

## Perception about insulin therapy among diabetic patients attending outpatient department of a tertiary care hospital in Darjeeling, West Bengal

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### Abstract:

**Background:** Initiation of insulin therapy in diabetic patients is commonly met with resistance. The study was carried out to explore the willingness and perception of insulin therapy among diabetic individuals.

**Materials & methods:** It was a hospital based, descriptive study, conducted among 273 insulin naïve diabetic patients who attended the outpatient department of medicine in a tertiary care hospital of Darjeeling. Individuals who have previously used insulin were excluded. Pre-tested, semi-structured questionnaire was used for data collection.

**Results:** This study shows a high level of insulin therapy refusal (67.77%) in the study population. Majority of the participants expressed the refusal because of fear of injection, worsening of diabetes, complications, side effects, high expenditure, problems in lifestyle adaptations, difficult to fulfil responsibilities at work, discouragement from the others etc.

**Conclusion:** The high proportion of insulin refusal could be averted by increasing awareness and sensitizing patient about insulin therapy.

**Keywords:** Diabetes mellitus, primary care

### Introduction:

Diabetes mellitus, a silent epidemic, is a growing public health concern worldwide. According to international Federation of Diabetes, India is the second most affected country having approximately 77 million people above the age of 18 years are suffering from Type 2 diabetes (T2DM) which showed the prevalence as ~8.3% among adults. On top of that nearly 25 million are prediabetics.<sup>1</sup> Achieving glycaemic targets in Type 2 diabetes mellitus (HbA1C <7.0%) has been a challenge for both patients and healthcare providers as well.<sup>2</sup>

Studies have shown that initiation of insulin therapy at an earlier stage of T2DM had much better control of blood sugar level as well as slowing down complications.<sup>3</sup> But these promising effects of insulin therapy has lots of hesitancy in insulin initiation. The refusal rate for insulin therapy is 70.6% in Singapore, 42.5% in Bangladesh and nearly 33.0% in the United States of America.<sup>2,4,5</sup> Insulin refusal is often associ-

ated with fear of needle, fear of losing flexibility in daily activities, gender, level of education, monthly income etc. Insulin refusal by diabetes patients, of which, the majority are insulin naïve.<sup>6</sup> Insulin-naïve T2DM patients are those who never used insulin to control their glycaemic values. The insulin perception in patients is of vital importance as it the knowledge and perception of patients towards the diabetes can strongly influence their compliance to the treatment pre-

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scribed.<sup>7</sup> Therefore, present study is aimed to assess the perception regarding insulin therapy in a tertiary care hospital setting.

### Objectives

- To determine the proportion of diabetic patients willing to take insulin attending outpatient clinic of medicine of a tertiary care hospital in Darjeeling
- To explore the perception of insulin therapy among the study population

### Materials and methods

**Study type & design:** A hospital based, descriptive study, with cross-sectional design

**Study setting:** Outpatient department of Medicine of a tertiary care hospital of Darjeeling, West Bengal

**Study period:** July-August 2022

**Study participants:** Patients with Diabetes Mellitus (DM), attending the outpatient department of Medicine in a tertiary care hospital of Darjeeling.

- **Inclusion criteria:** Individuals with DM
- **Exclusion criteria:** Individuals who have previously used insulin, individuals not willing to participate

**Sample size & Sampling technique:** Total of 273 insulin naive diabetes mellitus type II patients were interviewed and included in the study. Convenience (Non-probability) sampling was done.

### Study tools

- Pre-tested, semi-structured questionnaire with 3 parts: Socio-demographic characteristics, duration of disease & willingness to take insulin, questionnaire on perception about insulin therapy
- 16 statements on insulin perception questionnaire with 5 point Likert scale (**Strongly agree**->**Agree**->**Neutral**->**Disagree**->**Strongly Disagree**)
  - **Statement 1.** Insulin helps to keep diabetes in control
  - **Statement 2.** Using Insulin will improve health
  - **Statement 3.** Using Insulin means that diabetes has worsened
  - **Statement 4.** Using Insulin gives others impression about some serious illness
  - **Statement 5.** Discouragement about insulin usage after hearing about others bad experience with it
  - **Statement 6.** Injecting insulin correctly is difficult

- **Statement 7.** Insulin may cause more complications in the long term
- **Statement 8.** Insulin will cause weight gain
- **Statement 9.** Insulin may cause serious problems with low blood sugar
- **Statement 10.** Insulin will make lifeless flexible; it would be more difficult to travel or eat out
- **Statement 11.** Insulin makes it difficult to fulfill responsibilities at work and home
- **Statement 12.** Using insulin signifies lack of proper diabetes control
- **Statement 13.** Insulin is too expensive
- **Statement 14.** Delaying Insulin therapy until absolute necessity
- **Statement 15.** Using Insulin after doing what was supposed to be done is unfair
- **Statement 16.** Fear of needle injection

### Study variables

Age, Gender, residence, education, Occupation, socio-economic status, diabetic patient (documented report from a doctor were considered), insulin perception statements

**Study technique** Topic was decided and discussed among students. A questionnaire was formed and pilot testing was done. Then with the pre-tested, semi-structured questionnaire was prepared on google form, Data collection was done in the outpatient department. Patient was asked if they had diabetes and verified with the OPD tickets and other medical records. Only who had written document with diabetes, interview continued. Further they were asked if they had any history of insulin therapy. If, present interview stopped, if not then the interview continued.

