

Relation between Self-Efficacy and Compliance to Treatment with Injectable Medication for Type 2 Diabetes

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ABSTRACT

Background: Diabetes is a chronic disease that requires self-management, with patients responsible for at least 99% of their care. The long-term success of type 2 diabetes maintenance therapy relies heavily on patient compliance and self-efficacy, a crucial factor influencing self-care behavior in these patients. **Aim:** This study aimed to explore the relationship between self-efficacy and compliance with treatment with injectable medication for type 2 Diabetes. **Subjects and Method:** A descriptive correlational design was used in this study. A purposeful sample consisting of 165 individuals diagnosed with type 2 diabetes who are undergoing insulin therapy in outpatient facilities affiliated with Egypt health care authority hospitals. (El-Salam General Hospital and Al-Shifa Medical Complex Hospital in Port Said City). **Tools:** Tool 1: Patient assessment data consisted of two parts: First part: personal characteristics of the patient; second part: clinical characteristics of the patient. Tool II: Compliance questionnaire to insulin therapy, Tool III: Insulin therapy self-efficacy scale (ITSS). **Results:** According to this study, 73% of the individuals examined had positive compliance towards insulin therapy, and (72.1%) of the participants in the study had good self-efficacy toward insulin therapy, The study patients' positive compliance toward insulin therapy and their level of self-efficacy were positively correlated ($p < 0.05$). **Conclusion:** Self-efficacy and treatment compliance with injectable medication were revealed to be significantly positively correlated by the study, indicating that higher self-efficacy levels lead to better compliance with treatment. **Recommendation:** Creating a guidebook entails providing information on administering various forms of insulin by themselves.

Keywords: self-efficacy, compliance, insulin, type 2 diabetes

INTRODUCTION

Type 2 diabetes is a metabolic disease that is highly common worldwide. It is primarily caused by a combination of two factors: the tissues' inability to respond to insulin and the pancreatic beta cells' decreased capability to release insulin (Galicia-Garcia et al., 2020). According to the International Diabetes Federation (IDF), Egypt ranks ninth globally in terms of the highest prevalence of diabetes cases, with a rate of 18.4%. Approximately 90% of diabetes cases worldwide are classified as type 2 diabetes mellitus, indicating a significant burden of this diabetes type across populations (Wahsh et al., 2023; Radwan, 2020).

Moreover, type 2 diabetes can often be successfully managed with lifestyle modifications and oral medications (Rani, Mishra, & Mardani, 2020). However, many people will eventually need insulin therapy as the capacity of beta cells to produce insulin gradually decreases (Grace, 2023). Insulin-treated patients face many difficulties, including fear of hypoglycemia, weight gain, injection discomfort, the need to monitor blood sugar levels, low health literacy, low self-efficacy, inadequate care from healthcare professionals, and psychological distress from the stress of their insulin regimen. These difficulties also negatively impact patients' compliance with insulin therapy (Liang, Lo, Tola & Chow, 2021).

A patient's self-efficacy is their ability to manage aspects related to their disease. A patient with high self-efficacy typically has a positive attitude and confidence in overcoming the challenges posed by their condition, which leads to a greater willingness to engage in necessary modifications to their treatment regimen actively. Self-efficacy and effective self-care management are crucial for maintaining a good health-related quality of life (Oluma, Abadiga, Mosisa, Fekadu & Turi, 2020). Self-efficacy is a central concept in Bandura's social cognitive theory, formerly social learning theory. This theory posits that self-steering, self-reflection, self-motivation, and creativity are attainable and give individuals a sense of autonomy over their thoughts, feelings, and behaviors (Cevik & Ozcan, 2021).

Patient compliance refers to the accuracy, regularity, and willingness to adhere to prescribed therapeutic regimens, including medication, diet, appointments, and lifestyle changes. Poor compliance can result from various factors, such as symptoms, chronic

disease, forgetfulness, a strained doctor-patient relationship, perceived side effects, and physical challenges. Also, lifestyle modifications and medication adherence are vital for managing diabetes mellitus. Ineffective insulin compliance increases mortality and morbidity by compromising patient safety and treatment efficacy (Sharma, Bishnoi, Kalra & Kant, 2020).

