

# Diabetic Patients' Adherence to Insulin Pen in King Hussein Medical Hospital in RMS in Jordan

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**Abstract**— Diabetes mellitus is a prolonged metabolic disease that has a significant economic load on the healthcare system concomitant with direct and indirect medical expenditures, loss of efficiency, and early death. **Objectives:** To evaluate the adherence to insulin therapy between patients with diabetes using insulin pen comparing to traditional insulin therapy. **Methods:** A cross-sectional survey will be conducted, and adult consumers will be recruited. One hundred patients will be questioned during the period of 3rd January to 30th January 2022. The patient adherence questionnaire will be managed using a structured interview technique (face to face) in which the patients will be asked questions by a pharmacist and registered nurses in an internal medicine clinic, questionnaire will include demographic data, period of diabetes and type of insulin used, and questions regarding adherence to the insulin pen treatment. Results will be analyzed by using SPSS version 21. **Results:** One hundred patients participated in the study, and a rate of 78% expressed that they are committed to taking their insulin doses, due to the presence of the insulin pen, which made it easier for them, whether the method of use or the lightness of the pain caused by the prick of needles. Approximately (81%) of participants when asked about the method used to give insulin is simple and easy they agreed. Furthermore (78%) agreed that it took less time to prepare and administer insulin using insulin pens than insulin vials. **Conclusion:** This result of the study gives a good impression that diabetics who use the insulin pen are well committed, but the researchers believe that the number of participants in the research does not give the correct result because the number of diabetics is high and the sample taken does not suffice.

**Keywords**— Diabetes Mellitus, Adherence, insulin pen.

## I. INTRODUCTION

Diabetes Mellitus is a prolonged metabolic disease that has a significant economic load on the healthcare system concomitant with direct and indirect medical expenditures, loss of efficiency, and early death.[1] As a result of a person's exposure to diabetes, there are many complications that may occur in the long term, including kidney disease that ends in kidney failure and retinopathy that ends in vision loss. Also, do not forget about peripheral neuropathy, which may end with amputation of the limbs.

One of the most important complications that may result from diabetes is cardiovascular disease, which is the main cause of death.[2]

There are a percentage of diabetic patients over time who suffers from an imbalance in the metabolic function, which in turn increases the incidence of associated diseases and an increase in the rate of death cases. The more hyperglycemia and the more unregulated the sugar, the greater the risk.[3]

Diabetes is divided and classified into two types: Type I, representing about 10%, and Type II, representing 90%, and sometimes gestational diabetes. There are several methods used to control high levels of sugar, whether type 1 or type 2 diabetes, one of the most important of these is exercise and changing lifestyles, the most important of which is the current dietary patterns and their harmful effects.

In the end, diabetes needs to use treatments, whether it is through pills and or insulin injections, in addition to changing lifestyles. [4]

Diabetes has a lot of physical, economic and moral burdens, especially the second type of diabetes, so there is

wide interest in the patient's commitment to taking his treatments and persevering on them to reduce what was previously mentioned about the symptoms and diseases associated with diabetes.

The use of insulin for patients with type 2 diabetes was one of the importance of previous research and the extent of patients' commitment to use it, which is the reason for the current studies.[5] Previous research mentioned the weak commitment of diabetic patients to insulin or oral medications. Similarly, there are studies that indicate poor commitment of patients to insulin.[6]

Most of the new research indicates that patients with type 2 diabetes who started treatment on insulin and those who use special pens showed very good compliance compared to those who used insulin with a bottle or syringe.[7, 8]

There are several systems for using insulin, such as insulin pens and prefilled pens that show excellent results such as adherence to treatment and patient satisfaction with the results of his tests. In addition, it was noted that there are fewer cases of hypoglycemia, patients refer to emergency departments, and low costs of the treatments used.[9-11]

The objectives of this study were to determine the extent of commitment of diabetic patients, especially type II, to the use of insulin pens, and their satisfaction compared to the use of alternatives.

## II. METHODS

A cross-sectional survey conducted, and adult consumers recruited. One hundred patients questioned during the period of 3rd January to 30th January 2022. The patient adherence questionnaire managed by using a structured interview technique (face to face) in which the patients asked questions

by a pharmacist and registered nurses in an internal medicine clinic, questionnaire include demographic data, period of diabetes and type of insulin used, and questions regarding adherence to the insulin pen treatment.

