A Cross-sectional Study of Insulin Pen Storage Knowledge and Related Factors in Vietnamese People with Diabetes

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Abstract: Knowledge about insulin pen storage significantly and directly affects treatment efficacy and quality for people with type 2 diabetes mellitus. Accurate and complete understanding and practice are vital for properly managing this chronic condition. However, studies on insulin pen use and storage have not been well-researched in Vietnam. This descriptive cross-sectional study aimed to assess the knowledge of people with type 2 diabetes regarding insulin pen use and storage. Data were collected through convenience sampling from 132 people with diabetes at a provincial hospital in Vietnam from September 2022 to May 2023. We developed the Vietnamese Insulin Pen Storage Knowledge Questionnaire (VIPSKQ) based on guidelines, Addendum 1: Forum for Injection Technique and Therapy Expert Recommendations, India 2021. Data were analyzed using descriptive statistics, the Chi-square test, and binary logistic regression.

Results indicated that only 35.6% of participants had good knowledge of insulin pen storage, whereas 64.4% did not. Four factors that affected the participants' understanding of insulin-pen storage were age, education level, duration of diagnosis, and years of treatment for diabetes mellitus. Nurses need to educate people with diabetes to increase their knowledge and skills of insulin pen use and proper storage using various strategies, such as using videos, phone applications, and monitoring their practice regularly. Nurses must also keep abreast of the latest information on insulin treatment modalities and pen storage guidelines. Our questionnaire shows promise for use in practice but needs further testing in different settings with larger groups of individuals with type 2 diabetes.

Keywords: Diabetes, Injection technique, Insulin pen, Insulin storage, Knowledge, Predictive factors, Type 2 diabetes, Vietnam

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Background

Diabetes mellitus (DM) has been increasing rapidly and has become one of the four major non-communicable diseases in recent years.[1] According to the International Diabetes Federation (IDF), the prevalence of DM among adults in 2021 was 537 million, but by 2030, this is predicted to rise to 643

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million and by 2045, 45 million.[2] In this context, DM treatment is an enormous global challenge for the health sector. According to the Ministry of Health survey results in Vietnam in 2021, 7.1% of adults were estimated to have DM.[3] The exponential rise in DM globally comes with many dangerous complications, such as heart disease, chronic kidney disease, nerve damage, and foot, oral, vision, hearing, and mental health problems,[4] contributing to DM becoming a pathology of the twenty-first century.[5]

For effective DM management, emphasis should be placed on proper diet, movement, exercise management and use of appropriate drugs.[6] Some people with diabetes are prescribed oral medications, while others need insulin injections for better blood glucose control. Nowadays, many people with diabetes are prescribed insulin pens instead of the usual syringe and vial method because of their outstanding benefits. Using insulin pens as an alternative to syringes increases the effectiveness of treatment and DM control and improves diabetes adherence.[7-9] These advantages over other treatments have made insulin pens increasingly widely used. To ensure the effectiveness of treatment, in addition to understanding how to use the insulin pen, people with diabetes must also know how to store the insulin pen well.

Improper insulin storage reduces pharmacological efficacy and activity so people with diabetes should be educated about proper storage methods. Insulin is unstable and sensitive to extreme temperatures and sunlight; therefore, it must be stored in a refrigerator between 2-8°C.[10] A descriptive study on the evaluation of insulin pen knowledge and skills of people with diabetes was conducted at an outpatient clinic in a hospital in Turkey. The favorable results were that, among participants, there was a high percentage of knowledge on how to properly store insulin pens and insulin while traveling (82.5%); how to store insulin in the right conditions (82.5%); how to store insulin in the refrigerator at 2-8°C when the room temperature was over 28°C (83.5%); and how to store unused pens and insulin in the refrigerator (97%).[11]

Manufacturers' instructions recommend that good insulin injection practice in diabetes management are that before opening, the insulin pen should be stored in the refrigerator but not frozen. The insulin pen should be discontinued and immediately disposed of if frozen. Once opened, the insulin pen can be stored in the refrigerator or at room temperature, and it is forbidden to store insulin pens with needles after use.[12] A study was performed in a general internal medicine clinic in Ohio, USA, on the administration technique and storage of disposable insulin pens based on the technique mentioned above. Among the 67 participants, around 75% of insulin pen users did not follow the manufacturer's instructions about proper use and care of the pens.[13] In addition, this study indicated that factors related to injection and storage techniques of participants were education level, number of years of insulin treatment, and time of pen use.

