

# A Pre-Experimental Study to Assess the Effectiveness of Planned Teaching Program on Knowledge and Practices Regarding Self Administration of Insulin Among Diabetic Patients

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## Abstract:

**Background:** Diabetes mellitus is a metabolic disorder, involving inappropriately elevated blood glucose levels. Diabetes mellitus has several different categories, type 1, type 2, gestational diabetes, neonatal diabetes etc. Diabetes mellitus is recognized as one of the leading cause of death and disability worldwide, India is in leading position with largest number of diabetics. **Aim:** To assess the knowledge of patient regarding self- administration of insulin injection among diabetic patients of selected rural and urban area of district Fatehgarh Sahib, Punjab. **Material and Methods:** A pre-experimental Research design” Used in present study. **Results:** The study revealed that in the knowledge assessment, the pretest results showed that 93.3% of participants had moderate knowledge, with only 6.7% scoring in the inadequate knowledge range. By contrast, in the post-test, there was a notable improvement: none of the participants scored in the inadequate knowledge range, 26.7% had moderate knowledge, and 73.3% achieved adequate knowledge.

**Keywords:** Knowledge, Self-administration, Insulin, Insulin Self Administration, Diabetes Mellitus.

## INTRODUCTION:

The World Health Organization (WHO) estimates that approximately 573 million people are living with the diabetes, with this number expected to rise to 784 million by 2045. The diabetic patients are increasing in number all over the world (also in India), deaths related to complications are expected to increase, causing manpower loss.<sup>1</sup>Effective management of diabetes is crucial to prevent or delay the complications such as cardiovascular disease, neuropathy and retinopathy which can significantly impact patient's quality of life and impose a substantial economic burden on healthcare systems.

The management of diabetes is the achievement and maintenance of optimal glycemic control. While various treatment modalities are available, including oral anti diabetic agents, life style modifications, and insulin therapy.

Insulin therapy, however, presents unique challenges, particularly concerning its administration. Unlike oral medications, insulin cannot be taken orally due to its degradation in the gastrointestinal tract, necessitating subcutaneous injection. Proper administration of insulin is essential to ensure its

effectiveness in controlling blood glucose levels and to minimize the risk of adverse events such as hypoglycemia and hyperglycemia. Moreover, the complexity of insulin regimens, including varying dosages, type of insulin, and injection sites, can be overwhelming for the patients, leading to suboptimal adherence and glycemic control.

Administering multiple daily doses of insulin into the subcutaneous tissue is crucial for achieving glycemic control, a pivotal factor in preventing both acute and chronic complications associated with diabetes. (UK Prospective Diabetes Study Group, 1998) Incorrect choice of injection site, technique and delivery devices can alter insulin absorption parameters, potentially leading to a mismatch between peak insulin effect and maximum glucose load.

### OBJECTIVES:

- To assess the knowledge of patient regarding self- administration of insulin injection among diabetic patients of selected rural and Urban area of district Fatehgarh Sahib, Punjab.
- To assess the practices of patients regarding self- administration of insulin injection among diabetic patients of selected rural and Urban area of district Fatehgarh Sahib, Punjab.
- To develop and administer planned teaching program with demonstration regarding self-administration of insulin injection of selected rural and urban area of district Fatehgarh Sahib, Punjab.
- To assess the effectiveness of planned teaching program with demonstration on knowledge and practices regarding self- administration of insulin injection among diabetic patients of selected rural and urban area of district Fatehgarh Sahib, Punjab.
- To find out the association of knowledge and practices with selected socio demographic variables.

### OPERATIONAL DEFINITION:

- **KNOWLEDGE:** The understanding that patients possess about the correct technique, procedure and principle involved in administering insulin injection.
- **SELF-ADMINISTRATION:** The act of taking a drug yourself, especially one that would normally be given to you by someone else.
- **INSULIN:** A hormone that lowers the level of glucose in the blood.
- **INSULIN SELF ADMINISTRATION:** The process by which diabetes mellitus patients independently administer insulin injections to manage their blood glucose level.
- **DIABETES MELLITUS:** It is a group of metabolic disorder in which there is high blood glucose level over a prolonged period.

