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"Assessment of the knowledge and practice of Vitamin Supplementation for diabetic children and adolescent among physicians working in Port Said hospitals "

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Abstract:

Diabetes mellitus is one of the top 10 causes of death globally. Nutrition is an integral part of diabetes management. Improved dietary quality is associated with better glycemic control. Vitamins A, C, D, E, and B are necessary for glycemic control.

Aim of the study:

Assess to improve physician's knowledge and practice regarding vitamin supplementations for diabetic children in Port Said government.

Methods:

A cross-sectional study was conducted including 353 Physicians who care for diabetic children and adolescents in healthcare facilities in Port Said governorate. Data collection was done between November 2023 and May 2024 using a pre-designed structured questionnaire that was developed by researchers asking about knowledge and practice about vitamin supplementation for diabetic children.

Results: The study revealed that physicians demonstrated the highest level of good knowledge about Vitamin B (75.4%). This was followed by Vitamin C and A (66.2% and 63.7%, respectively). Most physicians (72.3%) have good knowledge about vitamin supplementations and their roles for diabetic children. However, prescribing vitamins was practiced only if needed, except for vitamin B as 46.7% of them were used to prescribe it regularly. Results show that age, marital status, having children, specialty, and higher years of experience were the significant independent predictors of higher knowledge regarding vitamin supplementation ($p<0.001$)

Conclusion: This study showed high knowledge levels among physicians in Port Said hospitals with a positive correlation between the years of experience and knowledge. Public health policies and training programs are necessary to establish standardized guidelines for effective supplementation practices.

Key words: diabetes mellitus, knowledge, practice, vitamins supplementation.

Introduction

Introduction:

Diabetes mellitus is a chronic metabolic disorder characterized by high blood glucose levels that result from absolute or relative insulin deficiency due to β-cell dysfunction (T1DM), insulin resistance (T2DM) or both. [1] children with type 1 diabetes experience symptoms as increased appetite, polydipsia, dysuria, weight loss, increased appetite, and vision problems. [2]

Diabetes mellitus is one of the main causes of death globally. T1DM incidence is increasing by 3–4% every year and the age at onset in children has become younger. [3] The major components of the treatment of diabetes are diet , exercise and insulin.[4] Nutrition is an integral part of diabetes management. Improved dietary quality is associated with better glycemic control in youth with type 1 diabetes.

Martini et al 2020 reports a beneficial effect from vitamin D supplementation in the prevention of type 2 diabetes and in the pathogenic process of type 1 diabetes [5]. Also Vitamin C and vitamin E can control the symptoms of hyperglycemia in diabetic patients by reducing lipid peroxidation and decreasing the glycation of insulin in the pancreas. [6].

Physician knowledge and practice significantly impact the incorporation of vitamin supplementation into the treatment plans for diabetic children. The aim of this study is to contribute to the enhancement of patient outcomes and the overall quality of life for diabetic children. By Increasing awareness among physicians in Port Said regarding the administration of suitable vitamin supplements for diabetic youngsters.

The objective of this study was to assess the knowledge and the practice of Vitamin Supplementation for diabetic children among physicians working in healthcare facilities in Port Said governorate.

Methodology

Study design: A cross-sectional study design.

Setting of the study: This study was conducted in healthcare facilities in Port Said governorate including Hospitals affiliated with the Universal Health Insurance Authority (Al Nasr Hospital specialized for children, Al Salam Hospital, Al Zohour Specialized Hospital, Al Hayat Hospital), Port Said University Hospital and Primary healthcare units (Mostafa Kamel PHC, Al-Safwa PHC).

Study population: Physicians who care for diabetic children including pediatricians, general practitioners, and internal medicine physicians as endocrinologists.

Sampling technique: a non-random convenient technique. Physicians on duty in all selected hospitals and health care units were invited to participate in the survey with a target sample of 270 physicians.

Data collection tool: a pre-designed structured questionnaire was developed by researchers after extensive literature review [7, 8]The questionnaire was validated by two experts from Pediatric and Public Health departments independently.

