

PSYCHOLOGICAL INSULIN RESISTANCE IN PATIENTS WITH DIABETES MELLITUS; A CROSS-SECTIONAL STUDY CONDUCTED IN HAYATABAD MEDICAL COMPLEX HOSPITAL PESHAWAR PAKISTAN

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Abstract

Objective: To determine psychological insulin resistance (PIR) in patients with diabetes and find out different factors leading to PIR.

Methodology: A descriptive cross-sectional study was carried out in Hayatabad Medical Complex (HMC) hospital Peshawar Pakistan. This particular study enrolls 200 diabetic patients visiting HMC hospital Peshawar from February 2016 to December 2016. All the patients were guide verbally about the project and if he/she is willing to participate in the survey, proper consent was signed from them. A detailed questionnaire for data collection and interviewing of patients was designed which consist of two parts. The first part had demographic section which includes name, gender, address, type of diabetes and literacy rate while the second part includes different factors associated with PIR.

Results: Out of 200 diabetic patients, 43% were males and 57% were female. The mean duration of diabetes was more than 5 years with the mean age of the patients were 47 years. Most of the patient were illiterate (71%) and belonged to rural locality (76%). PIR was prevalent in our patients (73%). The major factor leading to PIR was non-affordability (54%). Other factors found were injection phobias (13.5%), lack of family support (9%) and side effect (8.5%). Negative beliefs, forgetting the dose, and lack of proper counselling on the part of physician were also found that lead to PIR in these patients.

Conclusion: Psychological insulin resistance has significantly increased and affect more than two- third of our patients. Several factors lead to this problem like non-affordability injection phobias and lack of proper counselling prior to insulin therapy.

Key Words: Psychological insulin resistance, Diabetes Mellitus, Insulin therapy

INTRODUCTION

World today faces diabetes as a major health issue and its incidence is on rise particularly in low income parts of the world¹. Thus Asia and Africa may have 2-3 times higher rates today². Pakistan is a South Asian country with a population of 207.7 million people³ and ranks to be at 7th position among the most prevalent countries i.e. prevalence is about 10%⁴. After Sindh province which has a prevalence of (13.9%), our province Khyber Pakhtunkhwa ranks 2nd with a prevalence which is 11.1%⁵. The situation will become alarming by the year 2025 when the current figure of 6.9 million will be nearly double^{6,7}. As our health budget is too limited to cope with this burden, many challenges

will be faced to treat diabetes in Pakistan.

The land mark trials like diabetes control and complications trial (DCCT) Epidemiology of diabetes intervention and complications (EDIC) and the UKPDS trials have showed that optimal glycemic control can prevent or minimize the complications of Diabetes. More recent trials like Advance and Accord trials also confirmed the importance of glycemic control⁸.

The optimal management of diabetes is complex and challenging. However with the discovery of insulin in 1921 by Banting, Best, MacLeod and Collip and with the recent advances in insulin, the dream of optimal glycemic control has become a reality⁹.

Several myths and misbeliefs collectively offer resistance to insulin therapy. Also, in the Indian subcontinent patient commonly do selective use of prescribed drugs and avoid drugs if they do not get prompt relief¹⁰⁻¹². Physicians are also reluctant to initiate or intensify; insulin therapy¹³⁻¹⁶. Similarly, our patients also offer resistance and refusal. The term psychological insulin resistance (PIR) was coined in 1994 to describe this phenomenon¹⁷. PIR in our patients, found in a local study is significantly high¹⁸. It results in delay in starting the insulin therapy and hence prolonging the duration

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of hyperglycemia. Several factors that might be related to physician as well as patient related contribute to PIR. This study was designed to find the frequency of PIR in our setup and factors associated with PIR. Thus, the findings of this study will help our practitioners to identify and address these issues while planning for insulin therapy and hence improve compliance to insulin in our patients.

MATERIALS AND METHODS

The place of this study was the Diabetes and Endocrinology Department of Hayatabad Medical Complex Peshawar (HMC) which is a tertiary care center in Khyber Pakhtunkhwa (KPK) Province. The study was reviewed by the Ethical Committee of this hospital and approval was granted. In February 2016 it was started and completed in Dec 2016. All patient with type 2 and type 1 age between 15-75 years were included. These patients were selected from outpatients as well as in-patient departments of Endocrinology Unit HMC- Patients with acute diabetes emergencies like diabetic ketoacidosis, hyperosmolar coma, and gestational diabetes were not included in the study. A total of 200 patients, who offered willing informed consent, were enrolled. The sample size was calculated using WHO sample size calculator using 95% confidence interval and 7% margin of error. The sampling technique was non-probability consecutive sampling. After addressing their acute complaints all the patients were interviewed in a relaxed calm environment. Details like address, educational status, age, occupation gender etc. were noted. Many patients were not willing or could not exactly answer their monthly income so it was not included in the proforma. Accu-chek Glucometer (Roche, Switzerland) was used to record the random blood sugar.

All aspects of PIR were asked in patient's mother language usually Pashto or Urdu. Patients were asked about symptoms of hypoglycemia or low blood glucose if any recorded at home. All misbeliefs, injections phobias, pains, bleeding cost, non-availability and non-affordability of insulin were asked in detail. Also issues in insulin administration like storage of insulin, exposure of injection sites, person available to inject, and visual impairments impending proper dosages were also asked. All these details were recorded on the clinical proforma designed for this study.