Significance of study

Enhancing patient compliance and self-efficacy are crucial factors that influence patients with type 2 diabetes mellitus's self-care practices, with the ultimate goal of reducing complications associated with the disease and facilitating better control of blood sugar levels (Oluma, Abadiga, Mosisa, Fekadu & Turi, 2020).

AIM OF THE STUDY

Explore the relationship between self-efficacy and compliance to treatment with injectable medication for Type 2 Diabetes. This aim was achieved through:

- Assessing self-efficacy to treatment with injectable medication for Type 2 Diabetes.
- Identifying compliance with treatment with injectable medication for Type 2 Diabetes.
- Finding out the relation between self-efficacy and compliance with treatment with injectable medication for Type 2 Diabetes.

SUBJECTS AND METHODS

I- Technical design

Study design

A descriptive correlational research design was applied in this study.

Study Setting

In Port Said City, the study was carried out at hospital outpatient clinics that are affiliated with Egyptian healthcare authority hospitals (El-Salam General Hospital)

having cardiac outpatient clinics one day weekly (Tuesday), and Al-Shifa Medical Complex Hospital which has internal clinics on Sundays and Thursdays twice a week which provide treatment, and follow-up services for patients.

Subjects

A purposive sample of type 2 diabetes patients taking insulin came to outpatient clinics at Port Said hospitals in Port Said city for six months in March 2023 and finished by the end of August 2023. The total number of patients was 165 (85 male and 80 female).

The study sample was selected according to the following criteria:

Those who had a type 2 diabetes diagnosis for longer than five years and those who took injectable type 2 diabetes medication were included. Patients with severe illnesses, such as cancer, and those with other endocrine problems were excluded.

Sampling size

The study was conducted using a purposive sample, which included 165 patients diagnosed with type 2 diabetes mellitus.

$$N = \frac{N * P(1 - P)}{N - 1 * (d^2 \div z^2) + P(1 - P)}$$

$$N = \frac{100000 * 0.5(1-0.5)}{100000 - 1 * (0.5^2 \div 1.96^2) + 0.5 (1-0.5)} = 165$$

N =100000	Total population
Z	Class standard corresponding to the level of significance equal to 0.95 and 1.96
D	The error rate is equal to 0.05
P	Ratio provides a neutral property = 0.50

According to the equation of Daniel WW (1999).

Confidence level equals 97%

Data collecting tools

This particular tool was used to gather data for the study:

Tool I: Patients' assessment data which consisted of two parts:

Part one: Personal characteristics of the patient: they comprise the sociodemographic data of the patients who are being studied, including their age, sex, level of education attained, body mass index (BMI), marital status, employment, monthly income, level of family support, and smoking behaviors.

Part two: The patient's clinical characteristics: These include clinical data such as past medical history (hypertension, heart disease, renal disease, liver disease, others such as rheumatoid arthritis), age at diagnosis of diabetes, number of years of insulin use, type of insulin, device used in insulin injection (syringe, pen), frequency of injection (one dose, two doses, three doses), complications of insulin (morning hyperglycemia, insulin lipodystrophy, hypoglycemia), frequency of checking blood glucose (daily, weekly, etc.). The researcher used the most pertinent literature to guide her development of this part. (Alhazmi, Balubaid, Sajiny, & Alsabbah, 2020), (Sunny et al., 2021), (Hinkle & Cheever, 2018), and (Harding, Kwong, Roberts, Hagler & Reinisch, 2020).

Tool II: Compliance with insulin therapy questionnaire:

A questionnaire was developed by Abu Hassan (2013) and Tan et al., (2015) in English and translated into Arabic by the researcher to assess eligible compliance attitudes with insulin injection of individuals with type 2 diabetes, both positive and negative. It is divided into two sets of data: three sentences for the positive compliance toward insulin injection and eighteen sentences for the negative compliance.

Scoring of the questionnaires: The questionnaire consists of 21 questions: 3 positive ones, which were scored (0) for response agree, (1) for response disagree, and 18 negative, which were scored (1) for response agree, (0) for response disagree.

