Knowledge and practice on self-insulin administration among diabetic patients in tertiary care hospital Lahore.

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Abstract

Background and Aim: The diabetic mellitus is a chronic disease, in which they suffered with multiple signs and symptoms of other contributing diseases like hypertension. Along this disease of diabetes they must know about the treatment and self-medication (insulin) administration techniques. They need to have the knowledge and practices of diabetes patient's daily self-care activities like insulin administration and use of insulin according the high value of blood sugar levels. The study aim was to assessment of the practices and knowledge regarding self-insulin administration among diabetic patients.

Methodology: A descriptive cross-sectional study was conducted at a tertiary care setting. Population was diabetic patients in n=150. Study duration was 4 months. Data was collected by adopted tool which consisted of 2 parts Knowledge and Practice based. Study tool has demographic data, knowledge about self-insulin administration and practice observed by checklist. Data analyzed through the categories of the (less than 50% score), average knowledge (score 51 to 60%), and good knowledge (more than 60%score). The correct practices considered more than 60% and less than 60% incorrect practices. Ethical approval was taken from participants as in written consent.

Results: The results reveal that the majority of female diabetic patients they were in 62.7%, age group were involved >46 years (51.3%), Married were 85.3%. The 76% families were having positive diabetic history. Most of the patients 55.3% were used (pen) device for insulin. Good knowledge was 15.38%, 76.92% average knowledge, and only 7.69% patient have poor knowledge. In this study was found the 40% patients performed correctly and 60% patients incorrect performed the self-administration of insulin.

Conclusion: Through this study got that point, there is sufficient knowledge about insulin self-administration. But they have incorrect practices to self-administer the insulin at their daily routine habits. They need to simulate on practices the self-administration of insulin by the guidance of expert health care professionals.

Keywords: Diabetic patients, Insulin knowledge, Self-insulin administration.

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Introduction

Diabetes mellitus is a condition of chronic disease, in which the effected person's entire life suffered with this disease. They need to promote their life in the way of well-being, must need to know and attain knowledge regarding diabetic mellitus related self-care practices. They need to enhance their insulin administration practices at home by the help of health care givers at the time of follow up [1].

Nurses are those health care providers, who spend most of their time with the patient. They provide medical care to treat the symptoms of diabetes, especially when the patients admit in the hospital, which needed more attention to fulfill nursing skills. Patients with diabetes in hospitals need different regimens, such as managing diabetes to develop and maintain medications or injections, or a healthy balanced diet. They need to concerns with care of diabetic wound. This assistance will help to prevent complications and change their life activities [2].

Nursing education is necessary for patients to improve their practices at home in administration of insulin. They cannot stay in hospital all the time. The patients should be expert in administration of insulin therapy at home. The concerning component to provide the care of diabetic patient, to teach the correct injection technique at the time of discharge. Various studies revealed in the world found that the diabetic patients are much aware to self-administering insulin, but patients' awareness related self-administration of insulin are still weak in some health care settings at the time of home care [3]. Knowledge of insulin management itself is a great concern for our country to work on diabetes care. The insulin dependent patient needs information about diabetes and insulin administration therapy [4].

Health care providers have important role to educate the patients about diabetic care and health promotion. The nursing services provide home care education to patients and their families after hospitalization regarding insulin administration in proper way [5]. Diabetes mellitus is a metabolic disease caused by hyperglycemia caused by a metabolic disorder of carbohydrates, fats and proteins. There are several factors that cause defects in insulin secretion, the effect of insulin [6]. Insulin therapy is a life-saving treatment for patients with high blood sugar in the hospital; however, it can be life-threatening if carried out incorrectly. There are many insulin products and insulin syringes available on the market, which is why insulin management is currently a problem for healthcare providers and patients [7].

To reduce diabetes mortality and morbidity rate is to train health care professionals. Moreover, the nurses are first line of contact to provide information for diabetic clients. Cleanliness of the injection site should be ensured before giving the injections. The injection site may be thoroughly cleansed either with cotton balls dipped in water or with alcohol swabs. Alcohol on the skin should be completely dry before injection [8]. Inject able form of insulin is administered by intermittent subcutaneously. Traditionally it was injected according to prescribe by physician orders and the dose adjusted following to eating, physical activity, and current blood glucose levels. The Insulin administration consisted on different sites, in which the abdomen is most common site for insulin injection. The different angles were used for injection at the abdominal site following around the umbilical. The site of arm use back middle third of the upper arm between the shoulder and the elbow joint. On the thigh preferable place is anterior site and on the buttocks mark the upper outer quarter [9].