I. **Socio-demographic data:** Age, Gender, Marital status, Presence of children, Specialty, years of experience, recent attendance of educational activity.
II. **Knowledge about vitamins supplements for diabetic children among physicians:** This section involved 22 items asking about roles and functions of different vitamins in improving diabetes mellitus among children. Each correct answer will be given one point with a total score of 22. The cut-off point was set as 50%. Physicians who scored more than 50% (from 12 to 22) correctly were categorized as having good knowledge. Cronbach's alpha of knowledge items was 0.747.
III. **Practice regarding vitamins supplements prescription for diabetic children among physicians:** This section involved seven items including frequency, duration, and challenges of prescribing vitamin supplementation. The Cronbach's alpha of practice items was 0.79.

Sample size: Sample size: sample size was based on this formula:

$$n = \left[\frac{Z_{\alpha/2}}{E}\right]^2 * p\,(1 - p)$$

n = number of sample size, $Z_{\alpha}/2 = 1.96$, P= Prevalence, E = 5%

P: The sample size was determined using data from a prior study in Riyadh, Saudi Arabia, where 94% (378 responders) demonstrated sufficient knowledge about vitamin B12 deficiency in diabetic patients [9]. using the Epi-info calculator with 80% power, a 0.05 significance level, and an estimated proportion of 94%, the required sample size was 273. Accounting for a 30% non-response rate, the final estimated sample size was increased to 355 participants to overcome the non-randomization of sampling.

statistical Analysis: Data analysis was conducted using SPSS version 25. Normality was assessed with the Kolmogorov-Smirnov test. Descriptive statistics included frequencies and percentages for qualitative data and medians with interquartile ranges for quantitative data. Chi-square and Fisher tests were used for cross-tabulations.

Binary logistic regression was conducted to determine the independent significant predictors of knowledge. Correlation between scales and subsections was evaluated with Spearman's rho test. Statistical significance was set at $P < 0.05$.

Ethical considerations: Our study protocol was submitted to the Institutional Review Board (IRB) at Port Said University. An official consent was obtained from the physicians of Port Said Hospitals, no identity

information was required, we kept all collected data safe and not shareable, and any physician was able to reject or withdraw during data collection without pressure.

Results: This study was conducted on 353 Physicians who care for diabetic children including pediatricians, general practitioners, and internal medicine physicians as endocrinologists in the healthcare facilities in Port Said governorate. The median age of participants was 31 years. 55.5% (N = 196) of the participants were males. 54.1% (N = 191) of them were married and about half of them (51%) have children. Nearly 78 % of the participants have attended an educational activity in the last 6 months. Their median year of experience is 5 years. Table (1).

Table (1): Socio-demographic characteristics of the study participants (N = 353)

		Frequency	Percent %
Age median (IQR)	Years	31	(28 – 38)
Gender	Male	196	55.5
	Female	157	44.5
Marital Status	Single	148	41.9
	Married	191	54.1
	Divorced	9	2.5
	Widow	5	1.4
Having Children	Yes	180	51
	No	173	49
Hospital Name	Al – Salam	130	36.8
	Al – Nasr	102	28.9
	Al – Hayat	28	8
	Al – Zohour	13	3.7
	Primary Care Units	27	7.6
	University	53	15
Specialty	General Practitioner	65	18.4
	Pediatrician	134	37.9
	Internal physician	154	43.6
Number of pediatric patients seen per day.	5 or less	127	36.0
	5 – 10	87	24.6
	10 -15	50	14.2
	15 or more	89	25.2
Attendance of educational activity in the last 6 months.	Yes	270	67.5
	No	83	23.5
Form of educational activity	Lecture	139	39.4
	Conference	166	47.0
	Workshop	48	13.6
Last attendance of educational activity median (IQR)	Months	3	(1 – 7)
Years of experience median (IQR)	Years	5	(2 – 11)
***IQR: Inter Quartile Range**			

The study assessed knowledge of various vitamins and their roles in diabetes management. For **Vitamin A**, 96.95% of participants were aware of its essential roles in immune defense, fetal development, vision, and cell division. Additionally, 73.1% recognized that prolonged use of metformin increases the risk of Vitamin B12 deficiency. Meanwhile, 70.0% were aware of the need for regular Vitamin B screening in diabetic children. Regarding **vitamin C** supplementation, 76.2% of participants knew that it reduces oxidative stress markers in diabetics.

For **Vitamin D,** 60.9% knew that low Vitamin D levels are associated with increased proteinuria, an indicator of nephropathy. Additionally, 66.6% identified that Type 1 diabetes is linked with a higher fracture risk from childhood. Meanwhile, only 36.8% identified an association between Vitamin D deficiency and HbA1c.

