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USERS COMPLIANCE AND BENEFITS OF INSULIN PENS THERAPY IN TRIPOLI LIBYA

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ABSTRACT

This perspective field study was conducted at the diabetic center Tripoli Libya between February 2015 to May 2015, nearly two years and after the time when the ministry of health started dispensing insulin pens along with traditional insulin on a wide scale. The investigators interviewed insulin dependent patients using a questionnaire composed of 11 questions. A total of 100 completed questionnaires were obtained out of 110 distributed. Data was gathered by personal interview of 50 male and 50 female patients at the center. The aim was to investigate and evaluate the extent of compliance of these patients with insulin pens which were introduced recently compared to traditional vials & syringe method of insulin administration. The results show only 8 patients out of total 100 continue using traditional insulin, and 92 of the patients switched from traditional insulin to pen devices. According to these patients, pen devices are superior to traditional methods, with no problems during use, less pain, easier to adjust the dose, relatively suitable price and available during traveling abroad.

KEYWORDS: Diabetes mellitus, Insulin pens, insulin, compliance, questionnaire.

INTRODUCTION

Diabetes Mellitus is a metabolic disorder that is characterized by high level of glucose in the blood (hyperglycemia) caused by either absolute deficiency of insulin, decrease in insulin secretion or insensitivity of insulin. Diabetes mellitus is one of the fastest growing chronic diseases worldwide and is associated with significant morbidity, mortality and health care costs.[1] There are three main types of diabetes, Type 1 diabetes mellitus, in which there is an absolute deficiency in insulin production and occurs at any age, although it mostly occurs in children and young adults.[2] Type 2 diabetes mellitus which is associated with insulin resistance, with initial normal insulin secretion, however, over time followed by, beta cells death, and hence insulin insufficiency, this type mainly occurs in people aged over 40 years, although it is recently becoming increasingly prevalent in the younger age groups.[3,4] Gestational diabetes which occurs during pregnancy, it usually disappears after delivery, however, a history of gestational diabetes increases a woman's risk of developing type 2 diabetes mellitus later in life.[2]

Diabetes management includes drug therapy, life style and diet modifications, along with health education.[5-7] The management of type1 and type2 diabetes mellitus has improved over the years, because of remarkable advancement in insulin types and delivery systems.[8]

The use of syringes to administer insulin was associated with poor dose accuracy, a long training period, unpleasant psychological impact and difficulties in conveyance.[9-11] These negative impacts led to lack of treatment persistence, non adherence and created barriers to achieving optimum glycemic control.[12]

The first insulin pen, the Novopen®, was launched in 1985, followed by Novopen® 2 in 1988, which has characteristic dial up setting to measure the required dose.[13] In general, pens offer simpler, accurate and convenient insulin delivery over traditional syringes. An insulin pen has three components: an insulin cartridge, a disposable short needle and an incremental knob (one click per unit) dosing, the device can be either reusable or disposable. Reusable insulin pens have a replaceable insulin cartridge. The disposable pen has a prefilled cartridge and is discarded after depletion of insulin.[14]

Compared with syringes, pens claimed to offer more flexibility, accuracy, discreetness and long term cost effectiveness, contributing to improved treatment persistence and adherence. Therefore, the use of insulin pens demonstrates better glycemic control and has wider acceptance.[15,16] Modern pen devices have advanced safety features such as audible clicks with each dose as well as, ergonomic features to reduce the physical effort

of the injection and confer more user friendlier, accuracy and flexibility.[17]

However, insulin pen devices are not devoid of limitations, such as difficulty in applying a mixture of insulin, and higher cost.[18] When longer term cost effectiveness is not considered, treatment with pen device is more expensive than with traditional insulin vials, especially in low and middle income countries.[15,19]

This study was conducted among patients with diabetes mellitus in Tripoli city Libya, to illustrate and evaluate the extend of patients compliance with this devices.

2. MATERIALS AND METHODS

This study was carried out between the months of February and May 2015 at the Tripoli diabetic center involving distribution of questionnaire form and personal interview of 110 patients with insulin dependent DM in the outpatient clinic (OPD).

The questionnaire was validated by a senior pharmacist in the center to ensure that it includes all the parameters of interest. The final form consisted of 11 close ended questions on:

1- Length of time patient used traditional insulin injection.
2- Method of insulin administration the patient is using now.
3- The reason(s) for switching from traditional insulin injection to insulin pens, or vice versa.
4- Advantage(s) or benefits gained by switching from traditional injection to pen devices, or vice versa.
5- The reason(s) for switching back to traditional injection from pens.
6- Length of time the patient on pens with good glucose level control
7- Extent of pain at site of injection from pen compared of traditional injection.
8- Easiness of adjusting the required dose of insulin.
9- Cost and availability of pens and accessories.
10- Social and psychological impact and acceptability of insulin pens.
11- Method(s) of insulin pens disposal after use.

3. RESULTS AND DISCUSSION

The data obtained from patient interviews where summarized and presented in histogram forms as shown in figures (1 to 14).