Patients should always follow the doctor's recommendations regarding the timing of injections. Changing your mealtime is a strategy used to increase or decrease insulin activity and should only be done under medical supervision. NPH can be given to detemir and glargine at the same time daily without meals. In the case of long-acting insulin, the interval between injections can range from 8 to 40 hours, and the injection time is not recommended [10]. However, as in other developing countries, nurses in Pakistan have little or no indications of managing diabetes in health care facilities or medical colleges, which extends the patient's confidence period. In contrast, overcrowded hospitals and lack of employment opportunities have contributed to developing additional knowledge or skills to support diabetes in patients treated in Pakistani hospitals [11].

Literature Review

Changing site and hand hygiene before insulin

The study was conducted by Awad et al. in Mansur by six public schools and one primary school. Diabetes (DM) is one of the most common endocrine and metabolic disorders in children. It checks the impact of the intervention program on improving personal hygiene information and practices for children of diabetes school age. The study was carried out using the project before after the study. Students with diabetes have obvious shortcomings in their related personal knowledge and hygiene.

The implementation of this project is positive and enhances their understanding and practice of self-management and insulin management opportunities. The results emphasize the importance of such a preparation for chronic diseases that require long-term care. To help children with diabetes, the curriculum should be developed with longer follow-up measures to assess its long-term effects. School nurses and teachers should be trained in teacher training programs to perform educational functions for children with diabetes. The curriculum should be developed to help children with diabetes, and longer follow-up measures must be taken to evaluate their long-term effects.

Syringe should be used for once time and disposal special safety box

The U. S. Food and Drug Administration recommend disposable insulin syringes. Injection should be used once. However, in our country, patients often use needles and needles to reduce costs. These patients should be aware of the risk factor and explain the method of syringes waste. Insulin syringe use only one person not sharing to other person.

Insulin vials room temperature

You have to make sure you have the right form and the right insulin. Since insulin is sensitive to extreme temperatures, the conditions in which the injection is held must be monitored, or use the insulin pen as an alternative.

Insulin administration

Patients should be informed about the negative consequences of injection deficiency. If you have a large insulin deficiency, you may need to concern for an insulin ration. Doctors and patients should therefore be conscious of the side effect. If any case change sugar levels, patient should be fully informed and the need for more monitoring of sugar level. Patients should not be changes the insulin type or brand. Pharmacist or doctor are change insulin and does according to sugar level.

Relationship between knowledge and practice in self-administration of insulin

This study was conducted to evaluate the knowledge of a self-management in patients with diabetes, to determine the relationship between knowledge and the ability to administer insulin therapy independently.

Research Methodology

A descriptive cross-sectional study was conducted at a tertiary care setting. Population was diabetic patients in n=150. Study duration was 4 months. Data was collected by adopted tool which consisted of 2 parts Knowledge and Practice based.

Study tool has demographic data, knowledge about self-insulin administration and practice observed by checklist. Data analyzed through the categories of the (less than 50% score), average knowledge (score 51 to 60%), and good knowledge (more than 60% score). The correct practices considered more than 60% and less than 60% incorrect practices. Ethical approval was taken from participants as in written consent.

Inclusion criteria

Diabetic patients being on insulin therapy

Clients who want to participate in this study

Exclusion criteria

For patients with visual impairment, it is difficult to assess the injection site and verify the expiration date or insulin history or determine the correct insulin dose.

Clients with severe peripheral neuropathy cannot safely treat the insulin system.

Problem Statement

To preventing diabetes control has been inadequate knowledge and poor practice about self-insulin administration

General objective

To assess the patient practice regarding standard approaches on self-insulin administration.

Specific Objectives

To explore the knowledge about self-insulin administration among the diabetes patients.

To evaluate the level of practice regarding self-insulin administration by using standard approach.

Research question

How to assess the Knowledge and practice on Self Insulin Administration among Diabetic Patients in tertiary care hospital Lahore, Pakistan?