The Addendum 1: Forum for Injection Technique and Therapy Expert Recommendations, India 2021 is a document developed by Tandon and healthcare professionals in India in 2012 and published in 2016, focusing on insulin use in hospitals to support healthcare practitioners in their clinical practice, updating practical advice and providing more comprehensive evidence-based best practice information. The Forum's recommendations include specific knowledge about insulin pens: proper storage, injection sites, correct injection techniques, and complications. The Forum continuously enhanced the individuals' adherence to updated recommendations.[14] Following and applying these principles to clinical practice will lead to effective therapies, improved outcomes, and reduced costs.

In Vietnam, the knowledge about the use of insulin pens in general has been studied quite a lot. For example, Thuy Linh Vu's research was on 105 people with T2DM who had been or were currently using insulin and being treated at Hanoi Medical University Hospital from 2019 to 2020 found that the rate of participants' storage of insulin in use and unopened improperly was 94.3% and 6.7 %,

respectively.[15] Another study with 117 people with T2DM treated at Nam Dinh Provincial General Hospital demonstrated that 98.3% of participants knew to store insulin unopened in the refrigerator.[16] Opened insulin can be stored in the refrigerator and at room temperature but must be protected from direct light. However, knowledge of correct insulin storage, especially accurate and complete knowledge based on official recommendations, has yet to be systematically considered in Vietnam; hence, this study on the storage of insulin pens and associated factors was needed.

Study Aims

To 1) explore knowledge about the storage of insulin pens in T2DM people treated at a provincial hospital, and 2) determine the predictability of age, educational level, duration of T2DM diagnosis, and duration of T2DM treatment on knowledge about the storage of insulin pens.

Methods

Study Design: A descriptive, cross-sectional design was used. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines[17] were used for this report.

Sample and Sampling: We used convenience sampling to recruit people with T2DM who were treated and followed up in an internal medicine department of a provincial hospital in Vietnam from September 2022 to May 2023. Head nurses assisted in getting us access to the sample, and the research team accessed the patient files to determine the sample. The inclusion criteria were: 1) diagnosed with T2DM according to the American Diabetes Association (ADA) 2021 standards[18] and prescribed insulin pen therapy; 2) could understand and speak Vietnamese; and 3) had no cognitive impairment, having a score of >17 measured by the MoCA test, Vietnamese version 7.1.[19] The exclusion criteria were patients with acute disease and/or unable to communicate. The sample size was determined based on the results of Tosun[11] regarding the evaluation of insulin pen knowledge and skills of people with T2DM; 82.5% of patients participating in the study stored insulin with the right conditions with a formula for an estimated sample size of a proportion and the sample size required was 114.[20] Considering possible participant attrition, 10% of the sample was added. The total number of samples needed was 114+15 = 129 cases, but we finally included 132 participants in this study.

Ethical Considerations: This study aimed to protect and promote the health of people with diabetes for no other purpose. This study was approved by the human research ethics committee of the hospital in Vietnam (No. HS2022/346QĐ/ĐHYD). The purpose of the study was explained to possible participants, and they were given information about the purpose and benefits of the study. We protected their human rights, including confidentiality, and their right to withdraw from the study without consequence. Those who verbally agreed to participate signed a consent form.

Instruments: Two instruments were used to collect data:

A Demographic Questionnaire was developed by the researchers consisting of age, educational level, gender, living area, occupation, education level, chronic diseases, and years of diagnosis and treatment for T2DM.