Finally, regarding **Vitamin E**, 60.1% understood its positive effects on HbA1c and insulin resistance in children with diabetes and 68.8% recognized its role as antioxidants. Meanwhile, the statement "Short-term interventions with vitamin E result in higher fasting blood glucose in diabetic children" has the highest wrong answer (74.2%). Table (2).

Table 2: Assessment of physicians' knowledge regarding vitamin supplementation (N = 353)

Knowledge items	Frequency (%) of correct answer
1. Vitamin A is vital to the body's defense mechanisms, fetal growth, sense of sight, and cell division.	342 (96.9)
2. Vitamin A supplementation is associated with high risk of diabetic retinopathy.	230 (65.2)
3. Vitamins B are found in plant proteins.	150 (42.5)
4. Vitamin B deficiency is considered as a cause of the improvement of neurological disorders.	227 (64.3)
5. Vitamin B complex have a role in treatment of Diabetes mellitus.	267 (75.5)
6. Vitamin B 6 , B9, B12 deficiency has a role in diabetic peripheral neuropathy.	328 (92.9)
7. Risk of vitamin B12 deficiency increases because of prolonged use of metformin for treatment of diabetes.	258 (73.1)
8. In Type1 Diabetes mellitus, it may cause vitamin B12 deficiency resulting pernicious anemia.	268 (75.9)
9. Diabetic children need routine screening for Vitamins B.	247 (70.0)
10. High doses of vitamins B3, B7, B6, B9 and B12 safe and have no serious adverse effects on diabetic children.	188 (53.3)
11. Vitamin C supplementation can reduce some markers of oxidative stress in people with diabetes.	269 (76.2)
12. Vitamin D insufficiency is highly prevalent among pediatric type 1 diabetics.	231 (65.4)
13. Low vitamin D level is associated with increased levels of proteinuria, as a sign of nephropathy.	215 (60.9)
14. Type 1 diabetes is associated with an increased risk of fractures beginning in childhood.	235 (66.6)
15. There is an association between vitamin D deficiency and increased Body Mass Index.	298 (56.1)
16. Insulin requirement is lower in diabetic children with VDD and VD insufficient patients.	163 (46.2)
17. Supplementation with 2000 IU of cholecalciferol for 12 months increases T lymphocyte cell percentages in new-onset Type 1 DM.	146 (41.4)
18. There is an association between VDD and HbA1c.	130 (36.8)
19. Vitamin D can prevent autoimmune diseases.	224 (63.5)
20. Vitamin E intake has a beneficial role in improving HbA1c and insulin resistance in children with diabetes.	212 (60.1)
21. Short-term interventions with vitamin E have resulted in higher fasting blood glucose in diabetic children.	91 (25.9)
22. Supplementation with antioxidants, such as vitamin E, may ameliorate endothelial cell dysfunction in children with diabetes.	243 (68.8)
Total Good Knowledge Level	**257 (72.8%)**

Table 3 shows the factors associated with good knowledge among physicians. Physicians of higher age, years of experience, and more recent educational activity had higher knowledge regarding vitamin supplementation (p<0.001, <0.001, 0.041). Physicians who were married and those who had children had higher knowledge levels (<0.001, 0.02). Also, specialty was associated with higher knowledge (p<0.001) Table (3).

Table (3): Factors associated with physicians' knowledge about vitamins supplementation for diabetic children. (N = 353)