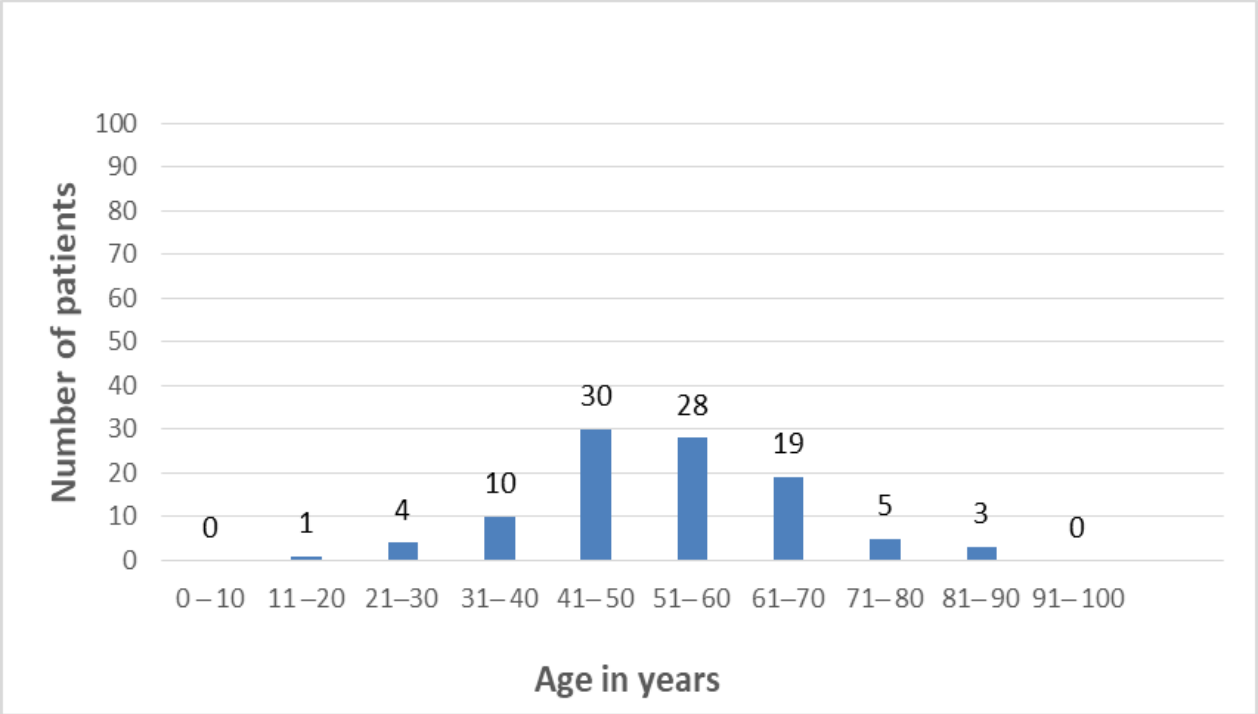

Figure 1: Age distribution of the interviewed patients.

Figure (1) Indicates the age range of the interviewed patients 77% of the patients were aged between 41 to 70 years old which is comparable with the normal diabetes mellitus age range world wide.

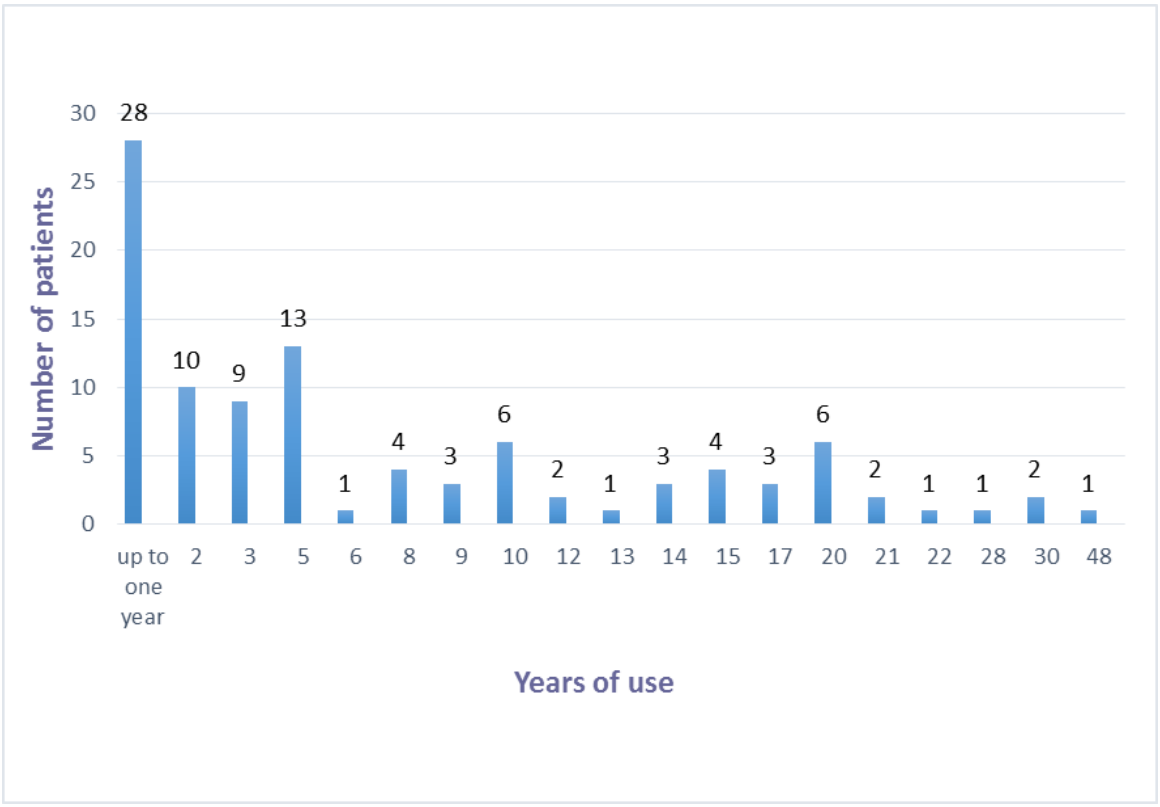

Figure 2: Duration of using traditional insulin injection.