This study will enhance my knowledge regarding observe the patients practice on self-insulin administration to use standard techniques.

Significance of the study

Diabetics are a worldwide burden faced by a chronic illness. Insulin therapy is a potent and life-saving drug which has the ability to cause damage if prescribed or delivered inappropriately. Insulin management and prescription errors are normal due to inadequate medical awareness and as hypoglycemia leading to medical mortality can lead to patient damage and adverse patient outcomes.

Operational definition

The study tool consisted on two sections.

Knowledge based questions, and

Practices assess through observation.

Practices observed through following variables of proper use of needle angle, avoid from massage after administration, change the site frequently, avoid from scar and navi, before injected kept the vial at room temperature for 15 minutes. Hand washing, disinfect the site, remove air bubbles before administration, and ensure one syringe use for one time. Dispose of properly, and diet after insulin injection.

The knowledge variables which observed these consist on known about the diabetes mellitus, means of high blood sugar, storage place, suitable place for insulin injection and its angle, rotate with thumb. Avoided the same site for injection, complication of low sugar, allergy from insulin, wastage of subcutaneous tissues. Prevention of insulin injection pain through rotates the needle, and prevent from tissue wastage. Massage for active re absorption, Benefits of self-insulin administration.

Concerning socio demographic data

Table 1 shows that 62.7% male and 37.3% female which were frequency n=88. Majority of patients were fall in more than 46 years of age groups. 85.3% patients were married and 14.7% are unmarried. 76% patients had positive family history of diabetes 74%. Patients were highly educated and 72% self-employed. Diagnosis duration n=46 more than one year and n=104 less than one year.

Duration of insulin injection <one year 24% and >one year 76%. Frequency of insulin injection administration majority of 55.3% had two time par day and majority of patients use pen which were 55. 3%. The results of this study revealed that most patients are 62.7% female, more women are obese than men in our culture, are irregularly diabetic, and female sports like male sports are physical. Do not activity. other study revealed that more than half were females (69.7%), This related to ongoing type II DM events among adult women in Egypt, Served with uncertain lifestyles, excessive junk food consumption and obesity.

Results

Table 1 Showed that most of the participants are female, were married and highly educated with a positive family history of diabetes.

Table 1. *Socio-demographic variables.*

Demographic characteristic	**N** 150	**Percentage 100%**
Gender		
Male	56	37.30%
Female	88	62.70%
Education		

High (secondary and University)	74	49.30%
Moderate	42	28.00%
Low (Read and write)	34	22.70%
Age group		
30−35 year	26	17.30%
36-40 year	26	17.30%
41-46 year	21	14.00%
More than 46 year	77	51.30%
Frequency of insulin injection		
One time a day	9	6.00%
2 Times a day	83	55.30%
3 Times a day	54	36.00%
4 times a day	4	2.70%
Duration of insulin		
Less than one year	36	24.00%
More than one year	114	76.00%
Diagnosis duration		
More than one year	47	30.70%
Less than one year	104	69.30%
Family history of Diabetes		
Positive	114	76.00%
Negative	36	24.00%
Type of device		
Syringe	67	44.70%
Pen	83	55.30%

Mostly participants are less than one year diagnosed and use insulin injection more than one year. Majority of participants are used insulin two time par day.

Table 2 and Figure 1 shows the knowledge assessment criteria result shows 15.38% patient has good knowledge, 76.92% have average knowledge only 7.69% patient have poor knowledge.