Variable		Knowledge Level N(%)		P-value	Odds Ratio	95% CI	P-value
		Poor	Good				
Gender	Male	48 (24.5)	148 (75.5)	0.229	0.736*	(0.460 – 1.179)	0.229
	Female	48 (30.6)	109 (69.4)				
Marital Status	Single	54 (33.4)	108 (66.6)	0.02	1.774*	(1.105 – 2.847)	0.02
	Married	42 (22.0)	149 (78.0)				
Having Children	Yes	34 (18.9)	146 (81.1)	<0.001	2.399*	(1.476 – 3.898)	<0.001
	No	62 (35.8)	111 (64.2)				
Specialty	GP	37 (56.9)	28 (43.1)	<0.001	References		<0.001
	Pediatrician	28 (23.3)	106 (76.8)		5.155	(2.726 – 9.748)	<0.001
	Internal	31 (20.1)	123 (97.9)		7.531	(2.522 – 22.48)	<0.001
Number of pediatric patients seen per day.	< 5	35 (27.6)	92 (72.4)	0.832	Reference		0.832
	5 – 10	24 (27.6)	63 (72.4)		1.538	(0.703 – 3.365)	0.790
	10 -15	11 (22.0)	39 (78.0)		1.255	(0.574 – 2.745)	0.811
	> 15	26 (29.2)	63 (70.8)		1.702	(0.695 – 4.168)	0.357
Attendance of educational activity in the last 6 months.	Yes	69 (25.6)	201 (74.4)	0.259	1.405	(0.823 -2.397)	0.259
	No	27 (32.5)	56 (67.5)				
Form of educational activity	Lecture	45 (32.4)	94 (67.6)	0.233	Reference		0.233
	Conference	42 (25.3)	124 (74.7)		1.223	(0.709 - 2.110)	0.469
	Workshop	9 (18.8)	39 (81.3)		2.104	(0.890 - 4.975)	0.090
Last educational activity	Months	Correlation = -0.109		0.041	-		
Age	Years	Correlation = 0.230		<0.001	-		
Years of Experience	Years	Correlation = 0.239		<0.001	-		

P-value: chi-square test.
Correlation coefficient: Spearman's rho test.

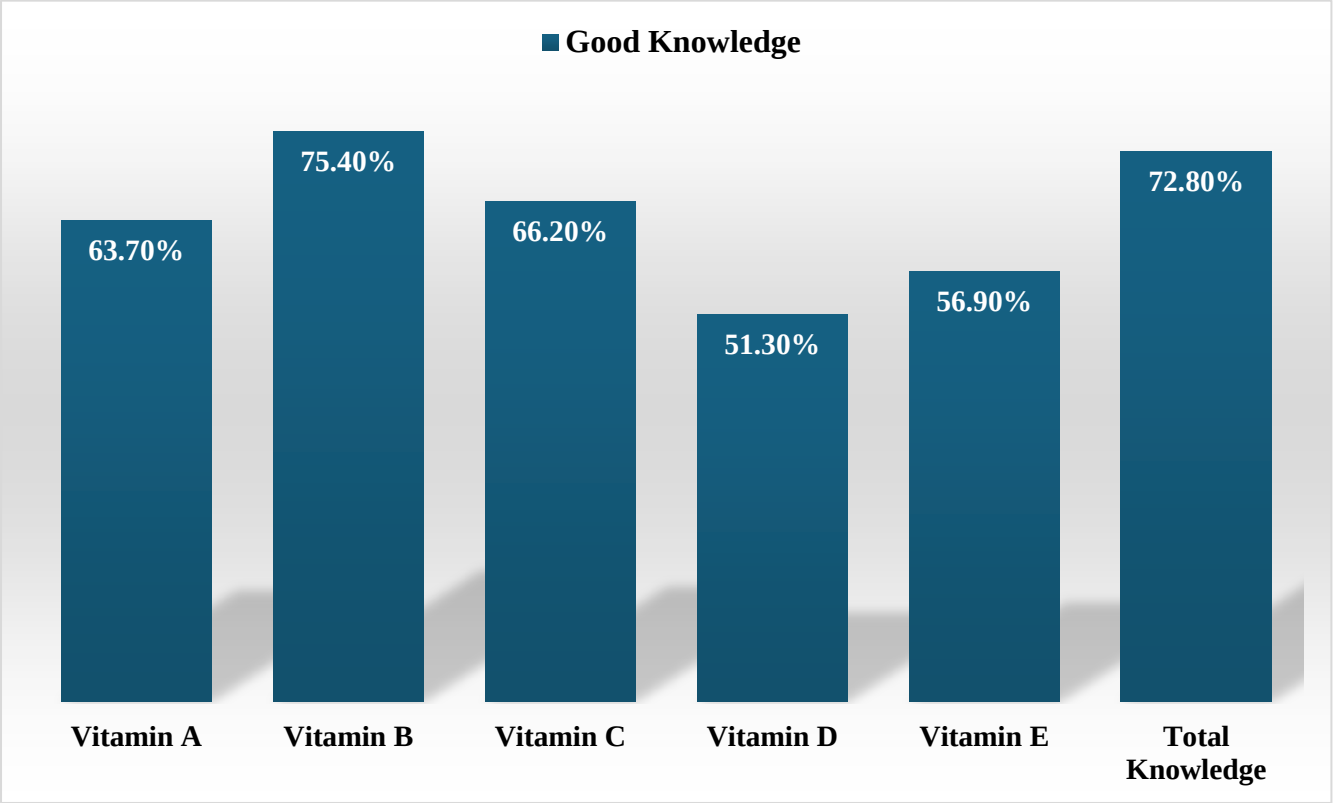

Figure (1): Physicians' total knowledge about each vitamin (N = 353).

