia has introduced a diabetes education and awareness campaign in its 2030 Vision program as a reaction to this growing public health crisis (Abdirahman, 2022). Patients and their families rely heavily on nurses for information on diabetes and its diagnosis and treatment (Temneanu et al., 2016).

Despite diabetes' prevalence and severity, many studies have shown that nurses and nursing students lack the necessary expertise to properly care for patients with the disease (Abduelkarem et al., 2013; Yacoub et al., 2014). In particular, nurses' understanding of diabetes pathology, symptoms, and drugs for diabetes care (Mahzari et al., 2022; Moawad et al., 2014); and a lack of knowledge and abilities in blood glucose monitoring (Mahzari et al., 2022) are all inadequate (Alaqeel, 2019). Furthermore, numerous studies have demonstrated that nurses' expertise in various elements of nutrition management is insufficient (Moawad et al., 2014).

The volume and scope of nursing care and education for patients with diabetes have grown in tandem with the global rise in the incidence and prevalence of the disease. Due to the country's high diabetes rate, this issue is of utmost importance in Saudi Arabia (Alotaibi et al., 2017).

Although several studies have looked into the knowledge and attitudes of Saudi Arabian nurses toward diabetic care (Ahmed et al., 2021; Mahzari et al., 2022), to the best of our knowledge, no study has looked into the knowledge of Saudi Arabian nurses regarding Pediatric DM or the factors affecting this.

Research into the subject of diabetes care in nursing has thus far concentrated on elderly patients, with a particular emphasis on their ability to avoid and manage their own diabetes (Alaqeel, 2019 Alkhatieb et al., 2022). Researchers have also looked at nurses' perspectives and understanding of diabetes-related conditions including foot diabetes (Alkhatieb et al., 2022). As a result, this research has a dual objective. The study had two primary goals. The first was to evaluate nurses' knowledge of pediatric DM, and the second was to analyze the factors that contribute to this knowledge.

Research Questions

This study seeks to answer the following questions:

1- What is the level of nurses' knowledge of pediatric diabetes mellitus at Turaif General Hospital?
2- What are the knowledge deficits of pediatric diabetes mellitus among nurses at Turaif General Hospital?
3- Are there any statistically significant differences at (0.05) among the mean scores of the nurses toward knowledge of pediatric diabetes mellitus due to (gender, education, and years of experience) variables

Research Significance

The high prevalence of diabetes in children in Saudi Arabia makes this an issue of importance to the government and the population (Alkhatieb et al., 2022). It is the responsibility of nurses to ensure that diabetes patients receive the best care possible (Ahmed et al., 2021). Since the incidence of diabetes in children has increased in Saudi Arabia, it is crucial that these nurses have a solid foundation in the care and management of children with diabetes. Lack of information may result in future nurses who are unprepared and lack the skills necessary to deliver adequate interventions for the care and control of diabetes. As a result, this research is the first to assess nurses' understanding of pediatric diabetes and its management in Saudi Arabia. The findings of this research could be used to strengthen nursing education programs at the undergraduate level. Policymakers, decision-makers, healthcare providers, and patient advocacy groups may find this study's findings useful as they work to improve health outcomes for children with DM. The findings of this study will be useful for curriculum designers and educators in their efforts to enhance nursing education in the area of pediatric diabetic care by using content and strategies gleaned from this research.

2. Methodology

Research Method

This research used the descriptive approach. The descriptive approach is a method of studying scientific phenomena or problems by doing the description in a scientific way, and then arriving at logical explanations that have evidence and proofs which give the researcher the ability to set specific frameworks for the problem. The researchers used the descriptive approach due to his suitability for this study.

Participants

The research sample consisted of all research population members through the complete census sampling method. So, the research sample included (220) pediatric nurses at Turaif General Hospital.

Data Collection

The questionnaire is used in this study as the main data collection tool. A questionnaire is a set of written questions that the respondent in turn answers, and they are of two types, either restricted or free. This questionnaire consists of parts. The first part included questions about the demographic and job data of the participants (gender, years of experience, educational level, and job). The second part of the questionnaire of (21) items about the pediatric nurses' knowledge of diabetes mellitus. Those who responded to the questionnaire tool with valid responses are (170) participants with a response rate reaching (77%). The duration of the study took about (1) month starting from 01 October 2022 until 02 November 2022

The rating scale used in this questionnaire is the Likert scale which has five ratings "very often", "often", "occasionally", "rarely", and "never". The questionnaire was written in the English language. The questionnaire was self -administered and distributed personally to the participants.

The participants of the research were made aware of the research objectives and their approval to participate in the study was ensured. Also, the participants were informed that their responses will be used the research purposes only and will not affect them in any aspect. Furthermore, the confidentiality of the data is ensured. On the other hand, the researchers obtained the ethical committee approval and official approval for data collection.