It is shown in figure (2) that the interviewed patients age about 60% of both genders used traditional insulin for over one year up to 5 years, the remaining 40% of the patient use traditional insulin for 6 up to 48 years.

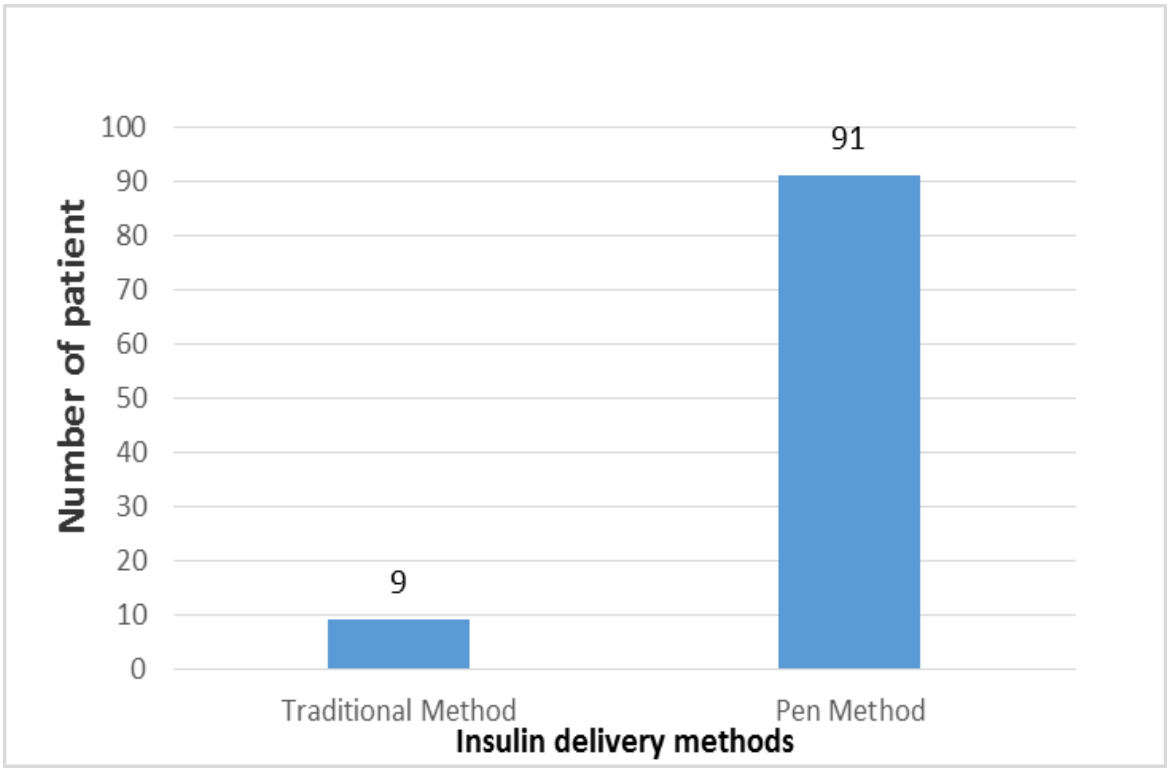

Figure 3: Type of insulin delivery system being used at the time of the study.

Figure (3) demonstrates that about 91% of the patients switched to insulin pen, and only about 9 % patients continue using the traditional injection method.

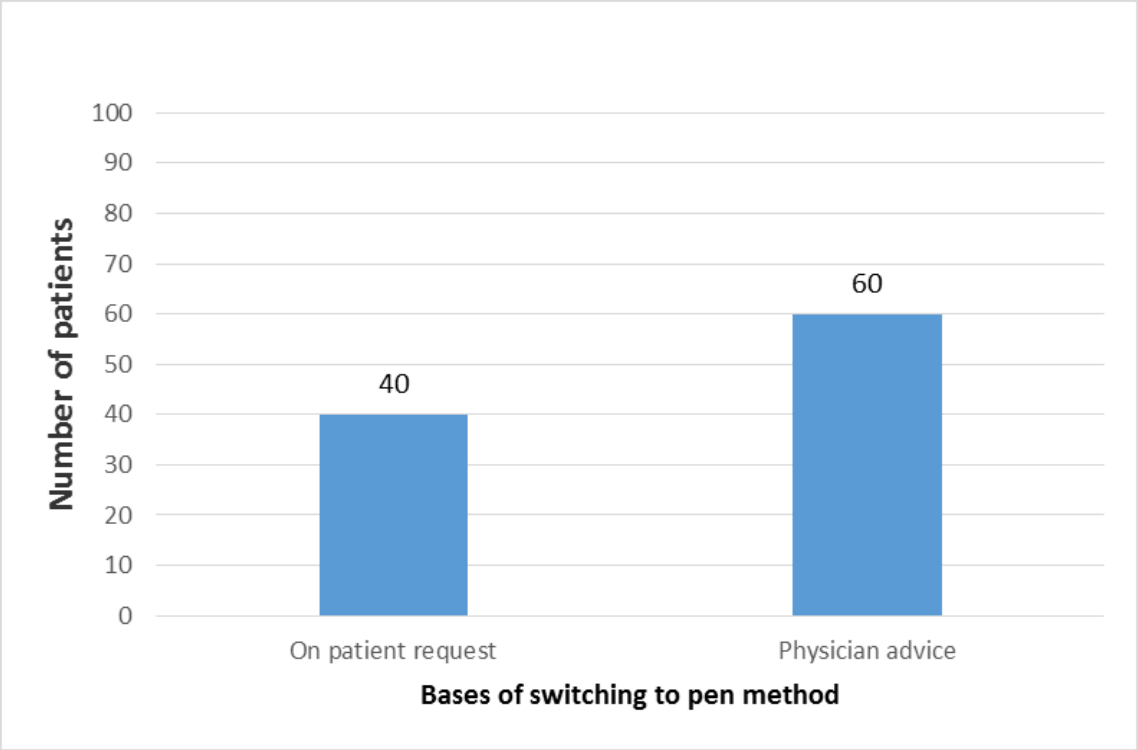

Figure 4: Recommendations on what base you switched to pen method your choice or physician order.