### III. RESULTS

Demographic characteristics of the 100 patients completing the study are listed in Table 1. One hundred patients participated in the study, and a rate of 78% expressed that they are committed to taking their insulin doses, due to the presence of the insulin pen, which made it easier for them, whether the method of use or the lightness of the pain caused by the prick of needles. Approximately both male and female are the same; the major group age counting 45 patients was the group (45-54). The majority of the participants were married and Almost half of the participants in the study were over 10 years old and had diabetes. (59%). About 81% of participants when asked about the method used to give insulin is simple and easy they agreed. furthermore (78%) agreed the It took less time to prepare and administer insulin using insulin pens than insulin vials.

TABLE 1. Baseline demographic patient characteristics

Demographics	no (%)
<b>Sex</b>	
Female	53 (53)
Male	47(47)
<b>Age (year)</b>	
18-24	7 (7%)
25-34	11(11%)
35-44	18(18%)
45-54	45(45%)
55-64	13(13%)
>60	6(6%)
<b>Marital status</b>	
Single	11(11%)
Married	79(79%)
Other	10(10%)
<b>Diabetes duration (years)</b>	
>5 years	11(11%)
5-10	18(18%)
11-15	59(59%)
16-20	10(10%)
>60	2(2%)
<b>Patient adherence</b>	
Adherent	78(78%)
Non-adherent	22(22%)
<b>Prescribed insulin regimen, n (%)</b>	
short acting (Regular human, lispro, aspart or glulisin)	34(34%)
Pre-mixed insulin (70/30, 50/50).	39(39%)
Long acting (detemir or glargin)	44(44%)

Most of them felt more confident receiving the correct dose of insulin with insulin pens than with insulin vials and syringes (75%), tow-third of the participants felt more comfortable using insulin pens compared to insulin vial, and 75% thought that The insulin pen is an improvement over the vials.

TABLE 2: A summary of the responses of diabetic patients who use pens and bottles

Survey Item	Yes	No	Don't Know
The method used to give me insulin is simple and easy.	81	7	12
It took less time to prepare and administer insulin using insulin pens than insulin vials.	78	0	22
I felt more confident receiving the correct dose of insulin with insulin pens than with insulin vials and syringes.	75	7	18
I felt more comfortable using insulin pens compared to insulin vials.	73	7	20
The insulin pen is an improvement over the vials.	75	5	20

### IV. DISCUSSION

In the current study, the participants showed significant educational skills in using insulin pen and comfort during the using of the device. The finding of this study revealed good adherence to insulin pen despite many studies revealed poor adherence[12]. The results that we have are the opposite of the results of most of the previous studies, which indicate the weak commitment of the patient to insulin therapy [13].

Insulin pen use is associated with lower rates of hypoglycemia, increased adherence rate and increased persistence, leading to increased glycemic control.[14]

Confirmation of this, that the good and high percentage of patients who use the insulin pen and adhere to it correctly confirms that the correct education and patient awareness of this reduces the complications of diabetes, which are considered dangerous in the long run, including cardiovascular diseases, kidney and eye diseases and other complications.[15].

Approximately 75% of patients with diabetes reported that the method of using the insulin pen is simple and easy, and most of them praised that the time taken to prepare the appropriate doses of insulin is faster and simpler than that used by vials. The largest percentage also confirmed that using the insulin pen gives them high confidence that they took the correct and accurate dose, unlike those drawn from the vials, which need a longer time and higher skill. The presence of the use indicator in the insulin pen and hearing the crackling of the device when preparing the dose is a good indication that the calculated dose what is required is correct. Most of the insulin pens users, who were mainly dependent on insulin from the multi-dose package or vials, confirmed that the use of insulin pens is an excellent development for diabetic patients, and everyone should go to this type of device to reduce cases of high or low diabetes and reduce the negative effects of diabetes.

### V. CONCLUSION

This result of the study gives a good impression that diabetics who use the insulin pen are well committed, but the researchers believe that the number of participants in the research does not give the correct result because the number of diabetics is high and the sample taken does not suffice.

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