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A STUDY TO ASSESS THE ATTITUDE AND PRACTICE OF DIABETIC PATIENT TOWARDS SELF-ADMINISTRATION OF INSULIN IN BASRA CITY, IRAQ

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ABSTRACT

Background: Diabetes Mellitus, the commonest endocrine disorder affects developed as well as developing country. Prevalence of diabetes in Iraq was estimated to be 10.2 per cent in 2010. This estimate exceeded total prevalence in the Middle East and North Africa region (9.3%) and is (nearly) equivalent to that of the USA (10.3%).

Objectives: The aim of the study is assess attitudes and practices related to insulin therapy and to self-administration of insulin among diabetic patients in Basra City.

Methodology: The study was descriptive cross-sectional one, on sample of 100 patients with diabetes mellitus attending outpatient clinic in Basra general Hospital and AL. Mawani Hospital. Structured questionnaire was used for the purpose of data collection, by direct interviewing the patients including information about the socio demographic characteristics, attitudes and practices regarding insulin therapy and self-administration if insulin ; the data collection was carried out from November 2013 to February 2014.

Results: Regarding sex (58%) of the sample were females, (4%) of the sample was younger than 25 years, Majority were married (90%), (12%) were illiterate, (28%) complete primary school, (46%) complete secondary school (14%) had higher educational level, (50%) were unemployed, and (53%) of them had positive family history of diabetes. Most of them (71%) diagnose after developmental of symptoms.

All patients in study consult regularly for their condition, (50%) of them prefer private clinic as facility for consultation. (43%) of them check their blood glucose only when them fell ill. Hospitals considered as source of insulin for (41%) of patients, (66%) prefer the arm as a site of injecting insulin. Only (20%) of them use the insulin syringe for single injection, (4%) of them dispose the used insulin needles in a special container at home, (97%) of them eat some food shortly after insulin. Only (54%) had good practice level of correctly practicing self-administration of insulin. The rate of correct practices among males was higher than the rates among females for the majority of the items, and among those who were recently diagnosed

Conclusions: The patients in this study showed variations in attitudes regarding their illness, insulin therapy and self-administration of insulin. The level of correctly practicing self-administration of insulin was low. Except for the disposal of used insulin needles in a special container at home, the rate of correct practices regarding self-administration of insulin among males was higher than the rates among females for the majority of the items.

Recommendations: Teaching program can be conducted in diabetes clinic regarding insulin and its administration. And hospital and other health institutions should apply responsible steps to facilitate passage for better educational level for patient with insulin self-administration.

KEYWORDS: Attitude, Practice, Diabetic Patient, Insulin, Self – Administration

INTRODUCTION

Diabetes Mellitus, the commonest endocrine disorder affects developed as well as developing country. In 2011, 336 million population have diabetes and estimated to reach 552 million by 2030 globally. Low and middle-income countries have 80% diabetes burden. Diabetes will be the seventh leading cause of death in 2030^[1].

Prevalence of diabetes in Iraq was estimated to be 10.2 per cent in 2010. This estimate exceeded total prevalence in the Middle East and North Africa region (9.3%) and is (nearly) equivalent to that of the USA (10.3%)^[2].

Persons with type 1 diabetes account for 5%-10% of those with diabetes, and with life style modifications, blood sugar control, and insulin injections, they can live long productive live ^[3].

Insulin therapy is a cornerstone of treatment in type 1 diabetes and, in many cases, also critical to the management of type 2 diabetes ^[4]. Insufficient knowledge of insulin contributes to errors in its use that may cause adverse patient outcomes. ^[5].

Diabetes is a complex and chronic condition that requires effective self-management by the individual in partnership with healthcare professionals to prevent both acute and chronic complications ^[6]. Patient education and self-care practices are also important aspects of disease management that help people with diabetes live normal lives^[7]. It is now accepted that the correct place for routine management of the person with diabetes is in primary care with supporting services from specialists^[8]. This study is important because it will help health care providers to recognize the feelings, attitudes, and practices of the patients and provide educational support that patients need when they are on insulin. There is a need for patients to gain awareness, because lack of awareness among many diabetic patients could lead to serious complications. The aim of the study is assess attitudes and practices related to insulin therapy and to self-administration of insulin among diabetic patients in Basra City.