Table 2. *Knowledge assessment criteria about self- insulin administration.*

Question	**Correct**	**Incorrect**
	Frequency %	Frequency %
Know about diabetes mellitus	100(60.0)	36(40.0)
DM means high blood sugar	122(81.3)	28(18.7)
Know about insulin	88(58.7)	62(41.3)
The insulin ampoule kept in the icebox or Cold place	98(65.0)	52(45.0)
The injection of Insulin is administered immediately after or before taken meal	90(60.0)	60(40.0)
The sites for insulin injection are abdomen, Thigh, Glutei and deltoid	92(61.3)	58(38.7)
Use 450 angle for insulin admonition	71(47.3)	79(52.7)
The gap from the same place to rotate is one thumb	78(52.0)	72(48.0)
Ways of minimizing discomfort during insulin injection are Skin intervention, do not move the needle after insertion, stop re-use of the same site	90(60.0)	60(40.0)
Insulin therapy risks include with low blood sugar, insulin sensitivity, insulin resistance, subcutaneous tissue wastage	96(64.0)	54(36.0)
The use of injection site repetition is intended to minimize discomfort, prevent sub-coetaneous tissues from being wasted	95(63.3)	55(36.7)
Injection massage is used to reduce fast absorption of insulin	99(66.0)	51(34.0)
The advantage of self-administering insulin Are time-saving, inexpensive and easy to take on yourself when traveling	86(57.3)	64(42.7)

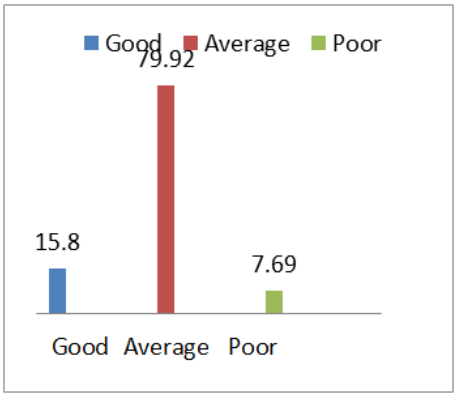

Figure 1. *Knowledge assessment criteria about self- insulin administration.*

According to the set criteria of correct practice >60% and incorrect practice <60%. The result founds 40% patients perform correctly, 60% patients incorrect performed self insulin administration showed in Table 3 and Figure 2.

Table 3. *Observational checklist of patients' practices related to self-insulin administration.*

Question	Correct	Incorrect
	Frequency %	Frequency %
Giving insulin at the right angle, avoiding injection site rubbing after administration of insulin	108(72.0)	42(28.0)
The site of the injections is changed	85(56.7)	65(43.3)
Prevent Navi or scar injection	60(40.0)	90(60.0)
Put the insulin vial at room temperature for at least 15 minutes prior to injection	51(51.0)	99(66.0)
Before injection hand washing done	56(37.3)	94(62.7)
Disinfect injection site	93(62.0)	57(62.0)
Air bubbles Free from syringe before being injected	92(61.3)	58(38.7)
Use of syringe for once	96(64.0)	54(36.0)
Discard of used needles or syringe in a particular needle wastage box	50(33.3)	100(66.7)
Take meal soon after insulin injection	68(45.3)	82(54.7)

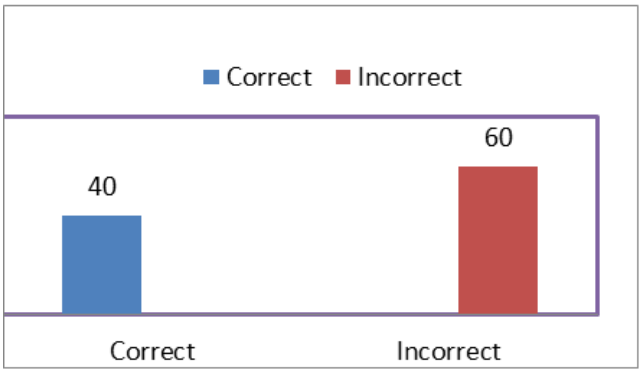

Figure 2. *Observational checklist of patients' practices related to self-insulin administration.*

Discussion

More than halt study samples age more than 46 year. Other countries on the top of all the Middle East and self-insulin administration North Africa Information on the prevalence of diabetes 15%: 27 also (Dieren et al). In the present study that 85.3% patients were married, the supported study by Kuhail 2012 and other studied. On the other hand reported that mostly patient more than 46 year. In this study found the majority of patients had positive diabetic family history, the diagnosed diabetic patients, insulin injected history more than 1 year. According to this study which was conducted by Mahdi et al. described the fifty percent of patients had fall in positive family history of diabetes. In this study shows fifty five percent patients were administered insulin injection twice in a day. Glycemic response of human nutrition and exercise insulin. For most, the diabetics patients to control their blood sugar levels according to the dose and frequency of insulin injections.