The study revealed that physicians demonstrated the highest level of knowledge about Vitamin B, with 75.4% showing good understanding. This was followed by Vitamin C and A (66.2% and 63.7%, respectively) as shown in figure (1). Most physicians 72.3% (N = 257) have good knowledge about vitamin supplementations and their roles for diabetic children.

Table (4) shows the results of multivariate regression analysis predicting knowledge about vitamin supplementations for diabetic children. It shows that age, marital status, having children, specialty, higher years of experience, more recent of educational activity were the significant independent predictors of total knowledge.

Table (4): Multivariate regression analysis predicting knowledge about vitamin supplementations for diabetic children (N = 353).

Significant Variables	Total Knowledge Level				
	B	**SE**	**β**	**P-value**	**95% CI**
Age	0.012	0.003	0.245	< 0.001	(0.007 – 0.018)
Marital Status	0.130	0.039	0.178	0.001	(0.054 – 0.206)
Having children	0.169	0.047	0.190	< 0.001	(0.078 – 0.261)
Specialty	0.032	0.010	0.174	0.001	(0.013 – 0.051)
Years of Experience	0.012	0.003	0.213	< 0.001	(0.006 – 0.018)
Last attendance of educational activity	-0.006	0.004	-0.084	0.114	(-0.14 – 0.002)
B = constant. SE = standard error. β = beta. t = test statistics.					

Table (5) shows the practice of physicians regarding vitamin supplementation. Most physicians only prescribe vitamin supplements for diabetic children when necessary and monitor their effectiveness through clinical assessments. However, 46.7% of physicians routinely prescribe vitamin B. In terms of duration, the majority prescribe vitamins A, C, and E for short-term use at rates of 54.1%, 47.3%, and 44.5%, respectively.

Vitamin B and multivitamins are prescribed more often for intermediate-term use (41.5% and 31.7%, respectively), while vitamin D is predominantly prescribed for long-term use at 20.1%. Multivitamins are primarily prescribed in response to deficiencies observed in blood test results (47.9%), whereas other vitamins are more often prescribed due to the availability of drugs (56.1%). Regarding the barriers of vitamin supplementation, one of the main challenges that physicians face in prescribing multivitamins for diabetic children is poor patient compliance (15.9%), while for other vitamins, concerns about side effects are the primary obstacle (27.2%) Table (5).

Table (5): Practice of vitamin supplementation for diabetic children among physicians

