



## A STUDY OF BARRIERS IN STARTING INSULIN TO DIABETIC PATIENTS IN A TERTIARY HOSPITAL IN CENTRAL INDIA.

### General Medicine

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### ABSTRACT

**Introduction:** Diabetic patients being on rise, a significant amount of patients now need insulin to manage their blood sugars and hence aim of this study was to study the barriers in starting insulin to patients with diabetes.

**Methods:** This hospital based descriptive observational study was conducted on 104 patients of diabetes in the department of general medicine in a tertiary hospital in central India. Participants were randomly selected, and then they completed the insulin noncompliance questionnaire (20 questions).

**Results:** Out of the total 292 patients studied, the most common reason for insulin refusal was fear of needles (64.7%) followed by belief in alternate medicine for insulin control (20%), followed by requiring someone else to administer the injection (19.2%), cost (18.7%).

**Conclusion:** In India due to widespread propaganda of alternate medicine, the trust of patients in modern medicine has decreased. Therefore, targeted educational interventions can help minimize these problems and improve patients' outcomes.

### KEYWORDS

diabetic, insulin

#### INTRODUCTION-

Globally, an estimated 422 million adults are living with diabetes, according to the latest 2016 data from the World Health Organization (WHO).<sup>[1]</sup> Diabetes prevalence is increasing rapidly; previous 2013 estimates from the International Diabetes Federation put the number at 381 million people having diabetes.<sup>[2]</sup> The number is projected to almost double by 2030.<sup>[3]</sup> Type 2 diabetes makes up about 85-90% of all cases.<sup>[4,5]</sup> Increases in the overall diabetes prevalence rates largely reflect an increase in risk factors for type 2, notably greater longevity and being overweight or obese.<sup>[1]</sup> Type 2 diabetes mellitus (T2DM) is induced due to relative insulin deficiency caused by pancreatic  $\beta$ -cell dysfunction and insulin resistance in target organs, and typically occurs in people aged >40 years. Epidemiology of T2DM is affected by genetic and environmental factors.<sup>1</sup> Even if diabetes is not fatal, it can cause permanent disabilities, including cardiovascular disease, kidney disease, retinopathy, neuropathy, and peripheral arterial and cerebrovascular diseases.<sup>[6]</sup> Diabetes and diabetes-induced complications are major causes of morbidity and mortality which substantially contribute to health care costs.<sup>[7]</sup> Insulin has been identified as the most effective glucose-lowering agent but there are various factors leading to delay in start of insulin.

Therefore, we conducted this study to study the barriers against starting insulin to patients with diabetes living in central India.

#### MATERIAL AND METHODS-

This hospital based observational study was conducted on diabetic patients who presented in the department of general medicine in a tertiary hospital in central India. Inclusion criteria were insulin administration by a physician to continue treatment or for the first time, refused insulin therapy by the patient, and willingness to collaborate in this study and patients undergoing non-insulin therapy were excluded from the study. Written informed consent was obtained from each of the patients.

The necessary sample size was calculated as 280 patients and so in total 300 patients were selected for the study. Data collection was done using a two-part questionnaire. The first part included demographic information such as gender, age, type of diabetes, educational level, and marital status. The second part contained 20 questions on the reasons for insulin noncompliance. It was scored based on a 5-point Likert scale as follows: (1) strongly disagree, (2) disagree, (3) undecided, (4) agree, and (5) strongly agree.

#### RESULTS-

A total of 292 patients were studied as eight of 300 questionnaires were excluded from the study due to incomplete information. Therefore, information from 292 patients was analyzed. Considering gender, 156 participants (53.42%) were female and 136 (46.58%) were male. 256 of the participants (87.67%) were married. The age range was 26–82

years (mean  $\pm$  SD age 56.2 $\pm$ 12.1 years). Patients' opinions about the barriers against insulin initiation are shown in Table 1.

The most common cause of insulin therapy refusal was the fear of needles patients (64.7%). Also a staggering 20% had given a reason of belief in alternative medicine like Ayurveda and homeopathy.

