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BARRIERS TO INITIATE INSULIN THERAPY AND ITS ASSOCIATION WITH DURATION OF DIABETES MELITIS AND DEMOGRAPHIC FACTORS IN UNCONTROLLED TYPE 2 DIABETIC PATIENTS: A CROSS SECTIONAL STUDY

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ABSTRACT

Objectives: *To determine different barriers to initiate insulin therapy and association of duration of diabetes mellitus and demographic factors with barriers in initiation of insulin therapy in Uncontrolled type 2 diabetic patients.*

Materials and Methods: *We conducted a cross sectional study conducted among patients with type 2 diabetic patients presenting to endocrinology outpatient clinics in two Tertiary care hospitals of Peshawar ie. Khyber teaching hospital and hayatabad medical complex Peshawar. The duration of study was 03 months after approval of synopsis. The sample size was 257.The study population was selected by consecutive non probability sampling technique. The data was collected by pre designed questionnaire. All the included patients were interviewed on pre designed questionnaire. Data was processed in SPSS version 22.*

Results: *In study we found that patients face different barriers to initiate insulin therapy. In our study, side effects of insulin was the barrier for 97(37.7%) of the patient, difficulty in carrying insulin was barrier for 128(49.8%) patients , dose adjustment of insulin was barrier for 90(35%) patients, fear if insulin needle was barrier for 89 (34.6%) patients, self administration of insulin was barrier for 98(38.1%) patients , affordability of insulin was barrier accounting for 114(44%) patients , frightened about insulin therapy by someone was barrier for116 (45.1%) patients. The association between economic status of patient and the barrier that they are frightened by someone was statistically significant. Chi-square test was also run between duration of diabetes with all barriers in which one association was found nearly significant i.e. the association of duration of diabetes with difficulty in carrying insulin with the p value of 0.064.*

Conclusion: *The most common barrier in insulin therapy initiation of patients in the study was difficulty in carrying insulin. We found that there is near to significant association between duration of diabetes and difficulty in carrying insulin. There is significant association between economic status of patient and frightened by someone. The lower the economic status the more frightened about Insulin use.*

Key words: *Uncontrolled type 2 diabetes, Barriers, Insulin therapy*

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INTRODUCTION

Diabetes mellitus is a set of metabolic diseases marked by chronic hyperglycemia. It is due to defects in insulin secretion, insulin action, or both. Metabolic

abnormalities reflects to the role of insulin as an anabolic hormone. The causes of metabolic abnormalities include Low levels of insulin to achieve enough response and/or insulin resistance of target tissues, mainly skeletal muscles, adipose tissue, and to a lesser extent, liver, at the level of insulin receptors, signal transduction system, and/or effectors enzymes or genes[1]. The management of Type 2 Diabetes Mellitus is really challenging. Insulin therapy is the best medical treatment for patients with type 2[2]. According to American Diabetes Association (ADA), insulin is the most expensive diabetes treatment[3]. There are certain barriers that exist to initiate insulin therapy in type 2 diabetes patients. A study conducted in Saudi Arabia showed multiple barriers for insulin therapy. Limited staff for diabetes education, low patient education, patient refusal, exaggerated fears of insulin side effects, and inadequate consultation time were the main barriers to acceptance and prescription of insulin[4]. A study conducted in Malaysia revealed that the participants' acceptance of insulin was affected by their care and worry about diabetes and insulin[5]. A study in Africa showed different barriers towards insulin therapy, which included fear of injection, pain, insulin injection needs help from others, fear of hypoglycemia and embarrassment[6]. A study conducted in Tores Strait island showed that a group of Torres Strait Islanders who were at high risk with poorly controlled diabetes and also didn't take insulin were of mostly negative perceptions of insulin which could be important barriers to better glycemic control[7]. One of the study shows that treatment in type 2 diabetic patients is a global issue that hinders achievement of glycaemic control, particularly in patients needing insulin therapy. Reasons for it are the patients' misconceptions about insulin therapy, affordability, and lack of time, resources and/or motivation to optimize use of insulin[8]. Type 2 DM is more prevalent in Asian countries as compared to Western countries .This is due to rapid urbanization, poor living standards, and inadequate healthcare facilities, and putting a substantial cost burden on patients. Different studies conducted in Pakistan shows that patients have misconceptions about insulin therapy which is one of the major barriers to early initiation of therapy. These perceptions prevail more in areas where patients have poor socioeconomic background and have low education levels which ultimately results in improper education about the long term benefits of insulin therapy[9].