Practice		Frequency (%)					
		Vit. A	**Vit. B**	**Vit. C**	**Vit. D**	**Vit. E**	**Multi**
Frequency of vitamin prescription for diabetic children	Regular	54 (15.3)	165 (46.7)	74 (21)	115 (32.6)	68 (19.3)	98 (27.8)
	If needed	227 (64.3)	137 (38.8)	203 (57.5)	184 (52.2)	202 (57.2)	199 (56.4)
	No prescription	72 (20.4)	51 (14.4)	76 (21.5)	54 (15.3)	83 (23.5)	56 (15.9)
Duration of vitamin supplements for diabetic children in your practice	Short term	191 (54.1)	89 (25.2)	167 (47.3)	104 (29.5)	157 (44.5)	122 (34.6)
	Intermediate term	81 (22.9)	146 (41.4)	78 (22.1)	130 (36.8)	57 (21.2)	108 (30.6)
	Long term	15 (4.2)	86 (24.4)	38 (10.8)	71 (20.1)	43 (12.2)	60 (17)
	No prescription	66 (18.7)	32 (9.1)	70 (19.8)	48 (13.6)	78 (22.1)	63 (17.8)
		A, B, C, D, and E					**Multi**
Monitoring the effectiveness of vitamins	Patient outcome	111 (31.4)					61 (17.3)
	Clinical examination	236 (66.9)					142 (40.2)
	Lab monitoring	209 (59.2)					115 (32.6)
	No follow up	121 (34.3)					131 (37.1)
Causes of prescribing vitamins for diabetic children.		**A, B, C, D, and E**					**Multi**
Availability of drugs		198 (56.1)					127 (36)
Blood test results as a deficiency		148 (41.9)					169 (74.9)
Improvement in wound healing		144 (40.8)					95 (26.9)
Potential antioxidant effects		181 (51.3)					88 (24.9)
To control diabetic neuropathy		142 (40.2)					86 (24.4)
To control diabetic neuropathy		166 (47)					84 (23.8)
Bone health concerns		92 (26.1)					94 (26.6)
Research evidence /Guidelines		36 (10.2)					116 (32.9)
Patients request		74 (21)					102 (28.9)
The patient's poor dietary		69 (19.5)					165 (46.7)
None, I do not prescribe		74 (21)					79 (22.4)
Facing challenges in prescribing vitamins for diabetic children							
Yes		111 (31.4)					
No		202 (57.2)					
Not sure		40 (11.3)					
Challenges		**A, B, C, D, and E**					**Multi**
Poor Patient compliance		94 (26.6)					56 (15.9)
Lack of clear/updated guidelines		79 (22.4)					28 (7.9)
Concerns about side effects		96 (27.2)					29 (8.2)
Drug is not available		47 (13.3)					31 (8.8)
Drug is expensive		88 (24.9)					51 (14.4)
Vit.: Vitamin. Multi: Multivitamins							

Discussion

Despite treatment advancements, diabetes mellitus (DM) is still associated with high morbidity and mortality. Novel therapeutic approaches are needed [10].Vitamins play a substantial role in guiding the risk, progression,

and consequences of diabetes mellitus. Consuming Vitamins, A, B, C, D, E, or a combination of them has been linked to a reduced risk of diabetes complications.[11]

The objective of this study was to contribute to the enhancement of patient outcomes and the overall quality of life for diabetic children by assessing physicians' understanding and prescription practices regarding vitamins A, B, C, D, and E in the management of pediatric diabetes. Most physicians 72.3% (N = 257) have good knowledge about vitamin supplementations and their roles for diabetic children with a significant association between knowledge levels on one side and age of physicians, their specialty, their years of experience, their recent educational activity.

The 2024 American Diabetes Association Standards of Care highlighted that long-term metformin use may lead to vitamin B12 deficiency. Periodic B12 assessment is recommended, especially for individuals with anemia or peripheral neuropathy. Comprehensive diabetes evaluations should include testing for vitamin B12, calcium, vitamin D, and phosphorus levels, particularly for those on metformin or with type 1 diabetes and related complications.[12]

The current study results revealed that 73.1% knew that prolonged metformin use can increase the risk of Vitamin B12 deficiency, and 75.9% correctly indicated that Type 1 diabetes can led to Vitamin B12 deficiency, potentially causing pernicious anemia. This is consistent with a study from the Diabetes Prevention Program (DPP) and its follow-up (DPPOS) which examined the risk of B12 deficiency in metformin users. This study results indicated that long-term metformin use was linked to biochemical B12 deficiency and anemia, suggesting that regular B12 testing should be considered for metformin-treated patients. [13]

Although 75.4% of physicians demonstrated strong knowledge about vitamin B, only 46.7% regularly prescribed it. Similar findings were observed in a 2024 study of physicians in Riyadh, Saudi Arabia, highlighting a gap between knowledge and practice. Despite 77.1% acknowledging the risk of vitamin B12 deficiency from long-term metformin use, only 44.0% recognized levels below 200 ng/mL as deficient[9].

A cross-sectional study conducted from May to November 2019 across several primary healthcare centers in Saudi Arabia assessed physicians' perceptions regarding vitamin B12's role in preventing or treating diabetic neuropathy. Results showed that 42% of physicians believed vitamin B12 did not prevent diabetic neuropathy, and 52.7% considered it an ineffective treatment.[9] However, the current study showed that 64.3% of participants believed that vitamin B12 supplementation did not prevent diabetic neuropathy, while only 24.4% found it to be an ineffective treatment for this condition. These findings highlight differing perceptions over time and across study groups.