#### DISCUSSION-

Diabetes is characterized by a persisting hyperglycemia with slow damage to vital organs in the body. Many oral hypoglycemic drugs are in the market for the same but after a few time some patients with type 2 diabetes mellitus too require insulin to maintain their blood sugar. Various factors contribute to DM patients' non adherence to medication, such as socio demographic and psychological factors, patient knowledge, as well as therapy-related factors. We distinguished the common barriers faced by DM patients in this investigation. Our results showed that the most common factors that contributed to DM patients' insulin therapy refusal was fear from needles, dependence on others, and fear of needles. The least expressed factor was trust in the physician.

Numerous studies have explored potential factors associated with insulin refusal in patients with diabetes prior to insulin therapy.<sup>11,14-16</sup>

Mostafavian et al<sup>11</sup> showed lower rates of adherence among females, patients with lower educational level, single patients, and patients with more than 1 year of diabetes duration. Similarly, our findings revealed that education level had a significant association with willingness to use insulin. In other words, illiteracy and low educational level was associated with low adherence to insulin therapy. This finding can be due to the fact that illiteracy can interfere with understanding of the disease and medication to some extent. In contrast to our study, Chen et al<sup>17</sup> did not find any significant relation between glycemic control and educational level. However, a study conducted in 2015 showed that the risk of nonadherence was very high in females and patients with insufficient education.<sup>18</sup> Ghadiri-Anari et al<sup>19</sup> found that fear of injection was the most frequent reason for insulin therapy refusal and was unrelated to age, sex, and educational level. The injection device is an important factor in determining adherence to treatment; using traditional insulin syringes in public may result in social rejection or discontinuation. Newer injection devices, compared to syringes, are easier to use and might lessen inconvenience and thus improve adherence. This study identified that fear of needles was the most expressed barrier against insulin therapy initiation. These findings were consistent with previous research, showing that 33% of patients were anxious about taking their insulin injections.<sup>20,21</sup> In our study, fear of injection frequency was higher in females and lesser educated patients in comparison with males and higher educated patients. Our findings were in concordance with the literature, where females showed more unwillingness to initiate insulin treatment than males.<sup>18,22</sup>

In another study, children with diabetes experienced more (27%) injection anxiety when compared with adults.<sup>23</sup> A health insurance scheme could reduce financial barriers against receiving health care.

Accordingly, conducting medical education programs is suggested to increase knowledge about diabetes management and improve the adherence rate among DM patients.

**CONCLUSION-**

The results of this study indicate that newer painless methods of insulin administration should be used and this nonsense propaganda that alternate medicine like Ayurveda or homeopathy can cure diabetes should be stopped permanently.

**Table 1: Distribution of possible barriers to insulin adherence in diabetic patients**

Barrier	Strongly disagree(%)	Disagree (%)	Undecided (%)	Agree (%)	Strongly agree(%)
Fear of needles	0	18 (6.16)	15 (5.13)	70 (23.97)	189 (64.7)
Belief that alternate medicines can cure it	2 (0.68)	40 (13.7)	92 (31.5)	100 (34.2)	58 (20)
Additional costs	12 (4.1)	53 (18.2)	69 (23.63)	102 (34.9)	54 (18.5)
Inconvenience of carrying insulin	10 (3.4)	38 (13.0)	106 (36.3)	96 (32.87)	42 (14.38)
Do not trust the physician	35 (11.98)	62 (21.2)	166 (56.8)	21 (7.2)	8 (2.7)
Fear of complications	30 (10.3)	63 (21.6)	149 (51)	35 (11.9)	15 (5.1)
Dependence on others	21 (7.2)	71 (24.3)	89 (30.5)	55 (18.8)	56 (19.2)
Drug unavailability	32 (10.9)	62 (21.2)	123 (42.1)	54 (18.5)	21 (7.2)
Injection site pain	32 (10.9)	53 (18.2)	131 (44.9)	55 (18.8)	21 (7.2)
Difficult to inject	32 (10.9)	55 (18.8)	122 (41.8)	62 (21.2)	21 (7.2)

**Table 2: Demography of patients' adherence to insulin injection**

characteristic	Number	Percentage
Gender		
Male	136	46.57
Female	156	53.43
Place of residence		
Urban	156	53.43
Rural	136	46.57
Marital status		
Married	256	87.67
Single	36	12.33
Level of education		
Illiterate	92	31.5
Primary	120	41.1
Graduate and above	80	27.4

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