Most of the interviewed patients (60%) switched to insulin pen on their physician's advice while the remaining (40%) switched on their own requests themselves, as illustrated in figure (4). Their preference is further so explained in figure (5) which demonstrated that their preferences were based on recommendation from other patients, friends and/or relatives. The patients stated various reasons for switching to pen, among them; facing difficulty of maintaining cold temperature for storage during working hours, because of repeated electricity black outs, ease of use, highly effective and does not need special restricted storage temperatures, as illustrated in figure (6).

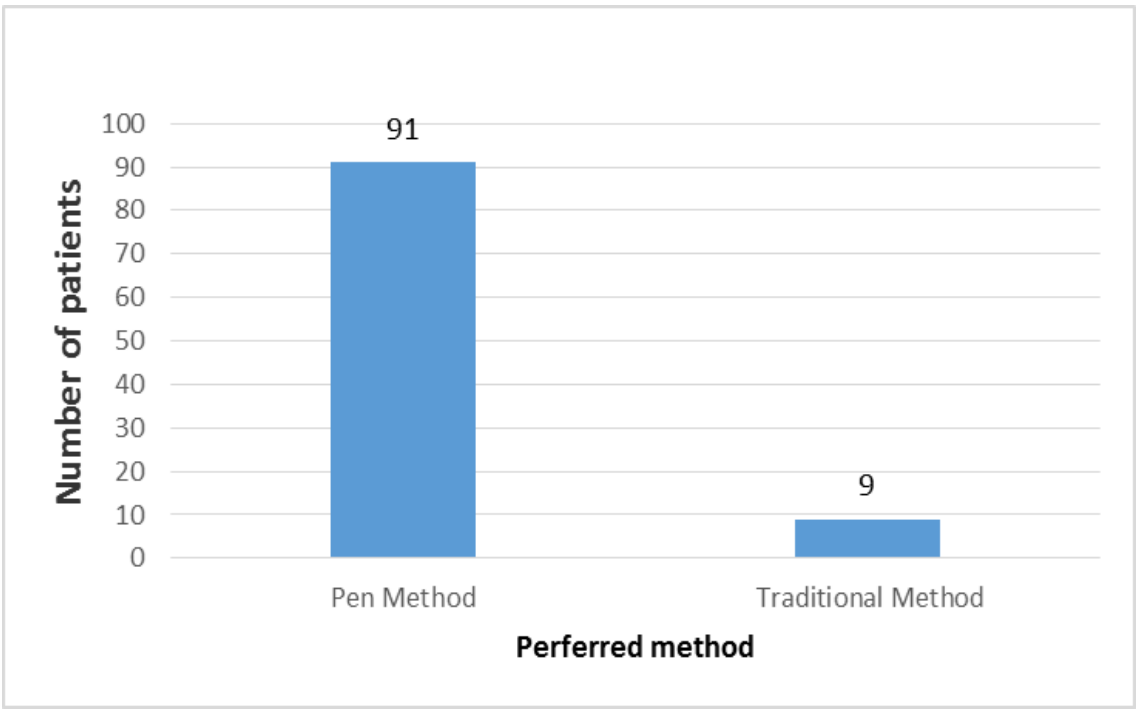

Figure 5: Methods of insulin administration preferred.