**Data analysis** The data collected were checked for completeness and consistency. All data collected were compiled in a Microsoft Office Excel sheet and statistical analysis will be done using SPSS version 20. The findings are shown in percentages using tables.

**Ethical permission** The Medical College Authority was informed & permission was taken. The study participants were explained about the study and informed consent was taken. Anonymity and confidentiality were maintained.

### Results

In the present study majority of the participants belonged to 41 to 60 years of age-group (62.6%). Male participants (65.2%) were most common. Majority resided in rural area (61.5%), unskilled worker by occupation (38.5%). Middle school, secondary level school and graduated participants were found most common and similar proportion (19.4%) among the participants. Majority belonged to lower class

(24.5%) and upper lower class (2.9%) according to modified B.G prasad scale (AICPI June 2022).

When the participants were asked regarding diabetes, it was seen that majority (34.1%) had diabetes for one to two years of duration and with more than half (55.3%) with a positive family history of diabetes.

This study shows a high level of insulin therapy refusal (67.77%) in the study population. Most patients had negative self-perceptions and attitudes about insulin use. Fear of injection was common (65.6%). However, more patients re-

ported the fear of not being able to inject insulin correctly (76.9%) than the fear from needle injection. A lot of patients had erroneous beliefs regarding diabetes and insulin therapy. 74.3% believed using insulin meant that their diabetes had worsened and 64.4% believed it would cause complications in the future (64.4%). Fear of side effects was also common – like problems with low blood sugar (55.4%) and weight gain (42.5%). A large number of patients believed insulin use would require lifestyle adaptations – 69.2% believed insulin would make their life less flexible and 52.7% believed that it

**Table 1: Distribution of the study participants according to their** (n=273)

Variables		Frequency	Percentage (%)
Age (years)	20- 40	50	18.3
	41- 60	171	62.6
	61 and above	52	19.1
Gender	Male	178	65.2
	Female	95	34.8
Residential address	Urban	105	38.5
	Rural	168	61.5
Educational category	Illiterate	49	17.9
	Primary School	9	3.4
	Middle School	53	19.4
	Secondary School	53	19.4
	Higher secondary School	30	10.9
	Graduate	53	19.4
	Post Graduate	26	9.6
Occupation	Unemployed	57	20.8
	Unskilled Worker	105	38.5
	Skilled Worker	29	10.6
	Professional	40	14.6
	Business	42	15.5
Socio-economic status*	I e” 8480	43	15.8
	( 4156-8395)	47	17.2
	III ( 2460-4155)	56	20.6
	IV ( 1273-2459)	60	21.9
	V (< 1272)	67	24.5
Duration of Diabetes (in years)	<1	8	2.9
	1 – 2	93	34.2
	3 – 5	85	31.1
	6 – 10	50	18.3
	>10	37	13.5
Family History of Diabetes	Yes	151	55.3
	No	122	44.7
Willingness for Insulin therapy	Yes	88	32.3
	No	185	67.7
<b>Total</b>		<b>273</b>	<b>100</b>

\*Based on modified B.G prasad scale according to AICPI January, 2022

**Table 2: Distribution of the study participants according to answers to specific questions****(n=273)**

SL No.	Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
1	Insulin helps to keep diabetes in control	23(8.4%)	124(45.4%)	83(30.4%)	34(12.5%)	9 (3.3%)	273(100%)
2	Using Insulin will improve health	13(4.8%)	108(39.6%)	107(39.2%)	37(13.6%)	8 (2.9%)	273(100%)
3	Using Insulin means that Diabetes has worsened	79(28.9%)	124(45.4%)	33(12.1%)	35(12.8%)	2(0.7%)	273(100%)
4	Using Insulin gives others impression about some serious illness	77(28.2%)	121(44.3%)	44(16.1%)	29(10.6%)	2(0.7%)	273(100%)
5	Discouragement about Insulin usage after hearing about others' bad experiences with it	25(9.2%)	115(42.1%)	83(30.4%)	42(15.4%)	8 (2.9%)	273(100%)
6	Injecting Insulin correctly is difficult	106(38.8%)	104(38.1%)	29(10.6%)	30(11.0%)	4 (1.5%)	273(100%)
7	Insulin may cause more complications in the long term	64(23.4%)	112(41.0%)	62(22.7%)	32(11.7%)	3 (1.1%)	273(100%)
8	Insulin will cause weight gain	29(10.6%)	87(31.9%)	103(37.7%)	51(18.7%)	3 (1.1%)	273(100%)
9	Insulin may cause serious problems with low blood sugar	31(11.4%)	120(44.0%)	80(29.3%)	40(14.7%)	2 (0.2%)	273(100%)
10	Insulin will make life less flexible, it would be more difficult to travel or eat out	68(24.9%)	121(44.3%)	50(18.3%)	31(11.4%)	3 (1.1%)	273(100%)
11	Insulin makes it difficult to fulfill responsibilities at work and home	35(12.8%)	109(39.9%)	56(20.5%)	53(19.4%)	20(7.3%)	273(100%)
12	Using Insulin signifies lack of proper diabetes control	37(13.6%)	147(53.8%)	55(20.1%)	27(9.9%)	7(2.6%)	273(100%)
13	Insulin is too expensive	90(33.0%)	112(41.0%)	55(20.1%)	16(5.9%)	0(0.0%)	273(100%)
14	Delaying Insulin therapy until absolute necessity	77(28.2%)	122(44.7%)	43(15.8%)	28 (10.3%)	3(1.1%)	273(100%)
15	Using Insulin after doing what was supposed to do is unfair	17(6.2%)	107(39.2%)	101(37.0%)	43(15.8%)	5(1.8%)	273(100%)
16	Fear of needle injection	80(29.3%)	99(36.3%)	44(16.1%)	37(13.6%)	13(4.8%)	273(100%)