Tool III: Insulin Therapy Self-Efficacy Scale (ITSS):

Based on Bandura's self-efficacy concept, the scale taken from Nakaue et al., (2020) included 21 English-language questions translated into Arabic and re translate to

English by the researcher that evaluated a patient's confidence and self-efficacy in three areas: glycemic control, insulin injection technique, and the capacity to handle hypoglycemia. Moreover, a patient's future compliance with insulin therapy can be predicted by the ITSS.

Scoring of the scale: A seven-point Likert scale, with seven points for "absolutely confident" and one for "not confident at all," was used to evaluate the 21 items in the draft ITSS.

II- Operational design

The study has been conducted in several phases: preparation, tool content validity and reliability, pilot study, and fieldwork.

A. Preparatory phase

By examining relevant historical, contemporary, local, and global literature, as well as a range of studies and theoretical perspectives across various subject areas, the researcher employed books, research papers, online resources, journals, and magazines to develop data collection methods for this phase. This process included reviewing authoritative sources such as the Cochrane Library, ACP Journal Club, and PubMed.

B. Validity and Reliability

Validity: All study tools were ascertained by a jury of nine experts in Medical and nursing faculty staff at Port Said University to assess the accuracy and applicability of the tools, and modifications were made according to their opinions.

Reliability: Upon conducting the Cronbach's Alpha coefficient test, it was found that the compliance and attitude of patients toward insulin therapy demonstrated satisfactory internal consistency with a value of $\alpha=0.82$. Moreover, the Insulin Therapy Self-efficacy Scale (ITSS) also exhibited high internal consistency with a Cronbach's Alpha coefficient of $\alpha=0.93$, indicating a robust and reliable measurement tool for assessing self-efficacy in insulin therapy.

C. Pilot Study: This was done to gauge how long it would take to complete the sheet and to evaluate the tool's applicability and validity. Ten percent of patients with

type 2 diabetes who were on insulin were assessed for compliance and attitude toward the insulin therapy questionnaire and the insulin therapy self-efficacy scale (ITSS). The outcome of the pilot research and the expert revision of the instrument are taken into account. The analyzed sample did not include any patients in the pilot trial.

D. Field Work:

The data collection period for this study started from the beginning of March 1, 2023, to the end of August 31, 2023. The investigator worked three days a week in the outpatient clinics of the study setting. During this time, the researcher conducted interviews lasting twenty to twenty-five minutes each. Using a data-gathering instrument, one to three patients were interviewed at a time. Following each interview, the researcher reviewed the data forms in the presence of the patients to confirm the accuracy and completeness of the collected information.

III- Administrative design:

In a formal letter to the director of universal health, the director of Port Said University's nursing department authorized data collecting at the health insurance hospitals' internal clinics, outlining the project's purpose and title.

Ethical consideration

Approval was obtained from the directors of the specified hospitals to conduct the study after explaining the study's aim. Additionally, verbal consent was secured from each patient after an interpretation of the study's purpose and the data collection procedures to ensure their understanding of the significance of their participation. The researcher emphasized that the information collected would remain confidential and be used exclusively for the study.

The participating patients were informed that their involvement was voluntary and that they had the right to withdraw from the study at any time without necessitating to provide a reason. Furthermore, the data collection process did not disrupt the normal operations in the above mentioned settings. All data collected from the participants was handled with complete confidentiality.

D-Statistical design

III- Statistical design:

Using a personal computer and SPSS version 20, we coded, analyzed, and tabulated the collected data. Frequencies and percentages were computed. The mean and standard deviation were used. For this investigation, a p-value equal to or less than 0.05 was chosen as the significance threshold. The interrelationships between quantitative variables were evaluated using the Pearson correlation test. The ANOVA test is one method for determining statistical differences between the means of two or more groups.

RESULTS

Table (1) reveals that 51.5% of the patients were male, and 44.2% had a mean age of 59.5 ± 1.1 , dropping between 45 and less than 60 ages old. Concerning socioeconomic standing, 29.1% of the patients in the study were illiterate, and 93.9% were married. This data also shows that 41.2% of the patients were overweight, 19.4% were at a healthy weight, and 57.7% of the patients under study were unemployed.