RESULTS

200 patients were included in this study. The demographic features are shown in table 1. The age ranged from 15 to 75 with mean age of 47 years while the mean duration of DM was found to be more than 5 years. In total 200 patients, 86 (42.5%) were males while 114 (57.5%) were females. 152 (76%) belongs to rural areas while 48 (24%) were from the urban areas. The frequency of type 1 and type 2 diabetes were 18 (9%) and 182 (91%) respectively. 58 (29%) patients were

educated while the rest 142 (71%) were illiterate.

Out of 200 patients, psychological insulin resistance was observed in 146 (73%) patients. Different factors were found to play role in PIR, with different percentages. The major factor for insulin noncompliance was found to be non-affordability. Thus 54% people narrated that they were unable to buy or afford insulin. The next factor it, was the fear and phobias associated with insulin injection like pain, bleeding etc. (13.5%). Some people had negative beliefs that insulin is started at later and severe stages of DM and it may cause accumulation of fluids in abdomen with abdominal site injections (3.5%). Different factors of psychological insulin resistance are show in table 2 while graphically shown in figure 1.

DISCUSSION

This research was designed to find different factors and their frequency associated with psychological insulin resistance in our patients. After research, we found this to be one of the few studies in our country concerning this issue in our patients with poor glycemic profile. It was not surprising that most of our patients had uncontrolled diabetes and marked osmotic symptoms, but still they offered resistance to start insulin therapy. Our 73% had PIR with the following reasons mentioned in table 2. A recent study done in Gujrat by Syed Muhammad Ali shah showed PIR to be 51.25%¹⁹. The difference can be explained mainly that most of our patients were uneducated (71.1%) and mostly from rural areas (76%) . In more than half of the patients in Malaysia i.e. (51%), showed resistance to insulin therapy²⁰. Similar finding was also reported in type 2 DM patients in Dawn study²¹.

The main reason against insulin therapy in our patients was the cost. 54% of our patient were not able to afford therapy that was life long, needing syringe to use and issues with refrigeration. Most of our patients were registered with insulin back at HMC hospital Peshawar for free insulin. This was also reported by Riaz et al¹⁸, that most of the patients in Lahore depend upon the government hospital to get insulin free of cost. As

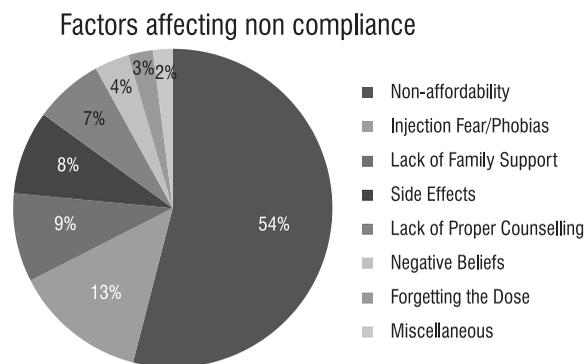


Figure 1: Distribution of different factors affecting non-compliance in our study

Table 1. Demographics of study population (n=200)

Variables		Frequency	Percentage
Gender	Males	86	42.5%
	Females	114	57.5%
Locality	Rural	152	76%
	Urban	48	24%
DM type	DM 1	18	09%
	DM 2	182	91%
Literacy	Educated	58	29%
	Uneducated	142	71%

Table 2: Factors leading to non-adherence

Factors	Percentage
Non-affordability	54%
Injection Fear/Phobias	13.5%
Lack of Family Support	9%
Side Effects	8.5%
Lack of Proper Counselling	7%
Negative Beliefs	3.5%
Forgetting the Dose	2.5%
Miscellaneous	2%

the KPK is war affected province, despite dedicated efforts of the government at times fails to provide free insulin to our patients. Thus, non-affordability is a major etiology of PIR in our setup.

The level of patient education was not a reliable etiological factor. The results are conflicting in this regard. In our study, 29% of our patients were literate while 71% were totally uneducated. Nadia et al found 47% of their patients to be illiterate²². Similarly Imtiaz et al also found negative impact of illiteracy on drug compliance²³. Educated patients were found with clear concepts about insulin therapy. However international studies have shown different results i.e. some studies found no such associations between literacy and insulin compliance²⁴. A study conducted in UK has shown that patients with lower level of education have good compliance²⁵. It may be the reason of their greater trust in their physicians²⁶.

Despite many advances and improvements in insulin therapy, several myths and misbeliefs surround adherence to it. These attitude and beliefs have been explored in studies world over²⁷. Dilek G et al found in their cohort, that negative beliefs about insulin therapy rather than injection fear was the reason for poor adherence²⁸. Our patients have the common fear of getting used to medication. Many of the patients think that insulin may damage their organs or it is started at late

diabetes lab stages DM. In 86% of case PIR beside other factors, the risk of depending was the main concern of our patients. The other misbelief was to stop or decrease insulin therapy when blood sugar gets controlled or say "cured" Few patients with abdominal injection thought that it will accumulate fluid in their abdomen. These wrong perceptions and misconception of patients can be corrected with proper doctor patient communication. This communication is lacking in heavy rush of our OPD_s Naheed et al found that 50% of patient with DM never receive any education about their diabetes care and control^{28, 29}.

CONCLUSION

Psychological insulin resistance has significantly increased and affect more than two- third of our patients. Several factors lead to this problem like non-affordability, injection phobias and lack of proper counselling prior to insulin therapy.

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