The researchers achieved the validity of the questionnaire by verifying that the questionnaire measures what it is intended to measure. The questionnaire has been made available to a number of experts who majored in the field. In light of the comments and remarks provided by the judges, the researcher has modified the questionnaire and rephrased the items that need more clarity and relevance to the intended goal.

In this research, the researchers have used Cronbach's Alpha coefficient to assess the reliability of the questionnaire sections. Table (1) presents the results of Cronbach's Alpha coefficient for the questionnaire:

Table 1. Reliability Statistics

Section	No of Items	Cronbach's Alpha
Nurses' knowledge of DM	**21**	**0.847**

From the above table, Cronbach's Alpha for the items of the questionnaire is (0.847) and these values are higher than (0.5). The questionnaire is then considered a reliable tool.

Data Analysis

To analyze the collected data, the Statistical Package in Social Sciences (SPSS) software is used. The below statistical tools were used:

1. Cronbach's Alpha Coefficient to calculate the reliability of the questionnaire.
2. Mean score in order to determine the average estimates by the study participants of the items of the questionnaire.
3. Standard Deviation: was used to identify the extent of the deviation of the responses.
4. ANOVA test: to identify if there are statistically significant responses among the nurses due to their demographic and job variables.

3. Results & Discussion

This part presents the findings of the study and a discussion of these findings. As the main data collection tool in this research is the questionnaire, this research seeks to present the participants' responses to the sections of the questionnaire. In the below part, the findings related to the demographic data of the respondents and the findings related to questionnaire items are also presented. The presentation of findings is followed by a discussion of these findings.

Table 2 The findings related to the respondents' demographics:

Participants' Characteristics	Frequency	Percentage
Gender		
Male	100	58.8%
Female	70	41.2%
Total	170	100%
Years of Experience		
Less than 2 years	38	22.4%
From 2-5 years	29	17.1%
From 5-10 years	37	21.8%
More than 10 years	66	38.8%
Total	170	100%
Educational Level		
Doctoral	3	1.8%
Master	28	16.5%
Bachelor	85	50%
Diploma	54	31.8%
Total	170	100%
Job		
Nursing manager	26	15.3%
Nurses	123	72.4%
Assistant nurse manager	15	8.8%
Nursing Assistant	6	3.5%
Total	170	100%

The above-mentioned table shows the participant's responses to the demographic data. Regarding the gender variable, the results showed that the male participants represent (58.8%) of the

overall research participants, and the female participants represent (41.2%) of the overall research participants.

Regarding the educational level variable, those who hold a doctoral represent (1.8%) of the overall research participants, those who hold a master represent (16.5%) of the overall research participants, those who hold a diploma represent (31.8%) of the overall research participants and those who hold bachelor represent (50%) of the overall research participants.

With regard to job variable, the percentage of nursing managers is (15.3%), the percentage of nurses is (72.4%), the percentage of the assistant nurse manager is (8.8%), and the percentage of nursing assistant is (3.5%).

Regarding the years of experience variable, those who are (less than 2 years) represent (22.4%) of the overall research participants, those who are (from 2-5 years) represent (17.1%) of the overall research participants, those who are (from 5-10 years) represent (21.8%) of the overall research participants, and those who are (more than 10 years) represent (38.8%) of the overall research participants.

Table 3 shows the participant's responses to the research questions:

S	Statements	Frequencies					Mean	Standard Deviation	Response Level	Rank
		Very often	Often	Occasionally	Rarely	Never				
1	Diabetic children need to eat carbohydrate items on a regular basis in big quantities.	1	39	75	31	24	2.77	1.81	Med	13
2	Diabetic children need to have their blood sugar checked before every meal, but it should be a different meal every day.	5	45	63	31	26	2.83	2.01	Med	8
3	Subcutaneous insulin injections are the norm.	33	51	60	21	5	3.91	2.19	High	2
4	In order to slow down the absorption of insulin at night, it is recommended to inject it into the leg.	11	41	49	36	33	2.77	1.74	Med	14
5	When following a basal-bolus regimen, if a mealtime insulin dose is missed, the missed dose should be administered as directed by medical professionals.	7	51	50	31	31	2.83	1.99	Med	9
6	Repetition of glucose until hypoglycemia symptoms decrease, followed by meals, is the recommended treatment.	7	57	40	32	34	2.82	1.87	Med	10
7	Ketoacidosis, or diabetic ketoacidosis, is a life-threatening condition caused by high	37	62	38	29	7	3.90	2.05	High	6