Table (2) demonstrates that 66.7% of the studied patients suffered from hypertension, while 2.4% of them suffered from liver diseases. Regarding measuring blood glucose levels at home, 47.3% of the studied Patients did not measure their blood glucose levels at home because they didn't have a glucometer, while 40% measured blood glucose levels at home regularly. Regarding the frequency of measuring blood glucose levels, 66.1% of the studied patients measured blood glucose levels when they feeling tired.

Table (3) displays that 66.7% of the patients under study had premixed insulin, and 73.3% had been using insulin for one to less than ten years. This chart also makes it clear that 67.3% of the patients in the study were using syringes to take their insulin twice a day. Regarding complications of insulin, 68.5% of the studied patients were exposed to morning hyperglycemia, 59% of them were exposed to insulin lipodystrophy, and also 45.5% of them were exposed to hypoglycemia.

Figure (1) indicates that 73% of the studied patients agreed with a positive attitude toward insulin therapy, while 27% disagreed with a positive attitude toward

insulin therapy. Regarding negative attitudes towards insulin therapy, 53.4% of the studied patients disagreed with a negative attitude toward insulin therapy, and 46.6% agreed with a negative attitude toward insulin injection.

Figure (2) indicates that 72.1% of the patients in the study had good self-efficacy toward insulin therapy, while 27.9% had poor self-efficacy toward insulin injection.

Table (4) clarifies the positive attitude of the studied patients toward insulin therapy and their self-efficacy is positively correlated ($p < 0.05$). In contrast, there was a negative correlation between the negative attitude of the studied patients towards insulin therapy and their self-efficacy ($p < 0.001$).

Table (1): Distribution of patients' clinical data: (n= 165).

characteristics of patients	N	%
Age/years:		
- 30 < 45	16	9.7
- 45 < 60	73	44.2
- 60 < 75	68	41.2
- 75 - 90	8	4.9
\pm SD \bar{X}	59.5 \pm 1.1	
Min-max	30 – 85	
Range	55	
Sex :		
- Male	84	50.9
- Female	81	49.1
Social status:		
- Unmarried	10	6.1
- Married	155	93.9
Level of education		
- Illiterate	48	29.1
- Read and write	42	25.5
- Moderate education	43	26.1
- Higher	32	19.4
Occupation:		
- Work	70	42.4
- Not work	95	57.6
Family Income from patients' opinion:		
- Enough	74	44.8
- Not Enough	91	55.2
Body Mass Index (BMI):		
Underweight (< 18.5)	0	0.0
Healthy weight (18.5-24.9)	32	19.4
Overweight (25-29.9)	68	41.2
Obesity (\geq 30)	65	39.4
\pm SD \bar{X}	29.1 \pm 5.1	
Min-max	18.5-49.3	
Range	30.8	

Table (2): Clinical data for the studied patients: (n= 165).

Medical history* :		
Hypertension	110	66.7
Heart diseases	47	28.5
Renal diseases	11	6.7
Liver diseases	4	2.4
Others(Rheumatoid arthritis)	14	8.5
Patients' compliance with blood glucose monitoring:		
No, I have no glucometer	78	47.3
Yes, Only when I fell ill	21	12.7
Yes, Regularly	66	40
Time of measuring blood glucose level at home:		
Daily	4	2.4
Every Week	52	31.5
Others (when feeling tired)	109	66.1

*Numbers not mutually exclusive

Table (3): Treatment with insulin therapy for the studied patients (n= 165).

Treatment with insulin therapy	N	%
Duration of insulin injection/years:		
1 – 10	121	73.3
11 – 20	39	23.6
21 – 30	3	1.8
> 30	2	1.3
$\bar{X} \pm SD$	9.7±6.6	
Min-max	1 – 57	
Type of insulin:		
Premixed insulin (30% regular+70%NPH).	110	66.6
Long acting insulin (glargine, detemir or degludec).	26	15.8
Short-acting insulin (regular).	11	6.7
Short-acting insulin+ rapid-acting (lispro, Aspart, or glulisine)	18	10.9
Doses number of insulin taken / day :		
One dose	45	27.3
Two doses	111	67.3
Three doses	9	5.4
Device used for insulin injection:		
Syringe	110	66.7
Insulin pen	55	33.3
Time for taking insulin:		
On regular basis	158	95.8
When feeling unwell	7	4.2
Complications of Insulin *:		
Morning hyperglycemia	113	68.5
Insulin lipodystrophy	98	59.4
Local allergic reaction	36	21.8
Systemic allergic reaction	18	10.9
Hypoglycemia	75	45.5