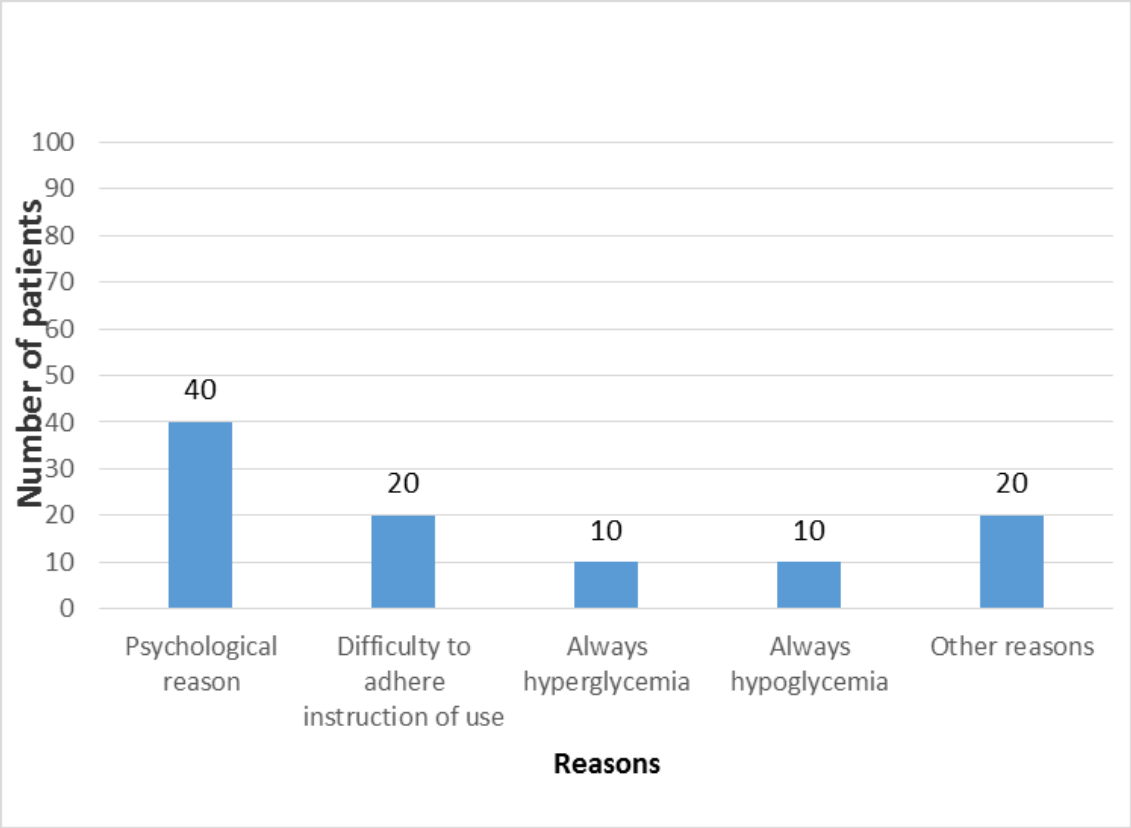

Figure 6: Reasons for switching to pens from traditional method.

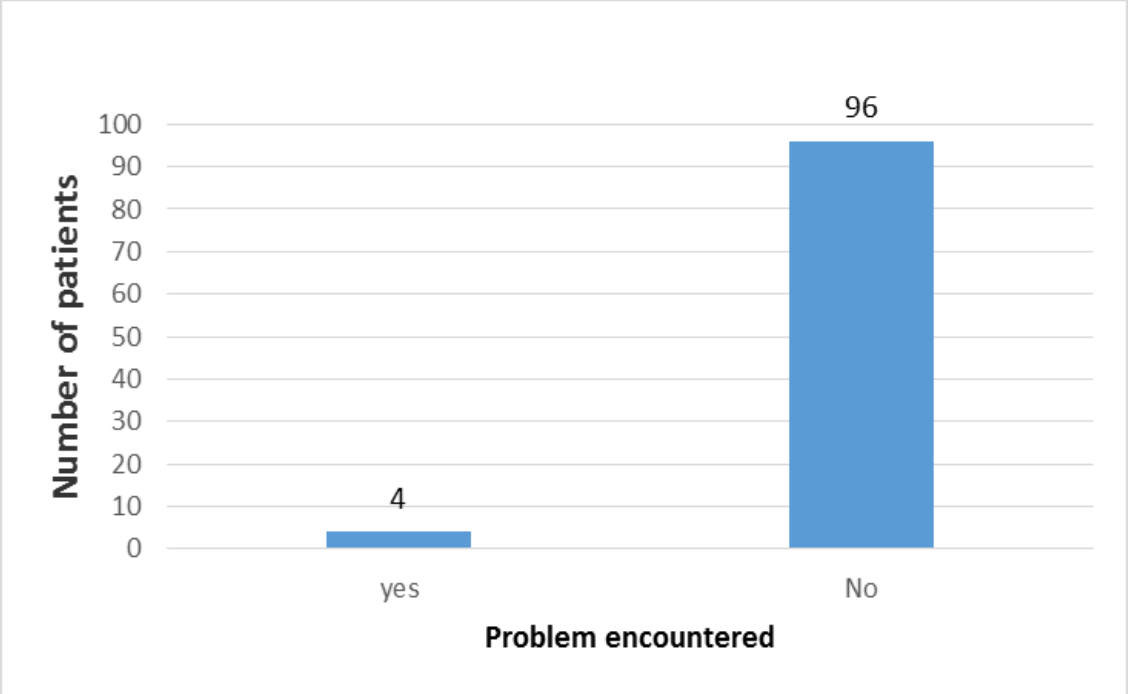

Figure 7: Were there problem encountered with using insulin pens.

It is clearly seen that most of patients offering these devices faced no problems using insulin pens from figure (7).

When it comes to the advantages of using insulin pen over traditional method the interviewed patients explain that there was less pain with the pens as illustrated in figure (8), easier to adjust the correct insulin dose figure (9), affordability and availability figure (10) and easiness to carry on and availability when travelling figure (11).