The number of barriers responsible for initiating insulin therapy in type 2 Patients is increasing. This study assessed and identified myths, barriers and concerns regarding initiation of insulin therapy in patients with Type 2 diabetes at the two tertiary care hospitals in Peshawar.

To determine different barriers to initiate insulin therapy and association of duration of diabetes mellitus and demographic factors with barriers in initiation of insulin therapy in Uncontrolled type 2 diabetic patients.

MATERIALS AND METHODS

This cross sectional study was conducted on patients with type 2 diabetic patients presenting to endocrinology out patient clinics in Tertiary care hospitals of Peshawar. The duration of study was 03 months after approval of synopsis. The sample size was calculated as 257 using WHO sample size calculator putting prevalence of 21% from a study[10]. The study population was selected by consecutive non probability sampling technique. The data was collected by pre designed questionnaire. All the diabetic type 2 patients with uncontrolled diabetes were selected. All patients with gestational diabetes and who were not giving consent will be excluded from study. After approval from Ethical Committee of Khyber Medical College, the data was collected using self administered questionnaire. The purpose and benefits of the study was explained to the patients, they were assured that this survey would be purely used for research publication and their confidentiality will be maintained. The data was collected by the researcher through face to face interview from the study participants. After data collection, data was processed in SPSS version 22.Descriptive analysis was done for demographic features and results presented as mean+/- standard deviation for quantitative variables like age of the patient and duration of diabetes and qualitative variables like barriers were presented in bar charts. In order to compare the responses, statistical tests were performed. The results were presented in form of tables and graphs.

RESULT

The study includes 257 patients with uncontrolled type 2 diabetes in which 162 (63%) were females while 9(37%) were males. Age of patients was

between 19 to 90 with mean age of 53.19 +-14.21. Mean duration of diabetes was 9.9 years with standard deviation of 9. 645. In the study 138(53.7%) patients were illiterate, 17 (6.6%) were educated till primary level, 23(8.9%) were educated till secondary level while 79(30.7%) had done there graduation. Mean BMI of the patients was 27.8 with the standard deviation of 5.11. In the study 84 (32.7%) patients were of low economic status,144(56%) patients were of middle while 29(11.3%) patients were of high economic status.

In our study we found that patients face different barriers to initiate insulin therapy. Side effects of insulin was barrier for 97(37.7%) patients, difficulty in carrying insulin was for 128(49.8%) patients , dose adjustment of insulin was for 90(35%) patients , fear of insulin needle was for 89(34.6%) patients, self administration of insulin was for 98(38.1%) patients, affordability of insulin was for 114(44%) patients and frightened about insulin therapy by someone was barrier for 116(45.1%) patients..A bar chart showing all barriers is given in figure 1 below.

Table 1 shows descriptive statistics of few demographic variables of the study population.

Chi-square tests were run to find out association between demographic factors including age of patient , weight of patient , economic status of patient, weight of patient with the barriers to initiate insulin therapy. Out of which only one association was statistically significant while others were not significant. The association of age of patient and affordability of insulin was not significant with the p value of 0.79 (table 2). The association between economic status of patient and the barrier that they are frightened by someone is significant with the p value of 0.019.