Our physicians' prescriptions of vitamin B12 depended mostly on clinical significance as 47.9%, depended on blood test results, and 10.2% depended on research evidence and guidelines. Only 21% of our physicians prescribe vitamins for patient requests. In contrast of this, 42.5% of Saudi Arabian physicians agreed that their prescriptions of vitamin B12 had been a result of patient demand. [14] This disparity may be attributed to the differing knowledge sources and training.

The current study results revealed that 66.6% of participants correctly identified that Type 1 diabetes is associated with an increased risk of fractures starting in childhood. This aligns with the 2024 American Diabetes Association Standards of Care, which recommend that individuals with diabetes, especially those at risk for fractures, ensure adequate calcium and vitamin D intake through diet or supplements to meet the recommended daily allowance.[12]

The current study results revealed that 51.3% of physicians had good knowledge about vitamin D. These results align with Saeed et al, 2020 [15] who reported that 67.3% of physicians in the study showed good general knowledge about Vitamin D, while 32.7% had poor general knowledge.

The same result was found in a study conducted by Mekonnen *et al*., about knowledge, attitude, and practice of healthcare workers (HCW) on measuring adult Vitamin D level, diagnosing deficiency, and managing consequent health conditions in three ecologies of Ethiopia, suggested a little over half of HCWs have good knowledge on adult Vitamin D deficiency. This data emphasized the area with scope for further upgrading in knowledge of physicians[16]

The current study results revealed that only 36.8% of the participants identified associated between Vitamin D deficiency and HbA1c. The same was found in a randomized controlled trial study of 36 young people with newly diagnosed type 1 diabetes which found that those who took vitamin D supplements for a year had lower A1c levels (7.6%) than those who took a placebo (8%). This suggests that adding vitamin D to insulin therapy may help prolong partial clinical remission.[17]

In a study conducted in Poland in 2019, in which study participants are doctors and involved dentists as well. The study noted that 89% of participants did recommend vitamin D supplementation in the case of diagnosed deficiencies. The case was similar here as the first reason for demanding vitamins in the current study was being diagnosed with deficiency using a blood test.[18]

As regards vitamin A, our study found many physicians (63.7 %) have good knowledge about vitamin A supplementation, and the majority prescribe it if needed for short time and monitor by clinical examination. These results align with a previous cross-sectional study designed to determine the knowledge, attitude, and practices among 393 health caregivers of children 6-59 months regarding vitamin A supplementation in Vihiga

County, Kenya in 2021. They reported high vitamin A supplementation awareness (90%). However, low knowledge about vitamin A deficiency (30.3%) [19]

This discrepancy related to different population (Physicians to All caregivers including health workers and community health volunteers) and sampling technique (Non-random convenient to random multistage). Also, our study focused on the benefits related to DM.

As for Anti-oxidants (vitamins C and E), the majority of Buraidah's [20] participants (80.2%) believed that Vitamin C and E are not advised for diabetic patients, which goes along with our physician's knowledge and practice, as (49.6%) of our physicians have good knowledge about vitamins C and E, and they prescribe it only if needed for short time .

Regarding Vitamin E, the present study showed that 60.1% of physicians understood its positive effects on HbA1c and insulin resistance in children with diabetes This finding are in consistent with the results of a prospective study on type 2 diabetics with or without complications supplementing 4000 IU of vitamin E along with hypoglycemic drugs daily for 9 months showed a gradual decrease in fasting blood sugar, serum glycated hemoglobin (HbA1C), and BMI compared to control. [21]

The current study revealed that Multivitamins are primarily prescribed in response to deficiencies observed in blood test results (47.9%), whereas other vitamins are more often prescribed due to the availability of drugs (56.1%). Compared to the study conducted at Trakya University by Güney et al., most of the physicians (75.54%) rarely prescribed and recommended vitamins except for treatment.[22]

Conclusion:

This study showed high knowledge levels among physicians in Port Said hospitals with a positive correlation between the years of experience and knowledge. Most physicians prescribe vitamin supplementations for diabetic children only if needed. Rigorous clinical trials and public health policies are necessary to establish standardized guidelines for effective supplementation practices. Continuous education and training programs are recommended for healthcare providers on the benefits and proper administration of vitamin supplements for diabetic children.

Limitations:

This study introduces strengths and certain limitations including recall bias as all cross-section studies and non-random sampling. The research area is still quite lacking concerning the role of vitamins supplements for diabetic children. More research is needed for physicians to have a good view of whether the use of vitamins in this area could influence the health of diabetic children positively or not.

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