

A STUDY TO ASSESS THE IMPACT OF DIABETES AND INSULIN INTERVENTIONAL GUIDE IN DAIBETIC PATIENTS UNDERGOING INSULIN SELF ADMINISTRATION.

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ABSTRACT

Diabetes mellitus (DM) stands as a leading cause of death and disability globally, with India bearing the largest burden of Diabetics. Various physical, social, and economic factors contribute to the occurrence and management of diabetes. Knowledge about DM is fundamental for individuals and communities to prevent and control this condition. This study aimed to evaluate the knowledge and attitude toward diabetes and insulin among diabetic patients, considering selected demographic variables. Employing a non-experimental descriptive design, semi-structured interviews were conducted with random patients at the general medicine department of Krishna Hospital and Medical Research Centre in Karad. The findings revealed insufficient knowledge and attitude among patients using insulin, with a positive correlation noted between knowledge and attitude. It is concluded that effective education hinges on understanding patients' knowledge and attitude characteristics.

INTRODUCTION

Diabetes mellitus (DM) poses a significant global health challenge due to persistent high blood sugar levels and metabolic disruptions affecting various bodily functions. The prevalence of diabetes is on the rise worldwide, especially in India, driven by demographic changes and lifestyle shifts.[1] Diabetes can manifest at any age, with Type 2 diabetes most common after middle age and Type 1 diabetes peaking around 10-12 years. The disease is recognized as a global public health problem and is growing as an epidemic in both developed and developing countries.[2] It is a leading cause of death and disability worldwide. Managing diabetes requires a holistic approach, including medical treatment and lifestyle adjustments. Insulin therapy plays a vital role

but is hindered by patients' inadequate knowledge and negative attitudes towards their condition.[3,4]

Knowledge about DM is essential for individuals and communities to take action for diabetes control. Treatment includes oral hypoglycaemic agents and injectable insulin therapy alongside lifestyle modifications. [5] Insulin therapy requires coordination and understanding between the individual with diabetes and their caregivers. Dosage must be individualized based on blood glucose levels and insulin type, and adjustments are made as needed throughout the individual's life. Information and education lead to improvements in knowledge, attitudes, and skills, contributing to better disease control.[6,7,8,9] Patient education is proven effective in managing health problems. Therefore, more emphasis should be placed on standardizing and improving knowledge and attitudes to increase awareness and minimize errors during insulin therapy. Patient education is considered the most effective way to reduce diabetes complications and improve management [10,11,12]. Thus, the present study aimed to assess the knowledge and attitude levels of diabetic patients regarding diabetes and insulin therapy, evaluate their association with selected demographic variables, scrutinize common misconceptions and correct knowledge about insulin therapy, and establish professional responsibility in providing insulin usage instructions.

MATERIALS AND METHODOLOGY:

Patients who are already on insulin or newly prescribed with insulin having type I DM or type II DM& self administering insulin irrespective of age were included in the study. Convenient sampling was done for duration of Six months period and a total of 60 patients at hospital level, General medicine OPD were included. Baseline information related to demographics education, co morbidities, medication other than insulin baseline knowledge and attitude score on diabetes and Insulin use was recorded through personal interview using predesigned Patient Profile Form and locally validated questionnaire. Educational intervention on diabetes and Insulin self administration technique supplemented with diabetes and insulin guide and a demonstrational video for Insulin self administration technique was done at OPD. After 3 months a follow up of these patients were done and all the baseline parameters were reassessed post follow up through telephonic interview. All the variables were extracted from PPF form to excel. Statistical analysis of relevant parameters was done using instat software. The patients with type I and II DM with insulin administration were included. The QR code to access video demo was provided to patients for better understanding of insulin self administration.

Section I: Socio-demographic Variables

- This section encompasses socio-demographic factors including age, sex, education level, occupation, family history of diabetes mellitus, type of diabetes, duration of diabetes, type of insulin, and comorbidities.

Section II: Semi-structured Questionnaire

- A locally validated semi-structured questionnaire was utilized to evaluate participants' knowledge and attitudes towards diabetes mellitus.

Section III: Pre and Post Responses with Diabetes Educational Guide

- Participants were administered a Diabetes & Insulin Educational Guide, which was translated into Marathi due to the predominant Marathi-speaking population in the study setting, located within Maharashtra State.
- The validity of the questionnaire was established through consultation with Expert at Diabetology and General Medicine departments of KIMS, Karad.
- The study commenced subsequent to obtaining administrative permission. Researchers provided an explanation of the study's purpose to the subjects, and interviews were conducted among those willing to participate.
- Collected data were meticulously analyzed and organized in alignment with the study's objectives, employing descriptive and inferential statistics.
- Reliability coefficient ($r=0.71$).
- Questionnaire for insulin self-administration [Demonstration video] -
- Likert Scale is applied
 1. Strongly Disagree
 2. Disagree
 3. Neutral
 4. Agree
 5. Strongly Agree

RESULTS AND DISCUSSION:

The mean age of the study patients was found to be 57 ± 4 years and out of the total 60 study patients 61.6% of the patients were on Insulin self administration of which 88.3% were having Type II Diabetes Mellitus and 11.6% were Type 1 Diabetes Mellitus patients

Table No. 1 : Baseline Characteristics Of Study Patients:

Parameters	Mean Percentage/Number of Patients
Mean Age of study patients: (year)	57 ± 4
No. of patients self administered	37 (61.6%)
Educational status	Primary 41(35%) High school 11(50%) Graduate 8 (15%)
Comorbidities	Hypertension 52 (86.67%) Hyperlipidaemia 1(1.67%) No Comorbidities 7(11.67%)
Type of DM	Type I DM 7 (11.6%) Type II DM 53 (88.3%)
Type of Insulin	Human Actrapid 41 (68.33%) Insulin Glargine Pen 19 (31.66%)

The participants in the study exhibited inadequate levels of knowledge and a poor attitude towards diabetes and insulin-related matters. Insufficient comprehension of these topics may contribute to the development of associated complications.[13,14] The duration of diabetes mellitus was found to significantly influence patients' knowledge levels (log $p < 0.0001$), indicating that prolonged exposure to insulin may enhance patients' understanding[15]. This suggests that increased exposure to information over time can lead to improved knowledge and attitude. There is a moderately positive correlation between baseline knowledge and education level among study patients, indicating that higher education tends to be associated with better initial knowledge about diabetes management. The correlation between baseline attitude and education level is very weak and statistically insignificant, suggesting that initial attitudes towards diabetes management are strongly influenced by educational background. There is significant correlation between knowledge and attitude scores and education level among the study patients, indicating that while education may impact initial knowledge.

Table No. 2: Knowledge Score Of Study Patients Pre And Post Intervention

Knowledge	Mean	SD	W	P
Baseline	4.95	1.032	-1830	0.0001
Post intervention	9.53	0.74		

Table No. 3: Attitude Score Of Study Patient Pre And Post-intervention:

Attitude	Mean	SD	W	P value
Baseline	1.8	1.26	-1830	0.0001
Post Intervention	9.8	0.37		

Table No.4. Correlation Of Baseline Knowledge Vs Education In Study Patients:

$r = 0.3253$
$p \text{ value} = < 0.0001$

Table No.5. Correlation Of Baseline Attitude Vs Education In Study Patients:

$r = 0.007224$
$p \text{ value} = < 0.0001$

Table No.6. Correlation Of Knowledge And Attitude With Education :

Knowledge Vs Attitude	r	Squared r	Confidence Interval	P value
	0.02	0.0004	-0.2351 to 0.2727	0.87

Numerous studies have underscored the limited knowledge diabetic patients possess about their condition and self-care management. Similarly, many patients using self-administered insulin were found to lack awareness of its complications and management. [16,17,18]. Therefore, there is an urgent need to strengthen education on diabetes and self-care management to encourage adherence to treatment regimens.

Various methods can be employed to improve knowledge, such as providing patients with a booklet containing pictorial illustrations. This booklet could cover different types of insulin, their color codes, sites and techniques of insulin administration, storage guidelines, signs of hypoglycaemia and hyperglycaemia, as well as complications of insulin use and their management. Such educational materials could significantly aid patients in enhancing their understanding of self-administered insulin and refining their practice skills.[19]

Table No.7.Percentage Response Of Patients :

Sr.no	Questions	Comparison of K and A score		CHI -SQUARE
		Pre-intervention	Post -intervention	
1.	Which among the following insulin commonly used before meals to control blood sugar spikes?	5 (8.33%)	57(95%)	86.76
2.	Which of the following dietary factors can affect insulin sensitivity in individuals with diabetes?	5(8.33%)	53(88.33%)	73.71
3.	How does regular physical activity influence insulin sensitivity?	8(13.33%)	55(91.66%)	70.71
4.	What is common side effect associate with insulin therapy?	53(88.33%)	60(100%)	5.46
5.	Where is the best place to store insulin to keep it effective?	58(96.66%)	60(100%)	0.50
6.	Which part of the refrigerator insulin should be stored?	54(90%)	60(100%)	4.38
7.	How should insulin vials or pens be stored to protect them from light?	56(93%)	60(100%)	2.32
8.	Which of the following is / are common injection site for insulin ?	52(86.66%)	60(100%)	6.56
9.	How should you dispose of used insulin needles?	3(5%)	57(95%)	93.63
10.	What factors should be considered when adjusting insulin doses to minimize the risk of complications?	2(3.33%)	54(90%)	87.08
11.	What might excessive hunger, thirst, and frequent suggest in someone with diabetes?	6(10%)	53(88%)	70.55

From the baseline characteristics it is found that baseline demographic and clinical characteristics of the study population, showing a typical distribution for age, gender, educational status, comorbidities, and diabetes type and treatment and significantly improved the knowledge scores of the study patients, as evidenced by the increase from baseline to post-intervention scores. Similar to knowledge, the intervention had a profound positive impact on the attitudes of the study patients towards diabetes management, as reflected by the significant increase in attitude scores post-intervention.[20,21] This presents chi-square analysis results for various knowledge and attitude questions pre- and post-intervention. It indicates significant improvements in patient responses after the intervention across multiple questions, reflecting enhanced understanding and positive behavioral changes in diabetes management.

CONCLUSION:

This study concludes the significance of providing education regarding disease and insulin administration technique in rural area patients. These interventions can positively impact on improving the knowledge and awareness of patients regarding DM and Insulin use. The study also concluded that video demo of Insulin self administration process has adequately improved the understanding of patients regarding insulin administration regardless of the duration of diabetes.

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