The Vietnamese Insulin Pen Storage Knowledge Questionnaire (VIPSKQ) was developed by the researchers based on Addendum 1: Forum for Injection Technique and Therapy Expert Recommendations, India 2021.[14] This latter document was developed by Tandon[8] and is used to guide medical staff and other healthcare professionals in clinical practice and people with diabetes regarding knowledge about insulin pen therapy. Our questionnaire has nine items about insulin pen storage knowledge. (see **Table 2**). It was validated by five experts: two endocrinologists, a nursing education specialist, and two clinical nurses. These experts were asked to review the questions' content validity, language appropriateness,

and scoring criteria, which were revised according to their comments. Of the nine questions, only on item 7 did one expert give it a level of 2, "Disagree," and five experts gave the remaining questions a level of 4, "Strongly agree." Therefore, the I-CVI ranged between 0.8 to 1.0, with no item falling below 0.8. The I-CVI was 0.8 for item 7 and 1.0 for the rest, and the S-CVI/Ave was 0.97. The VIPSKQ has good content validity when I-CVIs ≥ 0.78 and S-CVI/Ave ≥ 0.9.[21] After the above, we conducted a pilot study with 24 people with diabetes and finalized the questionnaire.

The VIPSKQ items are scored 0 for a wrong answer and 1 for a correct answer. The score ranges from 0-9 points, with higher scores indicating higher knowledge. This instrument's level of knowledge is based on Bloom's[22] cut-off point for knowledge level, and the overall score is considered good if it falls within 80-100% (80% equals ≥7/9 correct answers). Less than 80% or <7 correct answers are considered insufficient knowledge.

Data Collection: This was conducted from September 2022 to May 2023. Members of the research team were present while the participants completed questionnaires, which took around 10-15 minutes. All questionnaires were checked for completeness to ensure no data were missed.

Data Analysis: After collecting and encoding the information in digital form, the data were entered into SPSS version 20.0 software for processing and analysis. A p-value of < 0.05 was deemed statistically significant. Data were analyzed using descriptive statistics, including frequency and percentage. A Chi-square test was used to examine factors related to participants' knowledge of storing insulin pens. Binary logistics were used to predict knowledge of insulin pen storage from independent variables.

Results

Among the study participants, those aged ≥ 60 were the highest proportion (73.5%). The ratio of participants living in urban or rural areas, respectively 46.2%, and 53.8%. As for gender, there was no big difference between males (45.5%) and females (54.5%). For occupation, the proportion of older and retired participants accounted for the highest rate at 63.6%. Secondary education accounted for the highest proportion (34.1%), and the lowest was the college/university group (7.6%). Among the accompanying pathologies, hypertension was the most frequent (56.8%). Duration of years for T2DM detection ≥ 3 years was 62.1%, and duration of years of diagnosis for T2DM < 3 years (56.8%) T2DM < 3 years (56.8%) accounting for the highest proportion. Other characteristics of the participants are shown in **Table 1.**

Table 1. Descriptive characteristics of the participants (N = 132)

Characteristics	Number	Percent (%)
Age		
< 60 years old	35	26.5
≥ 60 years old	97	73.5
Gender		
Male	60	45.5
Female	72	54.5
Living		
Rural	71	53.8
Urban	61	46.2
Occupation		
Agriculture, forestry, and fishery	11	8.3
Worker	8	6.1

Table 1. Descriptive characteristics of the participants (N = 132) (Cont.)

Characteristics	Number	Percent (%)
Officials	6	4.5
Housewife	20	15.2
Tradespeople	2	1.5
Older people /Retired people	84	63.6
Student	1	0.8
Education level		
Primary school	41	31.8
Middle school	45	34.1
High school	36	26.5
College/ University	10	7.6
Comorbidity*		
Hypertension	75	56.8
Dyslipidemia	3	2.3
Kidney failure	12	9.1
Cardiovascular disease	26	19.7
Degenerative spine	3	2.3
Peptic ulcer	6	4.5
Liver dysfunction	16	12.1
Others	53	40.2
Duration years of diagnosis for T2DM		
< 1 year	29	22.0
1-< 3 years	21	15.9
≥ 3 years	82	62.1
Durations on years of treatment for T2DM		
< 1 year	35	26.5
1-< 3 years	22	16.7
≥ 3 years	75	56.8

Note: One participant could answer more than 1 item.

For knowledge of insulin pen storage, only 47 out of 132 participants (35.6%) had good knowledge (correct answers 7-10 items or 80-100%), while 64.4% did not have enough knowledge (correct answers 0-6 items or less than 80%).