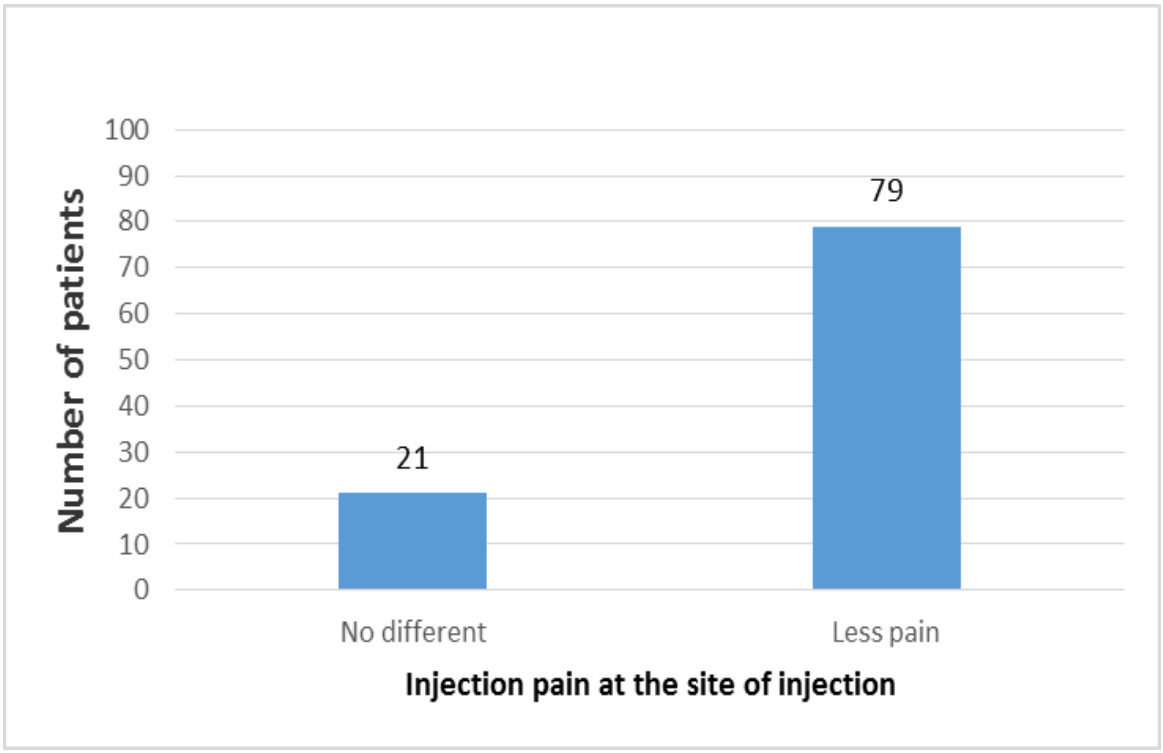

Figure 8: Pain level of insulin pens versus traditional insulin.

From figure (8), nearly to 80% of patients less pain with insulin pens while about 20% said there was no difference between both methods, so generally, patients using pen device reported less pain during insulin injection than traditional injection.

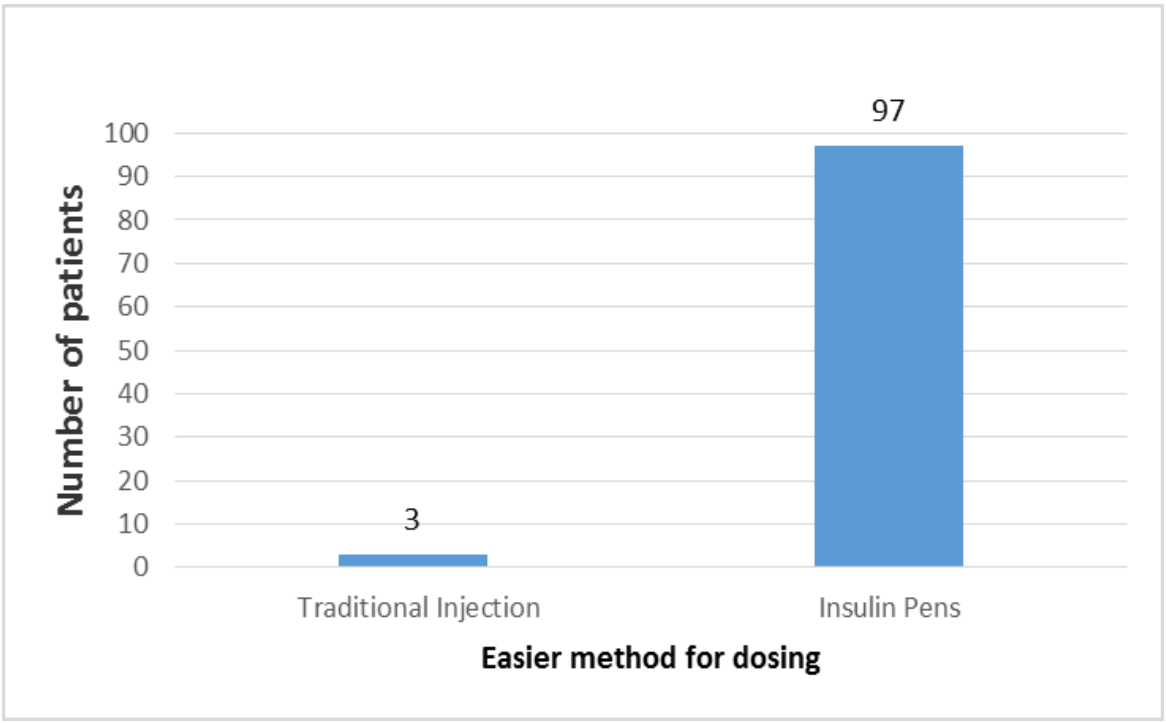

Figure 9: Explain the easier method of adjusting insulin dose.

From figure (9) it is obviously seen that, 97% of patients indicated that pen devices are much easier to use than traditional insulin injection when it comes to adjusting, and controlling the dose.