METHODOLOGY

- **Design of the Study:** Descriptive, Cross Sectional Study.
- **Setting of the Study:** AL- Basra General Hospital and AL_Mawani Hospital In Basra City.
- **The Sample of the Study:** Convenient sample of 100 diabetic patients attending outpatient clinic, of both male and female were selected. The sample was selected according to special criteria as patients being on insulin therapy. Structured questionnaire was used for the purpose of data collection; the data collection was carried out from November 2013 to February 2014.

The questionnaire that used for direct interviewing the patients by 2 senior nursing students aiming to reduce the anxiety of the patients during the interview. The questionnaire consisted of three parts. First part consisted of questions regarding the socio demographic characteristics of the patients including sex, age, marital status, education, occupation, and family history of diabetes. Second part consisted of questions regarding duration of the disease, how it was diagnosed,

consultation facilities, and information about blood glucose testing. The third part of the questionnaire aimed to gather information regarding insulin administration, fears and problems related to insulin self-administration and the correct practices related to self-administration of insulin. Poor practice level was considered if the participant practice less than (50% of correct practices), from (50% to 69% of correct practices) was considered as fair practice level, and if the participant practice (70% and more of correct practices) then the score considered good.

- **Statistical Analysis:** Analysis was made by using SPSS version 16, data was expressed in (frequency and percentage). Chi-squared test was used to examine the association between the groups and a probability of less than 0.05 was considered to be statistically significant.

RESULTS

Table (1): showed that (58%) of the sample were females and (42%) were males. Regarding age (4%) of the sample was younger than 25 years, (54%) of them between (25-49) years of age and (42%) were above 50 years of age. Majority were married (90%), regarding the educational level of the respondents (12%) of them were illiterate, (28%) complete primary school, (46%) complete secondary school and only (14%) had higher educational level (46%), (50%) were unemployed, and (53%) of them had positive family history of diabetes.

Table 1: Socio- Demographic Characteristics of the Participants

Variable		No.	%
Sex	Male	42	42
	Female	58	58
Age	<25	4	4
	25-49	54	54
	50+	42	42
Marital status	Single	10	10
	Married	90	90
Education	Illiterate	12	12
	Primary	28	28
	Secondary	46	46
	Higher education	14	14
Occupation	Unemployed	50	50
	Self employed	28	28
	Governmental employed	16	16
	Retired	6	6
Family history of diabetes	Positive	53	53
	Negative	47	47
Total		100	100

Table (2): showed that (35%) of the patients were diagnosed as diabetic for more ten years and over. And (58%) start taking insulin for less than 5 years. Most of them (71%) diagnose after developmental of symptoms and (29%) of them diagnosed accidentally.

All patients in study consult regularly for their condition, (50%) of them prefer private clinic as facility for consultation. Majority (98%) of them give advices for newly diagnosed patients with diabetes in their family. All the participants received nutritional advices regarding diabetes and (75%) of them follow these advices.

Table 2: Participant's Attitudes toward their Illness

Question	Answer	No.	%
When you diagnosed with diabetes ?	< 5 years	35	35
	5-9 years	30	30
	10+years	35	35
When you start to take insulin therapy?	< 5 years	58	58
	5-9 years	28	28
	10+years	14	14
How your disease was diagnosed ?	Accidentally	29	29
	After development of symptoms	71	71
Do you consult regularly for your condition ?	Yes	100	100
	No	0	0
What health facility do you prefer ?	Private clinic	50	50
	General hospital	25	25
	Diabetic clinic	10	10
	Health center	15	15
Do you give advices for newly diagnosed patients with diabetes in your family	Yes	98	98
	No	2	2
Have you received any nutritional advices regarding diabetes ?	Yes	100	100
	No	0	0
Do you follow these advices ?	Yes	75	75
	No	25	25
Total		100	100

Table(3): showed that (44%) of studied patients do not have glucometer, and (43%) of them check their blood glucose only when they fell ill, the majority of them (71.4%) were trained by pharmacist, (10.4%) of them trained by a nurse, other diabetic patients act as source of training for (3.6%) of the participants.