Table 2 displays insulin pen storage knowledge in detail for each item. This table indicates that 56.8% of participants understood the ideal temperature for storing insulin pens after opening the lid (i.e., the pen was in use) was < 30°C. Additionally, 76.5% understood that insulin pens should be put in an appropriate location rather than any location. Furthermore, 62.9% did not know that needles should not be stored with pens after use; 71.2% understood that they should put their insulin pens in the refrigerator but not freeze them; 62.1% knew how to preserve insulin if the outdoor temperature was > 30°C; 56.1% knew they should change their insulin schedules when there was a time difference when traveling; and 62.9% knew that they should take an extra insulin injection if there were a gap between trips and insulin injection time to ensure the insulin half-life was sufficient throughout the journey. Lastly, 51.5% of participants did not understand that putting insulin into their luggage when traveling by plane may affect the drug's quality.

Table 2. Insulin pen storage knowledge results

Insulin pen storage knowledge	Number	Percent (%)
Knowledge of storing the insulin pen in use *(after opening)*		
1. The ideal temperature for storing insulin and the insulin pen in use		
Unknown/any temperature	26	19.7
< 30°C	75	56.8
> 30°C	6	4.5
2. Suitable location to store insulin and insulin pens in use		
The location does not matter	6	4.5
Place in a dark, cool place, away from direct light (kitchen, greenhouse, roof of refrigerator...)	101	76.5
Place in a convenient, high, well-lit place such as the top of the refrigerator, television, or kitchen, close to the glass door	15	19
3. Should you separate the insulin pen and needle for storage after use?		
Yes	83	62.9
No	49	37.1
Knowledge of storing unopened insulin pens		
4. How to store unused pens and insulin		
Do not know	27	20.5
Store at room temperature	11	8.3
Store in the refrigerator, but do not freeze	94	71.2
5. Storing unused insulin when you do not have a refrigerator		
No storage required	11	8.3
Store in a plastic bag with rubber bands/in a jar with a wide mouth/ ceramic jar full of water inside	64	48.5
Store at room temperature	57	43.2
Knowledge of safe storage of insulin pens while traveling		
6. Storing insulin pens and insulin when traveling with temperature differences		
No storage is required	16	12.1
If the outdoor temperature > 30°C, insulin should be stored in a jar with ice in an appropriate container	82	62.1
Put in plastic bag, tie, and put in a container or box	34	25.8
7. If you travel with a time difference of ≥ 2 hours, do you need to change your insulin injection schedule?		
Yes	74	56.1
No	58	43.9
8. Is it ok to leave insulin in the luggage compartment when flying?		
Yes	68	51.5
No	64	48.5
9. If the difference between trip time and insulin injection is too long, is an additional dose of insulin required?		
Yes	83	62.9
No	49	37.1

As illustrated in **Table 3**, through Chi-square testing, we found associations between age (p = 0.022), gender (p = 0.091), education level (p = 0.005), duration since being diagnosed with T2DM (in years) (p = 0.02), and duration in years of treatment for T2DM (p = 0.009) with knowledge of preserving insulin injection pens. Logistic multivariate analysis is shown in **Table 4.** The level of education was the strongest predictor of knowledge about insulin pen storage, and those who had graduated from university knew more about this, 14.6 times higher than those with primary school education. Other predictors that showed a slight difference from the highest to the lowest were duration of T2DM treatment, duration of T2DM detection, and age, respectively.

Those who had a duration of ≥ 3 years of being diagnosed with DM and treated with insulin had 4.6 and 4.7 times higher knowledge on storage of insulin pens than those of < 3 years, respectively. In addition, those treated with insulin injections for 1 to < 3 years had 4.1 times higher knowledge on storage of insulin pens than those treated < 1 year.

Table 3. Factors related to knowledge of insulin pen storage in Chi-square test (N = 292)

	Participants' insulin pen storage knowledge				p-value
	Yes		No		
	n	%	n	%	
Age					
< 60 years	18	51.4	17	48.6	0.022
≥ 60 years	29	29.9	68	70.1	
Gender					
Male	26	43.3	34	56.7	0.091
Female	21	29.2	51	70.8	
Living area					
Rural	22	36.1	39	63.9	0.919
Urban	25	35.2	46	64.8	
Education level					
Primary school	9	21.4	33	78.6	0.005
Middle school	18	40	27	60	
High school	12	34.3	23	65.7	
College/university	8	80	2	20	
Duration of diagnosis with T2DM					
< 1 year	4	13.8	25	86.2	0.02
1 to < 3 years	8	38.1	13	61.9	
≥ 3 years	35	42.7	47	57.3	
Duration of treatment for T2DM					
< 1 year	5	14.3	30	85.7	0.009
1 to < 3 years	9	40.9	13	59.1	
≥ 3 years	33	44	42	56	