DISCUSSION

This mainly focused on the barriers to start Insulin therapy in type 2 diabetes mellitus, which is indeed an emerging public health issue. Different barriers were found out and associations of barriers

Table 1: Demographic variables descriptive statistics

Demographic variables	Frequency	Percentages
Gender		
Male	95	37%
Female	162	63%
Education level		
Illiterate	138	53.7%
Primary education	17	6.6%
Secondary education	23	8.9%
Graduate and above	79	30.7%
Economic status		
High	29	11.3%
Middle	144	56%
Low	84	32.7%

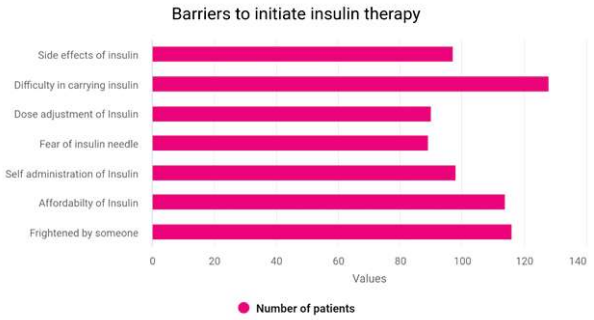

Fig 1: Barriers to initiate insuline therapy in uncontrolled type 2 patients

Table 2: Table 2:Association by Chi-Square Tests

Associations		Frequency	Percentage	P value
Age of patient*affordability of insulin	Less than 25 years	4	3.5%	.079
	26-50 years	58	50.8%	
	More than 50 years	52	45.6%	
Weight of patient*difficulty in carrying insulin	Less than 70kg	58	45.3%	.072
	More than 70 kg	70	54.7%	
Economic status of patient*frightened by someone	High	20	17.2%	.019
	Middle	33	28.4%	
	Low	63	54.3%	
Duration of diabetes*difficulty in carrying insulin	Less than 20 years	116	90.6%	0.64
	21-40years	9	7.03%	
	41- 60 years	3	2.3%	

with various demographic and duration of diabetes mellitus was assessed. A study conducted in Lahore shows among those patients who are not using Insulin, about 71.4% expressed their fear of taking Insulin because of the pain from injections; 83.4% felt that self-administration of Insulin is a barrier; 61.9% felt that cost of Insulin therapy is a huge barrier[11]. While in our study, 34.6% felt that fear of needle is barrier, 38.1% felt self administration of insulin as the barrier and for 44% participants , affordability of insulin was the barrier. In a study conducted in Baghdad, nearly half of the sample showed that they refused insulin therapy due to fear of side effects and complications, as more than half of patients agreed that insulin increase the risk for hypoglycemia, weight gain and one third thought it causes health deterioration[12]. While in our study 37.7% participants reported side effects of insulin as barrier for them.

In the study conducted in East Nile locality Khartoum, significant statistical difference were evident between patient with insulin inertia and their education level[13]. While in our study only four associations were significant, there is significant association between duration of diabetes and difficulty in carrying insulin. There is significant association between economic status of patient and frightened by someone.

A study in Singapore shows that there were concerns about insulin being a lifelong treatment, physical fear of insulin injection. Two additional themes influenced adherence to insulin therapy. These were socioeconomic concerns, and concerns about side effects of insulin[14].

A descriptive study was conducted on 214 patients referred to the Diabetes Center of Yazd University of Medical Sciences in 2015 in which the most common reason for refusing insulin therapy was expecting a new method of diabetes treatment (54.7%), followed by requiring someone else to administer the injection (19.2%), fear of needles, cost, traveling (18.7%), and stress/emotional problems (18.2%)[15]. While in our study the most common barrier was difficulty in carrying insulin(49.8%).

In a study conducted in Iran showed that Insulin refusal was common. 77% of participant reported being unwilling to take insulin if prescribed. Fear of injection is an important cause for insulin refusal among patients[16]. While in our study 34.6% participants claim that for them, fear of needle is the barrier to initiate insulin.

Another study showed the main patient-related barriers were fear of pain and injection (n = 18), concerns about side effects of insulin (n = 12), perception that insulin indicated end stage of diabetes (n = 11), inconvenience (n = 10), difficulty in insulin administration (n = 7), punishment (n = 7) and stigma and discrimination (n = 7)[17].

Some of the limitations in our study was small sample size, study in the hospital setups and less duration of the study.

CONCLUSION

The most common barrier in insulin therapy initiation was difficulty in carrying and affordability of insulin. We found that there is significant association between duration of diabetes and difficulty in carrying insulin. There is significant association between economic status of patient and frightened by someone.

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