Table 3: Practice of Blood Sugar Measurement

Question	Answer	No.	%
Do you check your blood glucose at you home?	No, I have no gluco meter	44	44
	Yes, Only when I fell ill	43	43
	Yes, Regularly	13	13
	Total	100	100
Who trained you on measuring blood sugar?	Doctor	3	5.4
	Nurse	6	10.7
	Pharmacists	40	71.4
	Other diabetic patients	2	3.6
	More than one source	5	8.9
Total		56	100

Table (4): showed that (59%) of diabetes patients uses other hypoglycemic medication with insulin, (43%) got their insulin from private pharmacy hospitals considered as source of insulin for (41%) of patients, (90%) use insulin on regular basis, (98%) of them keep their insulin in refrigerator, (66%) prefer the arm as a site of injecting insulin.

Regarding problems facing the participants (38%) of them faced no problem, (25%) faced redness and itching at site of insulin injection, (40%) of them have no fear when they know need insulin therapy, (25%) of them fear of insulin itself, while (18%) of them fear of pain and (17%) fear of hypoglycemia.

Table 4: Respondent's Practices and Attitudes toward Insulin Therapy

Question	Answer	No.	%
Do you use other hypoglycemic medications with insulin?	Yes	59	59
	No	41	41
From where you get your insulin?	Hospital	41	41
	Health center	14	14
	Private Pharmacy	43	43
	Other sources	2	2
	More than one source	5	8.9
When do you use your insulin therapy ?	On regular basis	90	90
	When I fell unwell	10	10
Where do you keep your insulin ?	In refrigerator	98	98
	On the shelf	2	2
At what site you prefer to inject yourself ?	Arm	66	66
	Thigh	25	25
	Abdomen	9	9
What are the main problems you faced at the site of insulin injection?	No problem	38	38
	Redness and itching	25	25
	Scar	23	23
	More than one problem	14	14
What type of fears you faced when you knew you need insulin therapy?	No fear	40	40
	Fear of insulin itself	25	25
	Fear of pain	18	18
	Fear of hypoglycemia	17	17
Total		100	100

Only (50%) of participants check the expire date of insulin, all participants do change the site of injection frequently, (97%) of them do not inject insulin on the scar or nevi, (55%) kept the insulin vial at room temperature at least 15 minute before been injected, (78%) wash their hands with soap and water before handling injection devices, (53%) of them sterilized the site of injection, (92%) remove air bubbles from insulin syringe before injecting insulin. Only (20%) of them use the insulin syringe for single injection, (4%) of them dispose the used insulin needles in a special container at home, (97%) of them eat some food shortly after insulin injection as shown in table 5.

Table 5: Participant's Correct Practices Related to Self-Administration of Insulin (n=100)

Practices	No.	%
Checking the expire date of insulin	50	50
Changing the site of injections frequently	100	100
The site of injection should not be on scar or nevi	97	97
The insulin vial kept at room temperature at least for 15 minutes before injection	55	55
Washing hands with soap and water before handling injection devices	78	78
Sterilization of the site of injection	53	53
Removing air bubbles from the insulin syringe before injecting	92	92
Syringe should be used for one time only	20	20
Disposal of used insulin needles in a special container at home	4	4
Eating some food shortly after insulin injection	97	97

Comparing the rates of correct practices between males and females, it was found that except for practice of Disposal of used insulin needles in a special container at home, the rate of correct practices among males was higher than the rates among females for the majority of the items.