Table 4. Logistic multivariate factors predicting insulin pen storage knowledge

Factors	Insulin pen storage knowledge		p-value
	OR	CIs	
Age			
< 60 years	2.483	1.124-5.485	0.025
≥ 60 years	1	-	-
Education level			
Primary school	1	-	-
Middle school	2.444	0.947-6.309	0.065
High school	1.913	0.693-5.279	0.21
College/university	14.667	2.637-81.567	0.002
Duration of diagnosis for T2DM			
< 1 year	1	-	-
1 to < 3 years	3.846	0.973-515.207	0.055
≥ 3 years	4.654	1.485-14.591	0.008
Durations on years of treatment for T2DM			
< 1 year	1	-	-
1 to < 3 years	4.154	1.164-14.825	0.028
≥ 3 years	4.714	1.648-13.483	0.004

OR: odds ratios; a p-value of < 0.05 deemed statistically significant; CIs: confidence intervals

Discussion

The results showed that the percentage of participants who did not have good general knowledge about insulin pens accounted for 64.4%. This percentage is relatively higher than other studies of insulin pen knowledge. For example, in a study about insulin therapy practice in Ceará state, Brazil, an impressive 100% of participants knew how to store unopened and opened insulin correctly.[23] In another study among 61 people with T2DM in southern Brazil regarding insulin knowledge and home management of diabetes, only 11.5% of participants knew how to store insulin.[24]

Through data analysis, we found that, although knowledge of insulin storage is familiar and crucial for people with diabetes, especially those treated with insulin pen therapy, there still exists a gap of knowledge. For example, the proportion of participants with insufficient knowledge of insulin pen storage accounted for 64.4%. Improper insulin storage reduces its pharmacological effectiveness and potency, thereby reducing the quality of treatment.[10] If not stored correctly, it will easily cause bacterial infections. It is impossible to treat T2DM at that time effectively, and infected insulin can cause other serious health effects.[14]

When educating people with T2DM on fasting, treatment, and exercise regimens, clinical nurses must pay special attention to imparting knowledge of preserving insulin pens. They need to update their knowledge continuously and select the latest complete, accurate, and effective materials to provide knowledge and health education to people with diabetes. Our study showed that 56.8% of participants knew the ideal temperature for storing the insulin or a previously used pen was < 30°C. Further, 76.5% of participants understood that insulin pens should be placed in dark, cool places, avoiding hot environments and direct

light, such as kitchens, greenhouses, and refrigerator roofs after being opened. This result concurs with another study where the proportion of patients with DM who kept the insulin and insulin pen in the right storage conditions was 82.5%.[11] Insulin is particularly unstable and sensitive to temperature extremes and sunlight. If insulin is stored in a place with high temperatures, such as in a closed car or a scorching environment, it can cause insulin to break down, reducing the quality of the drug and the effectiveness of treatment. On the other hand, injecting insulin at high temperatures into the body will cause blood vessels to dilate, leading to increased insulin absorption, thereby causing sudden hypoglycemia. This also explains why, after exercising or bathing in hot springs, participants should not inject insulin because it can unnecessarily speed up insulin absorption. Therefore, storing insulin and injection pens at the proper temperature and location is mandatory knowledge for participants.[14] Furthermore, our study also showed that 62.9% of participants responded that they usually stored insulin pens without removing the tip of the used needle after taking a shot. Heinemann,[12] writing on the importance of good insulin injection practices in DM management, suggested not storing insulin pens with needles after use. Failure to remove the tip of a used needle after injection can lead to bacterial infection, air leakage, and drug leakage.[14]

In this study, 71.2% of participants knew to store pens and insulin in the refrigerator but not to freeze them. As mentioned above, unused insulin pens must be stored properly to retain the best quality of the drug before being injected into the body. This result is much higher than other study results,[25] with only 37.5% of participants knowing where to store insulin inside the refrigerator, and 7.8% keeping it at room temperature. Only 48.5% of our participants were aware of how to store insulin pens when there was no refrigerator. One of the mistakes people with diabetes often make is that if they want to preserve insulin, they think they must always have a refrigerator at home.[26] This is not the case. For example, they can be stored in a jar with ice in an appropriate container.