### LITERATURE SURVEY:

A Cross- sectional study Conducted by Dr. Linil Mand, Dr Gaurav Aggarwal Shah assess knowledge on self-administration of insulin among diabetic patients attending general medicine OPD of Shah Satnam Ji Specialty Hospital Sirsa Haryana. Diabetes mellitus is known to be one of the main causes of death and disability worldwide. According to WHO, in 2014, 8.5% of adults aged 18 and older had diabetes. In 2019, diabetes directly caused 1.5 million deaths, and 48% of these deaths occurred in people younger than 70. Between 2000 and 2016, the rate of early death before age of seventy from diabetes increased by 5%. A structured questionnaire was used to assess their knowledge about self- administration of insulin injection. In this study, 30 participants (60%) had an average level of knowledge about self -

administration of insulin, 15 participants (30%) had good knowledge and 5 participants (10%) had poor knowledge.<sup>6</sup>

A descriptive study to assess Conducted by Patel Himani and Daxaben P Patel to assess the knowledge and attitude regarding the self- administration of insulin injections among diabetes mellitus patients at Nootan General Hospital, Visnagar. The study involved 60 diabetic patients aged 40-70 years, both admitted and attending outpatient services. 38.3% of participants were aged 61-70, 20% aged 51-60, 20% aged 41-50, and 8.3 below 40. Among them 73.3% were male and 26.7% females. Structured questionnaires were used to assess the knowledge and Likert's scale was used to assess the attitude of the patients. 18.3% had average knowledge, 13.3% had poor knowledge and only 5% had good knowledge about self -administering insulin. 18.3% had a highly favorable attitude while 81.7% had a favourable attitude towards self -administration of insulin injection.

## **MATERIALS AND METHOD**

### **Research Approach:**

A Quantitative research approach was adopted to accomplish the objectives of the study to assess to assess the knowledge of patient regarding self- administration of insulin injection among diabetic patients of selected rural and rural area of district Fatehgarh Sahib, Punjab.

### **Research Design:**

Pre-Experimental study designed is adopted to assess knowledge of patient regarding self-administration of insulin injection among diabetic patients of selected rural and urban area of district Fatehgarh Sahib, Punjab.

### **Research Setting:**

Rural and urban area of district Fatehgarh Sahib, Punjab.

### **Target Population:**

Above 18 years Insulin dependent diabetic patient.

### **Sample and Sampling Technique:**

Non-Probability Convenient Sampling Technique

### **Development of Research Tool:**

The tool was developed after thorough review of literature and in consultation with experts in the field of Research and Nursing.

### **Description of Tool:**

Development of tools for data collection

- Socio-demographic variables (10 items)
- Self-structured questionnaire (30 items)
- Observational checklist (16 items)

**SECTION A:** Selected socio demographic variables: Age in years, educational status, marital status, Occupational status, Family income, Duration of diabetes, type of diabetes, Duration of insulin therapy.

**SECTION B:** A self -structured questionnaire assessing knowledge about diabetes, insulin therapy and self -administration techniques. It consists of 30 multiple choice questions regarding diabetes and insulin administration.

**SECTION C:** An observational checklist to observe and evaluate the participant's actual practices

regarding insulin injection. It ensures that participants are performing each step correctly and adhering to recommended guidelines. It consists of 20 items.

### **Reliability of tool**

Reliability of instrument is the degree of consistency or dependability with which it measures the attribute it is measuring.

Reliability of tools will be computed by applying Karl Pearson's correlation coefficient formula.

### **Data Collection Procedure**

The researcher was obtained written permission from the higher authorities. The purpose of study was explained to the participants and confidentiality was maintained. Pre experimental research design was used in study, data collection was done from the diabetic patients in selected rural area by non - probability convenient sampling technique with the help of social demographic variables and self-structured questionnaire.

### **Plan of data analysis:**

Analysis and interpretation of data will be done according to the objectives and by using descriptive and inferential statistics. Pearson correlation will be used to find out the relationship between knowledge and practices of patients regarding self- administration of insulin injection. Analysis and interpretation of data was done according to the objectives using descriptive and inferential statistics. The level of significance chosen was at  $p \leq 0.05$ .

### **DISCUSSION:**

The primary aim of the study was to evaluate the effectiveness of planned teaching program on knowledge and practices regarding self- administration of insulin injection among diabetic patients above 18 years residing in rural and urban area of district Fatehgarh Sahib, Punjab. the in order to achieve the objectives of the study a pre-experimental group design with quantitative approach was adaptive. Convenient research sampling technique was used to select the sample. The data was collected from 30 insulin dependent diabetic patients by using a self -administer questionnaire. In the knowledge assessment, the pretest results showed that 93.3% of participants had moderate knowledge, with only 6.7% scoring in the inadequate knowledge range. By contrast, in the post-test, there was a notable improvement: none of the participants scored in the inadequate knowledge range, 26.7% had moderate knowledge, and 73.3% achieved adequate knowledge. This shift indicates a significant enhancement in participants' knowledge levels following the intervention.

Initially, in the pre-test, a majority of participants (93.3%) exhibited average practice levels (scoring between 6 and 10), with 6.7% displaying poor practice (scoring between 0 and 5), and none achieving good practice scores (11-16). Post-intervention, the scenario transformed drastically. There were no participants in the poor practice category, a complete elimination of poor practice scores. Only 1 participant (3.3%) remained in the average practice range, a sharp decrease from the pre-test. Impressively, 96.7% of the participants achieved good practice scores post-intervention.

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