And the differences was statistically higher among males regarding the followings, keeping the insulin vial at room temperature at least for 15 minutes before injection (66.7%), Washing hands with soap and water before handling

injection devices (88.1%), Sterilization of the site of injection (66.7%), and Syringe been used for one time only (31%), as shown in table 6.

Table 6: Participant's Correct Practices Related to Self-Administration of Insulin According to sex (n=100)

Correct Practices	Male		Female		Chi-Square	P Value
	No.	%	No.	%		
Checking the expire date of insulin	21	50	29	50	0.000	1.000
Changing the site of injections frequently	42	100	58	100	-	-
The site of injection should not be on scar or nevi	42	100	55	94.8	2.240	0.135
The insulin vial kept at room temperature at least for 15 minutes before injection	28	66.7	27	46.6	3.982	<u>0.046</u>
Washing hands with soap and water before handling injection devices	37	88.1	41	70.7	4.301	<u>0.038</u>
Sterilization of the site of injection	28	66.7	25	43.1	5.430	<u>0.020</u>
Removing air bubbles from the insulin syringe before injecting	40	95.2	52	89.7	1.032	0.310
Syringe should be used for one time only	13	31	7	12.1	5.425	<u>0.020</u>
Disposal of used insulin needles in a special container at home	1	2.4	3	5.2	0.949	0.482
Eating some food shortly after insulin injection	41	97.6	56	96.6	0.095	0.757

Table 7 showed that (19%) of the participants had poor level of correct practices regarding self-administration of insulin, (27%) had fair level and (54%) had good practice level.

Table 7: Score Level of Participant's Correct Practices Related to Self-Administration of Insulin

Score Level	No.	%
Poor (<50%)	19	19
Fair (50-69%)	27	27
Good (70% and over)	54	54
Total	100	100

The level of correct practices related to self-administration of insulin was statistically lower for those who were receiving insulin for more than 10 years than the other groups as shown in table 8.

Table 8: Score Level of Participant's Correct Practices Related to Self-Administration of Insulin by the Duration of Insulin Therapy

Duration	Poor		Fair		Good		Chi-Square	P Value
	No.	%	No.	%	No.	%		
< 5 years	11	19	15	25.9	32	55.2	14.416	0.006
5-9 years	1	3.6	8	28.6	19	67.9		
10+ years	7	50	4	28.6	3	21.4		
Total	19	19	27	27	54	54		

DISCUSSIONS

Living with diabetes is not easy, and achievement of glycaemic control requires from the patient to undertake self-care behaviours with persistent ability to maintain attention and alertness over prolonged periods of time. The majority of patients do not achieve glycaemic goals because of barriers related to insulin dose adjustment, self-monitoring of blood

glucose and fear of hypoglycaemia^[9].

The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men^[10]. Results in this study showed that the majority of patients who self-insulin administration were females (58%), this study was slightly similar to Bahrain's study where the female are (60.6%)^[11]. Regarding age the majority (54%) of them between (25-49) years, this results was different from India's study where those aged less than 50 years represent (26%)^[12]; the majority of participant of our study (90%) were married, this study was similar to Jordan study (91%) were married^[13]. In our study the majority (47%) had secondary school education, while in Kesehatan (46%) were also secondary school^[14]. In this study (53%) had positive family history of diabetes, this was lower than what was found in cross sectional study on 403 diabetic patients, 202 Malaysian and 201 from the UAE, where more than three quarter of Malaysian respondents (77.2%) were had a family history of diabetes compared to the UAE counterpart (64.7%)^[15].

In this study (35%) of the participants had history of diabetic for less than 5 years, similar to the result of study involving 59 diabetic patient in Kasturba Hospital in India^[16], and lower than what was reported in a study of 199 diabetic patient attending the outpatient clinics of Aga Khan University Hospital, Karachi, Pakistan^[17].