Unopened insulin pens have a different storage method than after use. As mentioned, insulin and insulin pens should be stored in the refrigerator and not frozen because this will change the insulin and cause loss of its blood glucose control effect. Once accidentally frozen, the insulin should be immediately discarded appropriately and must not be defrosted and used, nor the frozen insulin be injected directly into the body.[14]

If there were no refrigerators, only 48.5% of participants knew to store them in plastic bags tied with elastic bands or ceramic jars filled with water. Of our participants, 62.1% knew how to put insulin pens in an ice bottle in an appropriate box if the outdoor temperature is > 30°C. However, we believe that our participants' knowledge of storage without a refrigerator is relatively low because, with the current scientific and social development in Vietnam, almost every family has a refrigerator, making people with diabetes dependent on this and not caring about what to do without it.

When traveling on journeys with time differences, 56.1% of participants understood they should change their insulin schedule, and 62.9% said they should have additional insulin doses if the time difference is too long. In addition, 51.5% of participants said that putting insulin in luggage when traveling by plane does not affect anything. However, insulin should be carried with a prescription in cabin baggage or handbag when traveling by air. The luggage stored in an aircraft's hold may become frozen; thus, insulin in this luggage may lose effectiveness.[26] This finding is relatively surprising because we thought this knowledge was understandable, but nearly half the participants did not have it. As more services and tourism develop, the population is more likely to travel from one place to another. So, knowledge in this field should be improved. Thus, nurses and medical staff, nurses, require education and the capacity to promote the transmission of this knowledge to people with diabetes to improve their understanding.

The level of education was the strongest factor in predicting knowledge of insulin pen storage. This result was consistent with a previous study.[13] The

education level correlates with cognitive impairment among participants. The development of cognition is necessary to access, understand, evaluate, and apply information related to health.[27] A possible explanation is that people with higher levels of education can search, select, and synthesize different sources of information better.

The duration of DM treatment was the second strongest predictor of knowledge on insulin pen storage followed by duration since being diagnosed with DM. These two predictors were interrelated in that those with a longer duration of diagnosis tended to have a longer duration of treatment with insulin injection. It can be explained that when people with longer experiences of DM diagnosis and treatment could access and understand information, and their knowledge of pen insulin storage was better than those with a shorter duration.

Age was the last predicting factor in this study in that knowledge of insulin pen storage among participants of < 60 years was higher than those aged ≥ 60 years. The findings of this study were in line with previous research. Many cognitive and cognitive abilities decline with age. Older people tend to perform worse than younger adults on tests of inhibition, executive function, reasoning, processing speed, attention, and work.[28] Older adults also show a poor ability to remember specific details, such as words or images in lists or specific information.[29] This explains why older people often have problems understanding, evaluating, and applying the healthcare information of medical staff, nurses, and other healthcare professionals. Participants < 60 years of age typically have better cognitive function than participants > 60 years; since age increases, cognitive functions (such as attention, memory, and central control), as well as physical abilities (such as muscle strength) gradually decline.[30]

Limitation

Our study focused only on people diagnosed with DM and prescribed insulin pen therapy in one university hospital; thus, generalizations to other populations and settings are limited.

Conclusions and Implications for Nursing Practice

This study found that the percentage of participants without good knowledge about storing insulin injection pens was quite high, so we propose the following recommendations:

Firstly, nurses and other medical staff should emphasize the proper storage and use of insulin and insulin pens in diabetic education. Periodic assessment and training programs at medical facilities combined with innovative technology, are vital for health staff. Nurses must also work with other health professions to adapt and disseminate guidelines about using and storing insulin. Secondly, nurses need to follow appropriate guidelines for insulin techniques and pen storage and educate individuals, especially those aged ≥ 60 years, with a primary education level or below and who have durations of years of treatment and detection for T2DM < 1 year or who have just started treatment.