S	Statements	Frequencies					Mean	Standard Deviation	Response Level	Rank
		Very often	Often	Occasionally	Rarely	Never				
	blood sugar levels and the breakdown product ketones.									
8	When injected repeatedly into the same area, fat would begin to grow in an abnormal manner.	5	38	51	41	35	2.62	1.53	Med	19
9	Checking for ketones in the urine after a "one-time" spike in blood sugar is recommended.	33	60	33	33	11	3.90	2.09	High	5
10	A non-diabetic blood glucose level is between 4 and 7 mmol/l.	35	65	36	28	6	3.91	2.17	High	3
11	Insulin with an 8-10 hour half-life is considered intermediate-acting.	9	34	59	38	30	2.72	1.71	Med	15
12	The clinical definition of hypoglycemia is a blood glucose level of less than 4 mmol/L.	7	63	33	31	36	2.84	2.01	Med	7
13	Complex carbs are essential for a diabetes diet.	5	43	48	33	41	2.63	1.56	Med	18
14	When someone is sick, they need more insulin.	11	53	36	35	35	2.82	1.97	Med	11
15	Routine insulin injections for a child should be kept in a refrigerator or other cool, dry area at home.	7	40	47	46	30	2.69	1.69	Med	16
16	When the pancreas stops producing insulin, it causes type 1 diabetes.	36	64	28	32	10	3.90	2.13	High	4
17	Ketone testing during hyperglycemic episodes is recommended for all people with diabetes (type 1 or 2).	3	41	50	41	35	2.62	1.47	Med	20
18	Mealtime administration is recommended for human insulin.	41	63	30	26	10	3.94	2.23	High	1
19	Insulin should be withheld from a diabetic child undergoing endoscopy until after the operation is finished.	2	32	28	38	70	2.16	1.43	Low	21
20	Polyuria and polydipsia are signs of high blood sugar.	6	49	37	35	43	2.64	1.63	Med	17
21	Blood glucose is transported into cells with the help of insulin.	15	55	25	30	45	2.79	1.85	Med	12
Total Mean							3.04			

Response Level: *Low (Mean =1.81 – 2.60) – *Medium (Med) (Mean = 2.61 – 3.40). *(High) (Mean = 3.41 – 5.00).

Table 3 shows that the overall mean of the participants' responses to items of the questionnaire is (3.04) which is a medium mean, indicating that the nurses have a moderate level of knowledge of diabetes mellitus. The participants moderately agreed with the statements of this part of the questionnaire with mean scores ranging from (1.43) to (3.94) to

The above findings show that the nurses have high knowledge of mealtime administration and insulin taking (3.94), subcutaneous insulin injections (3.91), the non-diabetic level of blood glucose (3.91), the impact of pancreas stopping to produce insulin on type 1 diabetes (3.90), the need to check ketones in urine after spiking in blood sugar (3.90), and the threatening impact of diabetic ketoacidosis (3.90).

On the other hand, the results show that the nurses have a mediocre knowledge of the clinical definition of hypoglycemia (2.84), the regularity of diabetic checking for children (2.83), the missed doses (2.77), repetition of glucose until hypoglycemia symptoms decrease (2.82), the transportation of blood insulin into cells (2.79), the nutrition of diabetic children (2.77), the absorption of insulin (2.77), the half-life of insulin (2.72), the storage of insulin (2.69), the signs of high sugar (2.64), and ketone testing during hyperglycemic episodes (2.62).

One important finding of which the nurses have weak knowledge is that insulin should be withheld from a diabetic child undergoing endoscopy until after the operation is finished (2.16).

With overall 66% of nurses' responses to pediatric diabetes being mediocre, and one-half to two-thirds of the items were rated as moderately difficult or difficult by nurses in previous research that examined nurses' diabetes knowledge using different, albeit partly identical, questionnaires.

When asked what causes type 1 diabetes, a surprisingly large number of responders correctly identified a lack of insulin production by the pancreas as the root reason. The investigators are aware, however, that the remaining respondents' lack of basic nursing knowledge is unacceptable in a group of licensed pediatric nurses. Children with type 1 diabetes rely on insulin to stay alive. Half of those polled had no idea that insulin is what helps glucose enter cells from the bloodstream. Among these responders, there was disagreement as to whether its job was to break down glucose, transport glucose from the cells to the bloodstream, or excrete glucose in the urine. For real-world purposes, many people were not able to determine with certainty that Lipohypertrophy might be caused by repeated insulin injections into the same spot.

Only a quarter of the nurses were aware that a diet high in complex carbs was recommended for diabetic children, and half were ignorant that children with diabetes needed to eat frequently. This is especially concerning because pediatric ward nurses often have to provide dietary guidance to children with diabetes when their parents are not available to do so.

The current study indicated that participants' mean scores were relatively low, indicating that diabetes education is inadequate. This research shows that a key component of educational intervention is the repetition of the same knowledge through lectures and tutorials, regardless of the student's current

level of knowledge. The knowledge gap about diabetes among nurses was also reported in this study and two other trials.