The difference rate of those who receive insulin therapy for the group of less than 5 years was higher than those who had history of diabetes this could be explained by that some of the patient were previously of type 2 diabetes mellitus and after period of time they became in need of insulin this agree with statement of American Diabetes Association the injection of insulin may be needed by patients with type 2 diabetes for intermittent or continuous glyceamic control^[12]. In this study most of patient (71%) diagnose after developmental of symptoms, while in United Arab Emirates 69% were diagnosed after developmental of symptoms^[15].

In our study (44%) of patients do not have glucometer, this was higher than (31%) that was found among 100 diabetic patients visiting Diabetes Care Unit in Pakistan^[18].

In present study (59%) of patients were on both insulin and oral hypoglycemic drugs, this results was different from Jordan study just (18%) of them were on both insulin and oral hypoglycemic drugs^[13]. The majority (66%) of participant preferred arm as injection site followed by upper thighs, then the abdomen. Absorption is fastest with injection in the abdomen, followed by the arms, thighs, and buttocks^[19]. Redness and itching at site of insulin injection was reported by (25%) by the patients, while in Finland (46%) had a redness at site of injection^[20]. In our study (40%) of participant faced no fear when they knew their need insulin therapy while the least fear was of hypoglycemia as reported by (17%) of the patients while in Spain (53.3%) of the sample fear from hypoglycemia^[21].

Regarding the percentage of procedures related to checking the expire dates of insulin, washing hands, removing air bubbles from the syringe before injection were higher than what was found for the pre test and lower than that for the post test after implementation individual planned teaching on self-administration of insulin for patients with diabetes mellitus in Bangalore^[22].

In the present study all participant changing the site of injections frequently, helping in reducing irritation, bruising, and risk of infection, it is also critical for lipohypertrophy prevention, a complication reported in nearly 50% of individuals using insulin who fail to rotate injection sites^[23].

Manufacturers of disposable syringes and pen needles recommend that they only be used once. One potential issue, which arises with reuse of syringes or needles, is the inability to guarantee sterility^[24]. We identified a large

percentage of the participants reuse the disposable syringe, this unhealthy behavior need to be changed by education to prevent complications. Proper disposal of used syringes and needles is important to the prevention of accidently injuries from discarded needles, We identified a large percentage of patients who inappropriately disposed of used insulin needles as only (4%) of the participants dispose the used insulin needles in a special container at home, much lower than the result for convenience sample of 50 patients from two local independent pharmacies, a private endocrinology practice, and a pharmacy services clinic in an ambulatory internal medicine clinic at an academic medical center in Richmond, Virginia (44%) dispose the used insulin needles in a special container at home ^[25].

In present study (54%) of participant had good practice about insulin self-administration, (27%) fair and (19%) poor level. These results were better than the result of study for the purpose of assessment of the practice regarding insulin self-administration on sample of 60 diabetic patients in India revealed that (72%) of the subjects had poor practice; (28%) of them had fair practice, and none of them had good practice^[26]. In our study the level of correct practices related to self-administration of insulin was statistically lower for those who were receiving insulin for more than 10 years than the other group this could be explained by that they consider insulin therapy as part of their routine activity that not need so much consideration.

CONCLUSIONS

- The patients in this study show variations in attitudes regarding their illness, insulin therapy and self-administration of insulin.
- The level of correctly practicing self-administration of insulin was low
- The main defect in correctly practicing self-administration of insulin were in the aspect of reusing the syringe and the disposal of used insulin needles in a special container at home.
- Except for the disposal of used insulin needles in a special container at home, the rate of correct practices regarding self-administration of insulin among males was higher than the rates among females for the majority of the items
- The level of correct practices related to self-administration of insulin was statistically lower for those who were receiving insulin for more than 10 years than the other groups.

RECOMMENDATIONS

- Educating program can be conducted in the outpatient clinic and primary health care centers regarding insulin and its administration. A booklet could be used with illustrations given to the patients including information covering aspects of diabetes, insulin therapy and it's administration.
- There is need for future study on larger sample of patients to be able to generalize the results to the larger population.

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