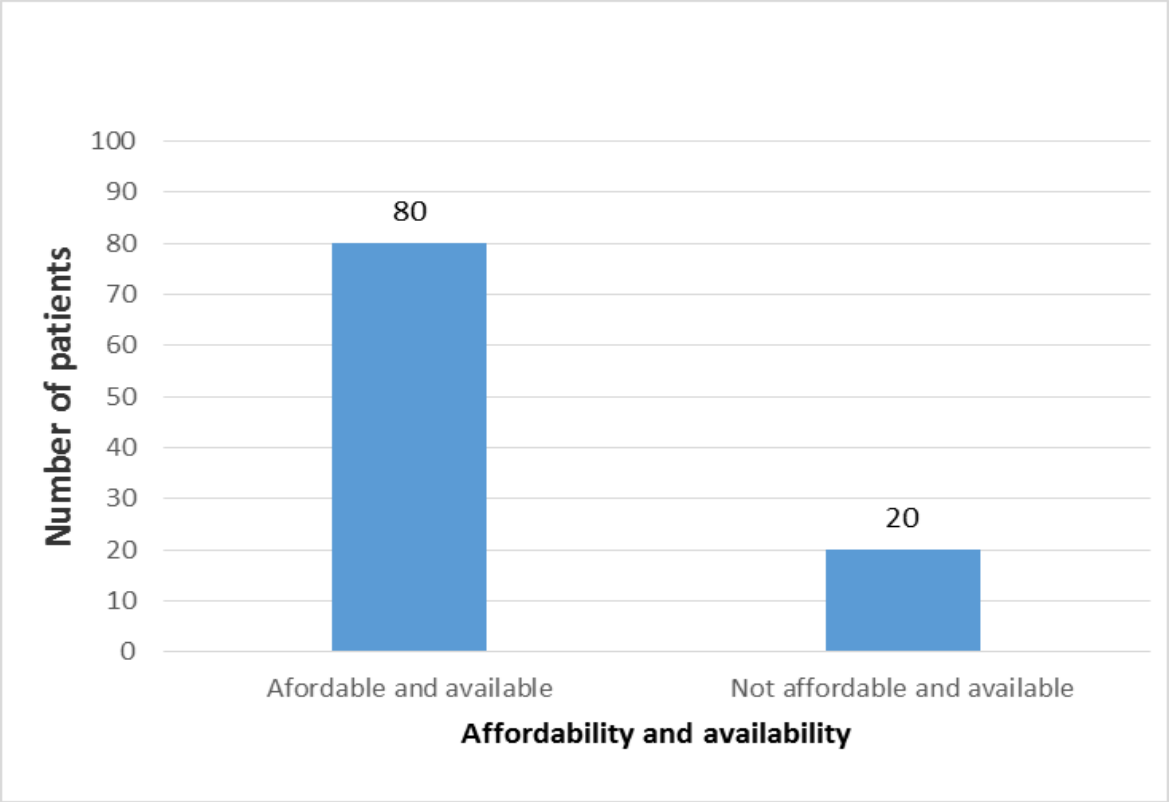

Figure 10: Affordability and availability of insulin pens.

As seen in figure (10) about 80 patients of both genders said that pen devices are not yet available free of charge on wide scale, however the prices are much less suitable for most of the patients, although there still be quite number of patients, about 20% be cannot afford to buy these devices and are dependent upon the government for their insulin therapy.

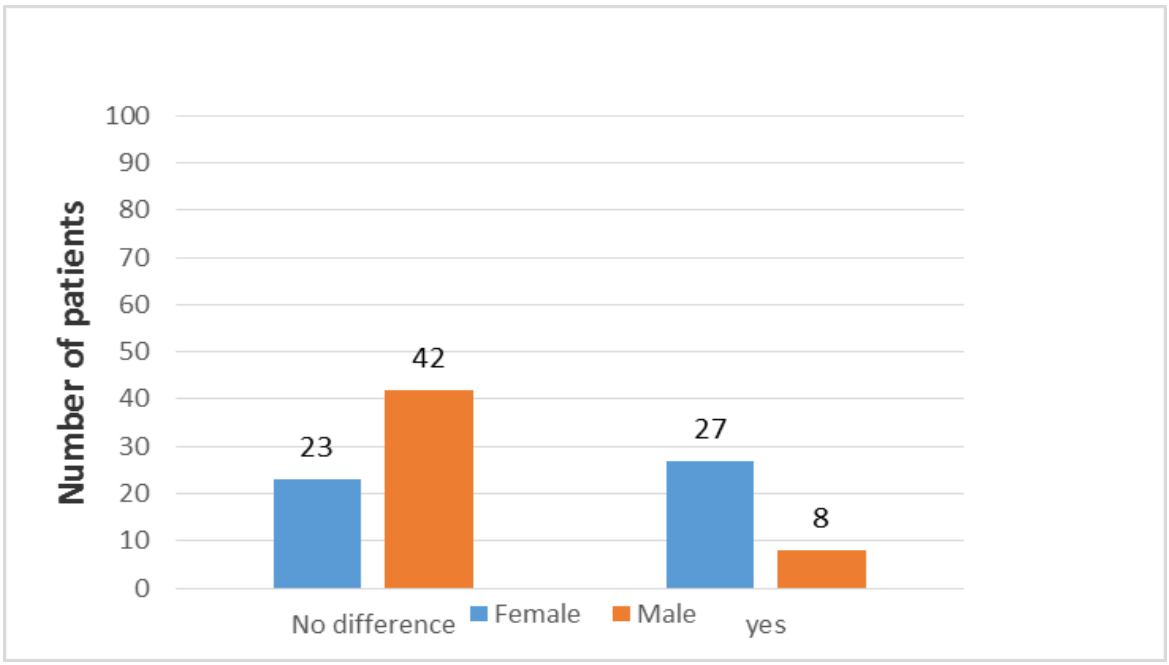

Figure 11: Social and psychological acceptability to pens or/and injection.

In figure (11) in case of psychological acceptability it can be revealed that there were 42% of the males and 23% of the female says there is no difference psychological acceptability. While 58% male and 77% female they found pens are more socially and physiologically accepted by them.