*Numbers not mutually exclusive

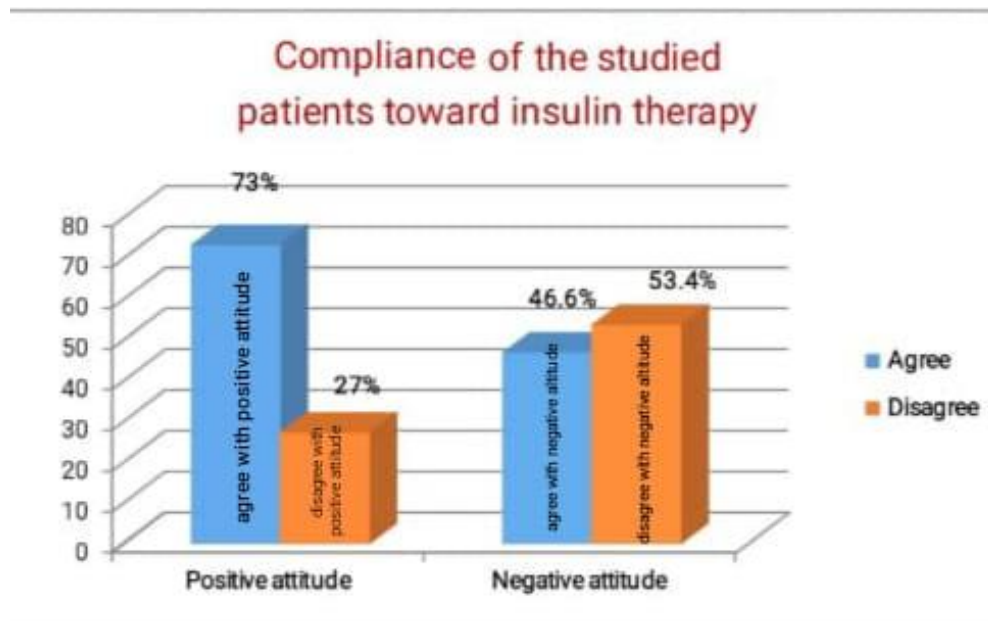


Figure (1): Compliance with insulin therapy for the studied patients (n= 165).



Figure (2): Patients according to total insulin therapy self-efficacy scale (ITSS) for the studied patients (n= 165).

Table (4): Correlation between patients' Compliance with insulin therapy and their self-efficacy to insulin therapy for the studied patients (n=165)

Compliance of the studied patients with insulin therapy	Total insulin therapy self-efficacy of the patients	
	R	p-value
Positive attitude	.240**	.002
Negative attitude	-.349**	.000

DISCUSSION

Insulin therapy plays a crucial role in the management of type 2 diabetes mellitus, especially in cases of severe hyperglycemia, treatment failure with other medications, advanced chronic kidney disease, liver cirrhosis, post-transplant diabetes, during pregnancy or patients exhibiting symptoms and having an A1C greater than 9% (Davies et al., 2022). Cerf, (2020) suggested initiating insulin treatment promptly to maintain beta cell function, ensure appropriate levels of glycosylated hemoglobin, and prevent the development of complications associated with diabetes. This approach is essential for optimizing long-term glycemic control and reducing the risk of adverse outcomes in diabetic patients.

Compliance with insulin administration has a significant effect on an individual's self-efficacy. Numerous studies have demonstrated that effective diabetes management is closely linked to self-efficacy, with higher levels of self-efficacy positively influencing compliance with insulin administration (Nakaue, et al., 2019), (Zhang, et al.,2023),(Jiang, et al., 2023) and (Sauriasari, Syafhan & Tahir, 2022). Furthermore, self-efficacy in insulin administration is predicted by an individual's educational background, length of diabetes, insulin injection expertise, and understanding of diabetes. By improving self-efficacy with personalized interventions, individuals are more likely to comply with insulin therapy and make well-informed decisions about their health and diabetes management (Huang, Hung, Huang, & Yang, 2021). So we aimed to explore the relationship between self-efficacy and compliance with treatment with injectable medication for type 2 diabetes.