Concerning knowledge regarding self-insulin administration

In this study 76.92% showed average knowledge. Another study had also more than half of diabetic patients; they have average knowledge and practices which had improved after nursing intervention. 81.3% patients awarded that the DM

means high blood sugar. This study was declared about self-administration of insulin knowledge in average level. The frequency of information was 68% and 86.7% lower than studies in other countries. . These gaps relate with previous studies due to high percentage of decrease awareness level f education, insufficient training facilities of insulin administration.

Another study finding was showed the limited knowledge on the patient felt difficulty of self-administration of insulin therapy, which was much lower than the studies conducted in Bangalore the percentage revealed from this study 87% and in Nigeria 66.4%. According to Rezaei describe, in this study the lack of knowledge, due to environmental and socioeconomic factors. Furthermore, patients had no information about the administration of insulin therapy. There were also faced the high economic burdens in managing diabetes conflicts [12].

In this study sixty five percent participants were knew that open bottles could be stored in the refrigerator. Other studies conducted in India and Bangalore, considerably different from this study, 72.4% and 78.33% respectively. There are not given proper training, lack of health facilities. This study result shows about self-insulin administration regarding knowledge only 53.84% patient's respondent had good information about self-insulin administration. Other study was conduct in Ellamaiqbal medical collage Lahore patient were respondent had good knowledge 29%. Mostly patients was not clean the area before insulin injection. Cleansing is one of the most important methods for preventing infections. This can be done with cotton pads that are wet with water or wool. Make sure your skin is dry before insulin.

The report found that diabetics had modest awareness about changes in insulin injection and post-workout. The results of this study show a weak link between knowledge of insulin skill level and skill levels. Patients said they felt very bad when they took everything on their own. Although some patients initially fear injections, they can do it successfully after birth and rely on their capabilities. They claim to help them improve their quality of life. You do not have to rely on others for injection. The teachings managed to overcome some myths related to insulin. Most diabetics believe that biomedical waste removal is a new concept and ready to learn more about disposal related to injection.

This study shows were patients aware about the site injection of the insulin on abdomen, thigh, hip and deltoid. 61.3% outcome different from studies in other countries. This research is due to the lack of coordinated health education and the lack of independent administration of insulin by the health professionals. Insufficient information about where insulin should be injected may cause insulin therapy complications. These reports highlight the need for insulin injection during diabetes education at the time of hospital and discharge [13].

Regarding to practice concerning self-insulin administration

The results of this study show that 40% of insulin patients are correct practice. These results are supported in other studies, and Armstrong et al. More than three thirds of this subject is poor practice [14]. This study found that patients had average knowledge and practice concerning insulin administration. Also, the study of diabetes injection habits using insulin revealed worrying procedures in the injection technology method, even after years of injection, using poor technology. In terms of research, self-managed insulin patients believe that self- insulin therapy is tiring and can lead to stigma. Over time, , ignore what's right and what's wrong, and follow normal about self-insulin therapy for encouragement to manage diabetes [15].

This Study showed only 37.3% patients had practice about self-administration of insulin before procedure to related check the expiry dates of insulin, wash your hand, clear air bubbles from the syringe before injection. Also, many other studies that at the same setting of repeated injections help reduce the incidence, ulcers and risk of infection [16]. This study shows the average practice among patients in the independent administration of insulin and a significant relationship between educational status and incompatibility with insulin therapy. This highlights the need for health professionals to teach insulin injections to diabetic patients. The difference from a research point of view is that the time factor has a positive impact on improving practice among patients [17].

Conclusion

Through this study got that point, there is sufficient knowledge about insulin self-administration. But they have incorrect practices to self-administer the insulin at their daily routine habits. They need to simulate on practices the self-administration of insulin by the guidance of expert health care professionals.

Recommendation

Most patients received information from medical staff; there is still a space for messages to get better information through the media. Health Specialists: At the end of each session, every patient should be follow up and training to improve their knowledge and practice's

Ethical Consideration

Approval letter was obtained from Principal, Lahore School of Nursing, and The University of Lahore. Permission letter was received from the Nursing Superintendent of study setting. Data was collected only for research purpose. This study was not harmful for any participants. Participation was completely voluntary. Data was kept confidential.

Conflict of Interest

There was no conflict of interest.

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