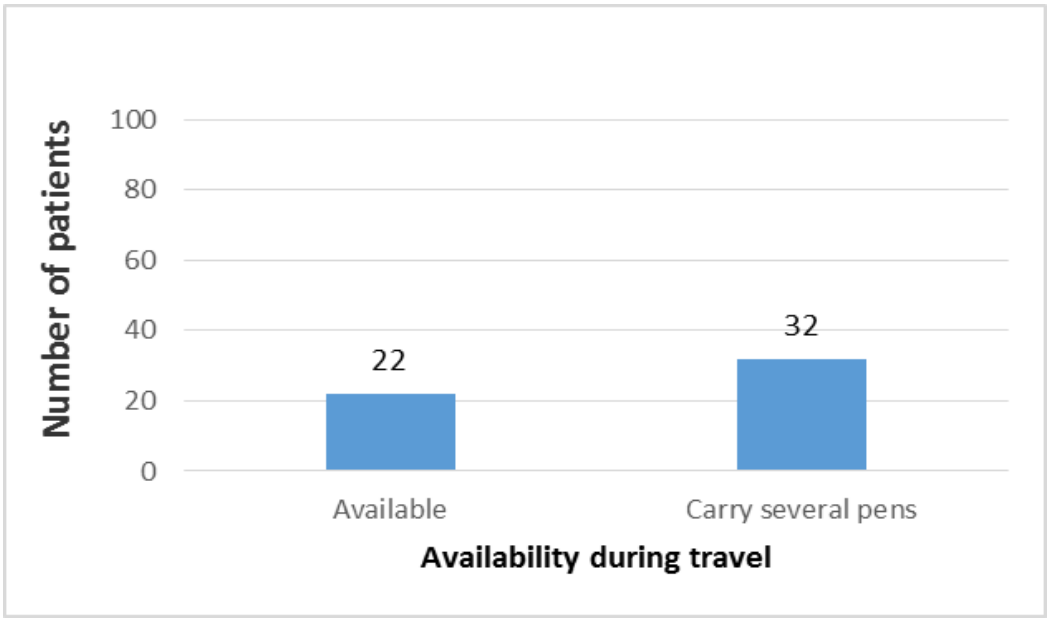

Figure 12: Explain availability during travel aboard.

Although Figure (12) shows that about 46 % of patients said that they never travel abroad, 22 out of the remaining 54 patient said pens are available abroad and find no difficulty to obtain them, moreover, the other said they carry enough pens with them when they travel aboard.

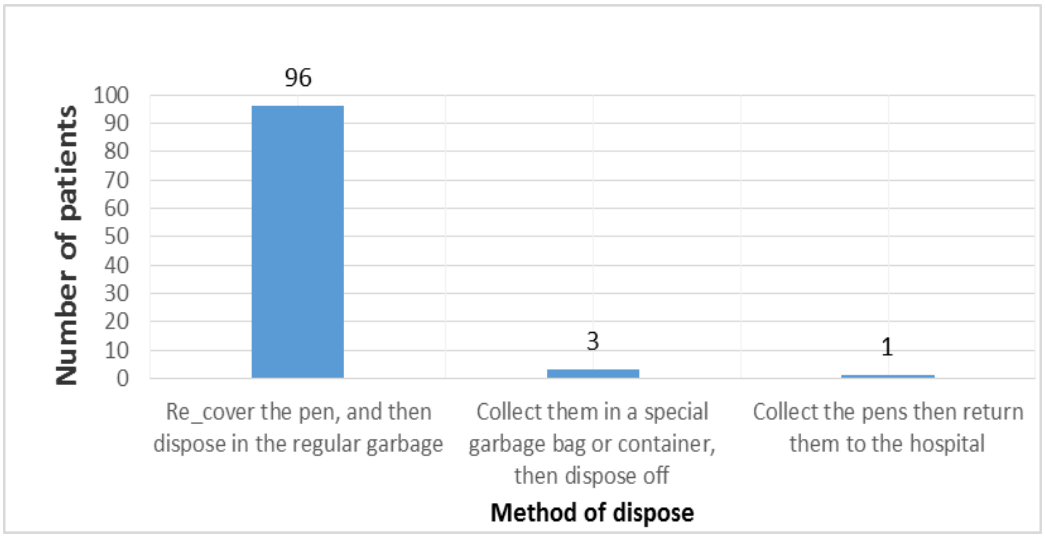

Figure 13: Methods of dispose insulin pens.

Finally the response of the patient to how to dispose of insulin pens after use figure (13) illustrate that 96% of the patients in the study dispose insulin pens by recap the pen and then throw it in the regular garbage, only 3 of females patient collect them in a special garbage bag or container then dispose them, and only one female collect the pens then return them to the center. The matter is focused on the need of pharmacists in their community to perform their job and educate the patients for their therapy how to store insulin and dispose it after finished, because most of them lack of adequate knowledge.

CONCLUSION

In conclusion, the study revealed that, insulin pens offered many benefits and advantages compared with traditional insulin vial & syringes, and hence the pens are more user-friendly requiring little instruction. These benefits include; pen devices are superior to traditional methods, with no problems during use, less pain, easier to adjust the dose, relatively suitable price and available during traveling abroad.

It is important that pharmacists should be more aware of the benefits of insulin pens and the role they can play in increasing adherence. Pharmacists should be more involved in patient counseling and there by contribute more to the safe use of insulin, both in hospitals and at homes by minimizing the likelihood of medication errors related to prescribing, transcription, dispensing, adjusting the dose, administration, and proper storage.

Generally, because patients find value in pharmaceutical care services by the pharmacists, there is a need to have more pharmacists involved both as personnel and services throughout hospitals at all levels.

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