This study revealed that hypertension was a comorbid disease. This result is in line with Jia and Sowers (2021) who demonstrated that poor glycemic control, insulin resistance, neuroinflammation, activation of the renin-angiotensin system, and increased arterial stiffness leading to increased peripheral vascular resistance all factors result in the occurrence of hypertension. Furthermore, the current study demonstrated that patients only checked their blood glucose levels when feeling unwell. This could be explained by the fact that almost half of the patients did not have glucometers because of insufficient knowledge about the importance of measuring blood glucose levels continuously. The study's conclusions are corroborated by Sousa, et al., (2020) who discovered that over half of diabetic patients did not regularly check their blood glucose levels.

A high blood sugar level, known as morning hyperglycemia, can be caused by low insulin levels from various sources. These include the dawn phenomena, the Somogyi effect, or insulin waning. A steady blood glucose level characterizes the dawn phenomenon until around 3 a.m., caused by the release of growth hormones at night. In contrast, the Somogyi effect is identified by normal or elevated blood glucose levels at bedtime, a drop to hypoglycemic levels at 2-3 AM, and a subsequent rise due to the release of counterregulatory hormones. Insulin waning is recognized by a gradual increase in blood glucose levels from bedtime to the morning. Individuals should monitor their blood glucose levels while awake to identify underlying issues. This data is crucial for making informed decisions on adjusting insulin doses to prevent morning hyperglycemia caused by the dawn phenomenon (Hinkle, 2021).

Based on this study, the majority of patients experience morning hyperglycemia. This could be brought on by stress, an ineffective nutrition control strategy in the evening, or a missing or lowered insulin dosage. Thota and Akbar (2024) noted that the most common side effect of insulin treatment is morning hyperglycemia, which supports this finding. In addition, the present study concluded that patients had a positive attitude toward insulin therapy. This result is explained by the fact that most patients who received adequate education about insulin and had effective communication and continuous follow-up with healthcare providers agree that insulin therapy improves their diabetes, which in turn improves their quality of life and also prevents complications of diabetes. This result is consistent with Davoudi, Chouhdari, Mir, and Akbarian (2020) who stated that most diabetic patients had a positive attitude toward insulin therapy.

These findings contradict those of Ali et al., (2021) who reported that those who have type 2 diabetes exhibit resistance to insulin injection due to negative attitudes such as pain, storage problems, and hypoglycemia concerns, which impede treatment compliance. Furthermore, a study conducted by Mirahmadizadeh, Delam, Seif, Banihashemi, and Tabatabaee (2019) found that those who have type 2 diabetes in South Iran demonstrated insulin noncompliance because of misunderstandings, injection anxiety, insurance lack, illiteracy, and non-diabetic diets.

According to a current study, most patients demonstrated strong self-efficacy in managing insulin therapy. This could be connected to having positive expectations about insulin therapy and a high educational level. Additionally, most patients perceived psychological support from their families, social acceptance, and higher insulin delivery system satisfaction contributed to enhancing their self-efficacy. This finding is supported by Oluma, Abadiga, Mosisa, Fekadu, and Turi (2020) who disclosed that over half of individuals with diabetes perceived good self-efficacy. However, the findings of this study contradict Bezerra et al., (2023) who reported that most diabetic participants had poor self-efficacy.

This study's findings showed that the compliance and attitude of diabetic patients improved in patients with good self-efficacy toward insulin injection. It is possible that having high levels of self-efficacy and engaging in self-care activities will improve the lives of individuals with diabetes, making it easier for them to comply with their treatment plans and prevent complications from developing. This is in line with Keskin Kiziltepe, Koc, Kavalali Erdogan, and Saglam (2019) who proved self-efficacy and insulin therapy compliance are significantly positively correlated. Similarly, this goes with Qutubuddin, Rahman, Ghafoor, Riaz, & Khan (2021) who revealed a significant relationship between better-glycated hemoglobin levels, indicating a potential link between compliance and self-efficacy in insulin management.