Regular visits to a diabetologist, it could be argued, would fix the problem. However, a study found that one of the most common hurdles to controlling hyperglycemia in patients was healthcare personnel's reluctance to accept the advice of endocrine services due to numerous beliefs (Kobos et al., 2020).

The above findings correspond with the findings of Mahzari et al (2022) and Khan et al (2020) who reported that most nurses have mediocre knowledge in terms of diabetes in children in terms of dose management, the causes, risk factors, and the nutritional management of diabetes. Also, this finding is supported by Sari et al (2022) who concluded that nurses have medium knowledge of the risk factors of diabetes.

With the introduction of new insulin analogs, it has been noted that most nurses are not very familiar with these new insulin formulations, which increases the risk of error. That most participants did not understand the temporal action profile of these new insulin analogs was confirmed by (Mahzari et al., 2022).

With the rising prevalence of juvenile diabetes mellitus, it is crucial that all nurses, regardless of specialty, be familiar with the disease (Sari et al., 2022). Unsurprisingly, nurses' lack of familiarity with diabetes mellitus management is a major barrier to care (Mahzari et al., 2022). It's improbable that a youngster will go undiagnosed for DM given that the vast majority of responders are aware of the condition's existence.

Recognizing the significance of diabetic education in overall diabetes care. It has been noticed in prior research that nurses have a significant knowledge gap when it comes to diabetes mellitus (Kobos et al., 2020; Harada et al., 2019). It is understandable that people with diabetes would rank insulin therapy highest, however, proper insulin administration requires knowledge of the insulin injection process and technique. When it comes to managing diabetes mellitus, nurses play a pivotal role and should be well - informed to not only aid in treatment but also educate patients (Khan et al., 2020).

Table 4 . ANOVA Test Results about the Differences among the Participants' Responses to the Questionnaire Items and their Job and Demographic Variables

Variables	Groups	SSQ	DF	MS		F	Sig.
Educational Level	Between Groups	3.701	2	1.850		1.702	0.184
	Groups Within	443.487	168	1.087			
	Total	447.187	170		Not Significant		
Job	Between Groups	5.872	2	2.936		2.905	0.061
	Groups Within	412.377	168	1.011			
	Total	418.249	170		Not Significant		
Years of Experience	Between Groups	7.417	2	3.708		3.356	0.036
	Groups Within	450.898	168	1.105			

Variables	Groups	SSQ	DF	MS	F	Sig.
	Total	**458.315**	**170**		**Significant**	

***Significant at ≤(0.05)**

The above findings show the differences among the participant's responses to the questionnaire items due to their variables (educational level, job, and years of experience). Table 4 shows that there are no statistically significant differences between the mean scores of the participants' responses to the items of the questionnaire due to the variable of educational level since F value is (1.702) and the significance level is (0.184) which is higher than (0.05). Also, it is shown that there are no statistically significant differences between the mean scores of the participants' responses to the items of the questionnaire due to the variable of job since F value is (2.905) and the significance level is (0.061) which is higher than (0.05). On the other hand, it is shown that there are statistically significant differences between the mean scores of the participants' responses to the items of the questionnaire due to the variable of years of experience since F value is (3.356) and the significance level is (0.036) which is less than (0.05). These findings are supported by the findings of Kobos et al (2020) and Khan et al (2020) who reported that more experienced nurses are well aware of diabetic occurrence and risk factors compared with those who are less experienced.

4. Conclusion & Recommendations

The results of this study showed that nurses generally have a moderate understanding of pediatric diabetes mellitus. The inadequate management of children with diabetes mellitus is exacerbated by nurses' moderate level of knowledge and expertise with the condition, despite the rising incidence of the disease among children. The growing prevalence of type 1 diabetes in children, however, emphasizes the importance of pediatric nurses having a solid understanding of diabetes. The availability of educational opportunities and the ability to evaluate their efficacy are both crucial. Simply pointing out where there is a knowledge gap is not enough. Senior nurses also have a responsibility to create training and support systems for their ward-based colleagues to avoid a loss of expertise.

Important diabetes knowledge gaps were revealed in this investigation. As a result, it's necessary to host seminars and training sessions for residents and nurses to impart fundamental information about diabetes management, with a particular emphasis on the care of diabetic youngsters. Accordingly, nurses will benefit from having standardized protocols and algorithms (in both textual and digital forms) to follow when managing hyperglycemia, based on the most recent research in the field. It is also important to plan the introduction of online education courses to address the knowledge gap in diabetes. In the future, a post-intervention survey should be used to evaluate the effect of these treatments on the nurses' total knowledge.

Treatment of children with diabetes relies heavily on nurses having a solid understanding of the disease. Nurses' familiarity with pediatric diabetes is reflected in their educational backgrounds. Special

training further to essential nursing education will strengthen the knowledge and abilities of nurses, presumably reducing the long-term risk of amputation because of the nurses' frequent and direct interaction with patients.

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