In the future, culturally and context-relevant studies, such as in provincial hospitals, district hospitals, and clinics, need to be conducted in Vietnam and elsewhere. Research with nurses on insulin and insulin pen use and storage is required to determine whether nurses' knowledge is a predictive factor in patients' knowledge. We intend to undertake in-depth research on the correlation between knowledge education and educational methods regarding the storage of insulin pens for people with DM.

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การศึกษาภาคตัดขวาง : ความรู้เรื่องการเก็บรักษาปากกาอินซูลินและปัจจัยที่เกี่ยวข้องในผู้ที่เป็นเบาหวานชาวเวียดนาม

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บทคัดย่อ: ความรู้เกี่ยวกับการเก็บรักษาปากกาอินซูลินมีอิทธิพลโดยตรงต่อประสิทธิภาพและคุณภาพการรักษาสำหรับผู้ที่เป็นเบาหวานชนิดที่ 2 อย่างมีนัยสำคัญ ความเข้าใจและการปฏิบัติที่ถูกต้องและครบถ้วนมีความสำคัญอย่างยิ่งต่อการจัดการภาวะเรื้อรังนี้อย่างเหมาะสม อย่างไรก็ตาม การศึกษาวิจัยเกี่ยวกับการใช้และการเก็บรักษาปากกาอินซูลินยังมีจำนวนน้อยในเวียดนาม การศึกษาภาคตัดขวางเชิงพรรณนานี้มีวัตถุประสงค์เพื่อประเมินความรู้ของผู้ที่เป็นเบาหวานชนิดที่ 2 เกี่ยวกับการใช้และการเก็บรักษาปากกาอินซูลิน เก็บรวบรวมข้อมูลโดยใช้การสุ่มตัวอย่างตามสะดวกจากผู้ที่เป็นเบาหวาน 132 รายที่โรงพยาบาลประจำจังหวัดในประเทศเวียดนามตั้งแต่เดือนกันยายน พ.ศ. 2565 ถึงพฤษภาคม พ.ศ. 2566 ผู้วิจัยได้พัฒนาแบบสอบถามความรู้เกี่ยวกับการเก็บปากกาอินซูลินฉบับภาษาเวียดนาม ตามแนวปฏิบัติดังภาคผนวก 1 ซึ่งเป็นคำแนะนำจากข้อสรุปของผู้เชี่ยวชาญด้านเทคนิคการฉีดและการบำบัดในการประชุม ณ ประเทศอินเดีย พ.ศ. 2564 วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา การทดสอบไคสแควร์ และวิเคราะห์การถดถอยโลจิสติกแบบสองกลุ่ม

ผลการวิจัยพบว่ากลุ่มตัวอย่างเพียงร้อยละ 35.6 เท่านั้นที่มีความรู้เกี่ยวกับการเก็บรักษาปากกาอินซูลินในระดับดี ในขณะที่ร้อยละ 64.4 ไม่มีความรู้ดังกล่าว ปัจจัยที่มีอิทธิพลต่อความเข้าใจของผู้เข้าร่วมวิจัยเกี่ยวกับการเก็บรักษาปากกาอินซูลิน 4 ประการ คือ อายุ ระดับการศึกษา ระยะเวลาของการวินิจฉัยโรค และจำนวนปีของการรักษาโรคเบาหวาน ดังนั้น พยาบาลจึงจำเป็นต้องให้ความรู้แก่ผู้ที่เป็นเบาหวานเพื่อเพิ่มพูนความรู้และทักษะในการใช้ปากกาอินซูลินและการเก็บรักษาอย่างเหมาะสมโดยใช้กลยุทธ์ต่างๆ เช่น วีดิทัศน์ และติดตามการปฏิบัติอย่างสม่ำเสมอ พยาบาลต้องติดตามข้อมูลล่าสุดเกี่ยวกับแนวทางการรักษาด้วยอินซูลินและแนวปฏิบัติในการเก็บรักษาปากกาอินซูลิน นอกจากนี้ แบบสอบถามของผู้วิจัยมีแนวโน้มว่าจะใช้ในทางปฏิบัติได้ แต่ควรมีการทดสอบเพิ่มเติมในบริบทที่แตกต่างกันในผู้ที่เป็นเบาหวานชนิดที่ 2 ในกลุ่มตัวอย่างขนาดใหญ่ขึ้น

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