CONCLUSION

The results of this study demonstrate that self-efficacy and insulin therapy compliance were significantly positively correlated, meaning that better insulin therapy compliance was associated with higher levels of self-efficacy. There was a statistical relation between the level of education, type of insulin, device used for insulin injection,

and compliance with insulin. Also, there was a statistical relation between the level of education, type of insulin, frequency of insulin administration, and self-efficacy to insulin therapy. Furthermore, there was no statistical relation between the duration of taking insulin and self-efficacy and insulin therapy compliance.

RECOMMENDATION

These recommendations are given in light of the current study's findings encouraging programs to change lifestyles to manage type 2 diabetes better, producing a handbook with instructions on how to use blood glucose monitors and different types of insulin, providing practical training on insulin administration techniques; and tailoring treatment plans to fit the patient's lifestyle, preferences, and capabilities, offering counseling services to help patients cope with the emotional and psychological aspects of managing diabetes and insulin therapy, facilitating support groups where patients can share experiences, tips, and encouragement with others facing similar challenges, identifying and addressing barriers that may hinder compliance and self-efficacy, such as financial constraints, cultural beliefs, or fear of injections, and providing solutions or resources to overcome these barriers. Regular monitoring of patient compliance and self-efficacy levels is recommended. Finally, doing more studies on large populations from different parts of Egypt to extend the applicability of the results is important.

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العلاقة بين الكفاءة الذاتية والالتزام للعلاج بالأدوية عن طريق الحقن لمرض السكري من النوع الثاني

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الخلاصة

مرض السكري هو مرض مزمن يتطلب الإدارة الذاتية، حيث يتحمل المرضى مسؤولية ٩٩٪ على الأقل من رعايتهم. يعتمد النجاح الطويل الأمد لعلاج مرض السكري من النوع ٢ بشكل كبير على امتثال المريض وفعاليتهم الذاتية، وهو عامل حاسم يؤثر على سلوك الرعاية الذاتية لدى هؤلاء المرضى. الهدف: سعى هذا البحث إلى استكشاف العلاقة بين الفعالية الذاتية والامتثال للعلاج بالأدوية القابلة للحقن لمرض السكري من النوع ٢. الموضوعات والطريقة: تم استخدام التصميم الارتباطي الوصفي في هذه الدراسة. عينة هادفة تتكون من ١٦٥ فرداً تم تشخيص إصابتهم بمرض السكري من النوع ٢ والذين يخضعون للعلاج بالأنسولين في المرافق الخارجية التابعة لمستشفيات هيئة الرعاية الصحية المصرية. (مستشفى السلام العام ومستشفى مجمع الشفاء الطبي بمدينة بورسعيد). الأدوات: الأداة ١: تتكون بيانات تقييم المرضى من جزئين: الجزء الأول: الخصائص الشخصية للمريض. الجزء الثاني: الخصائص السريرية للمريض. الأداة الثانية: استبيان الامتثال لاستبيان علاج الأنسولين، الأداة الثالثة: مقياس فعالية علاج الأنسولين الذاتية (ITSS). النتائج: وفقاً لهذه الدراسة، كان لدى ٧٣٪ من الأفراد الذين تم فحصهم التزام إيجابي تجاه علاج الأنسولين، وكان لدى (٧٢.١٪) من المشاركين في الدراسة فعالية ذاتية جيدة تجاه علاج الأنسولين، وقد ارتبط التزام مرضى الدراسة الإيجابي تجاه علاج الأنسولين ومستوى فعاليتهم الذاتية بشكل إيجابي (p < 0.05). تبين أن الفعالية الذاتية والامتثال للعلاج بالأدوية القابلة للحقن مرتبطان بشكل إيجابي كبير من خلال الدراسة، مما يشير إلى أن مستويات الفعالية الذاتية الأعلى تؤدي إلى امتثال أفضل للعلاج بالأدوية القابلة للحقن. التوصية: يتضمن إنشاء دليل تقديم معلومات حول كيفية إعطاء أشكال مختلفة من الأنسولين بأنفسهم.

الكلمات المرشدة: مرض السكري من النوع ٢، الأنسولين، الكفاءة الذاتية، الامتثال