medications of diabetes. 51.3% had heard of people with bad experiences which discouraged them and 72.5% people thought it would make others think they were more seriously ill. 67.4% of patients thought that using insulin meant that they had failed to care properly for their diabetes and 72.9% would delay insulin until absolutely necessary.

In positive perceptions, 44.4% believed insulin could improve their health and 53.8% believed insulin would help to keep their diabetes in control. However, a lot of patients were undecided on these notions.

### Discussion

This study was conducted in a rural government tertiary care hospital where the majority of the attendees are from the lower socioeconomic strata and lesser educated than those attending private or urban tertiary care set ups. The study shows a high level of insulin therapy refusal among diabetes. These findings are in line with previous studies which show a similar level of insulin refusal.<sup>2,7</sup>The reasons behind the refusal were found to be negative perception by the majority of the study participants. Psychological barriers to insulin use, also

called psychological insulin resistance (PIR) are the negative thoughts or feelings that people with diabetes may have about starting, using, or intensifying insulin.<sup>1,2,3</sup> Physicians may also underestimate patient attitudes and concerns related to insulin initiation, focusing more on clinical aspects rather than psychosocial barriers.

Although fear of injections has been the most commonly reported barrier to insulin use,<sup>4,5</sup> more patients in the present study reported the fear of not being able to inject insulin correctly as the major barrier towards insulin use. Concerns about the ability to handle injectable therapy has also been reported as barriers in other studies.<sup>6</sup> Physicians often attribute more importance to the fear of pain, thereby not properly eliciting the patient's true concern.

Other factors recognised in the present study as contributing towards a negative attitude towards insulin use were fear regarding the potential adverse outcomes such as the risk of complications, weight gain, changed lifestyle due to insulin therapy, higher expenditure of insulin therapy, equating insulin use to a worsening diabetes, bad experiences, social stigma (the fear of what people think about them), and lack of confidence to self-inject insulin safely. These findings are also consistent with the previous studies, which denotes that despite differences in race and ethnicity, the existence of negative perception among T2DM patients regarding insulin therapy is a global issue.<sup>6,7,8</sup>

Patients often perceive insulin as a last resort for their diabetes care.<sup>9</sup> This perception, which is influenced by several factors, including cultural beliefs, personal experiences, education, and the guidance of healthcare professionals, persists despite its clinical benefits and effectiveness in controlling blood sugar levels. A large number of patients believed insulin use would require lifestyle adaptations which would be difficult to fulfil responsibilities at work and home. These results can help design better educational interventions involving peer support groups.

Most incorrect responses in patients in the present study, are a direct consequence of low health literacy and awareness regarding diabetes in general and insulin use in particular. In addition, a lack of effective communication between the attending physicians and the patients contributes substantially to their ignorance. This statement has been validated by a recent study, conducted in a similar outpatient setting, which reported that the average consultation time was 1.2 min only rather than the standard of 10 min time.<sup>10</sup> Such strong correlation between consultation time and the negative perception of T2DM patients regarding their insulin therapy points towards inadequacy of the medical care services provided by the physicians.

Studies have recommended counselling and education in overcoming injection-related barriers, which may include demonstration using dummy insulin pens and testimonials from other diabetic patients experienced in insulin administration.<sup>11</sup> Educational interventions for awareness, peer support groups can provide additional help.

### Limitations

The study being a hospital-based study with small sample size and non-probability sampling technique for the selection of the participants were the limitations of the study. Since most patients attending government hospitals in the state belong to a lower socio-economic status and generally less educated than patients attending private clinics or hospitals, the results would be a reflection of these strata of patients and cannot be generalised.

### Conclusion & recommendation

The high proportion of insulin refusal among Type 2 Diabetes patients were found. Fear of needle fear, high expenditure, long-term complications, weight gain etc were found as barriers. For better management of T2DM and its complications, primary sensitization at physician's clinic about insulin therapy and regular IEC sessions to increase awareness can help to reduce the high morbidity and mortality due to diabetes.

**Conflict of interest:** Nil

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