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"Effectiveness of instructional demonstration on self insulin administration technique among diabetes mellitus patients in selected hospitals at Sagar"

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ABSTRACT

Background and Objectives:-

Objectives of the study are to:

1. Determine the existing knowledge regarding selfinsulin administration technique among diabetes mellitus patients as measured by a structured interview schedule.

2. Design and provide instructional demonstration on self insulin administration technique among diabetes mellitus patients.

3. Find the effectiveness of instructional demonstration regarding self insulin administration technique among diabetes mellitus patients as measured by the same structured interview schedule.

4. Find an association between pre–test knowledge score and selected demographic variables.

Methodology

In order to achieve the objectives of the study, a pre experimental study approach was adopted for the study. A closed ended structured interview schedule was used to assess the knowledge of patients on self insulin administration. Pilot study was conducted and purposive sampling technique was used to select 40 clinically diagnosed diabetes mellitus patients who are receiving insulin therapy. The main study was conducted in Govt. Hospital Sagar. The data collected were systematically tabulated to facilitate the data analysis. The collected data analyzed by using descriptive and inferential statistics.

CONCLUSION

This chapter had brought out the various implications of this study and also has provided suggestions for future studies. Studies of this kind should be an ongoing process to make the patients aware of the technique of insulin administration.

Results

The assessment of the knowledge among diabetes mellitus patients regarding self insulin administration technique revealed that the pre-test knowledge level of all the patients were moderate 57.5%, poor 30% and good 12.5%, compared to the post-test knowledge levels which showed very good 47.5%, good 40% and moderate 12.5%.

The overall mean knowledge score was 11.43±3.003, with a mean percentage of 59.57 % revealing that the overall knowledge of the parents regarding insulin administration is moderate. The effectiveness of instructional demonstration in the area of knowledge regarding diabetes mellitus had 22.11% increase in the mean percentage knowledge scores with the mean and SD of 6.87± 2.95was observed with that of 62.00% in pre-test and 84.11% in the post-test.

There was an increase of 34.67% in the mean percentage knowledge scores in the area of knowledge regarding self insulin administration technique with the mean and SD of 6.1± 1.65. The calculated 't' value (22.19, P<0.05) in knowledge aspect was greater than the table value (1.83) at 0.05 level of significance. Therefore, the null hypothesis was rejected and the research hypothesis was accepted indicating the gain in knowledge was not by chance.

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I. INTRODUCTION

Health is the general condition of a person in all aspects. Having good health is everyone's wish and it is different from not only being away from sick. Health is a resource for everyday life. Deviations from healthy life styles lead to diseases which are the important threats to human community in the 21st century.

Diabetes mellitus is a metabolic disorder, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces. This leads to an increased concentration of glucose in the blood (hyperglycaemia). Type 1 diabetes (previously known as insulin-dependent or childhood-onset diabetes) is characterized by a lack of insulin production. Type-2 diabetes (formerly called non-insulin-dependent or adult-onset diabetes) is caused by the body's ineffective utilisation of insulin. It often results from excess body weight and physical inactivity.[1]

The World Health Organization (WHO) estimates that worldwide, there are currently 220 million people living with diabetes. Diabetes is becoming an important chronic disease in Asia. WHO and the International Diabetes Federation predict that the number of diabetics in Asia could increase to 160 million by the year 2025.[2]

Diet, exercise, weight loss, and a healthy lifestyle remain essential in the initial and ongoing management of type 2 diabetes. The addition of one or more Oral Anti Diabetics (OADs) is appropriate when glycemic control can no longer be achieved by the use of the initial non pharmacologic measures. Similarly, insulin should be added when the combined use of OADs and non pharmacologic measures are no longer able to achieve glycemic control.[5]

Even when insulin is prescribed early in treatment, low doses are often employed due to the fear of hypoglycemia. Appropriate patient education early in treatment can do much to alleviate fears and misconceptions. Patients also need ongoing self-management support and collaborative care that links patients with provider contact and resources.[6]

The ability of non pharmacologic and oral pharmacologic therapies to maintain glycemic control in type 2 diabetes almost invariably dissipates. Insulin therapy, therefore, is eventually needed in the majority of patients with type 2 diabetes.[7] So proper knowledge regarding self insulin administration technique is necessary for controlling the elevated levels of blood glucose in diabetes mellitus patients and there by complications

Need for the study

A nation's prosperity lies in the health of its citizens. Healthy people make the nation strong and wealthy. The past few decades have revolutionalised the life style of human beings in the whole world. However this age of speed and competition has increased the stresses and strains which man is subjected to.

Globally, around 150 million people suffer from diabetes. The global number of people with diabetes is expected to be at least 220 million in 2010.[10] India leads the world today with the largest number of diabetic patients. The WHO estimated that 19.4 million individuals were affected by this deadly disease in India in 1995; it is likely to go up to 57.2 million by the year 2025.[4] Every fifth diabetic patient in the world is in India and every fifth adult in Indian urban area is a diabetic. In Mangalore 2002 cases of diabetes mellitus were reported in 2004 that reduces to 1624 in 2005, increased to 1834 in 2006 and further decreased to 1554 in 2007.[11]

A cross sectional study was conducted on insulin self administration technique among patients with diabetes mellitus in Brazil. A total of 169 patients were selected by simple random sampling. The study results identified errors in all the recommended steps for the safe administration of insulin and it shows that the average percentage of samples that performed the steps correctly were 61%. Hence the researcher felt there is a need to assess the knowledge of diabetes mellitus patients regarding self insulin administration technique.[12]

From the statistical data it is clear that the control and treatment of Diabetes mellitus is of prime importance. The controlling measures include diet restriction, exercises, oral administration of hypoglycaemic agents and ultimately insulin therapy. Insulin administration requires more importance because its improper use may not produce the expected result in the individual. So the researcher felt the need to educate people regarding proper methods of self insulin administration

II. METHODOLOGY

Methodology may be a description of process, or may be expanded to include a philosophically coherent collection of concepts or ideas as they relate to a particular discipline or field of inquiry. The methodology of research indicates the general pattern to gather valid and reliable data for the problem under investigation.[39]

This chapter describes the methodology adopted for evaluating effectiveness of instructional demonstration on self insulin administration technique among diabetes mellitus patients in selected hospitals at Sagar. The methodology includes the research design, setting of the study, population, sample and sample size, sampling technique, description of the tool, method of data collection and plan for data analysis.

Research approach

Research approach is a systematic, controlled, empirical and critical investigation of natural phenomena guided by theory and hypotheses about the presumed relations among such phenomena.[40]

In view of the nature of the problem under study and to accomplish the objectives of the study, evaluative approach was found to be appropriate to describe the effectiveness of instructional demonstration on self insulin administration technique among diabetes mellitus patients in selected hospitals at Sagar. The evaluative design is an applied form of research that involve finding out how well a programme, procedure or policy is working and its goal is to assess or evaluate the success of a programme

The traditional strategy for conducting an evaluative research consists of the following steps:

1 Determining the objectives of the programme.
2 Developing a means of measuring the attainment of those objectives.
3 Collecting the data.
4 Interpreting the data in terms of the objectives.

Research design

Research design is the researcher's overall plan for obtaining answers to the research questions or for testing the research hypothesis. It is the overall plan for addressing a research question including specialization for enhancing the integrity of the study.[41]

Pre-experimental, i.e., one group pre-test post-test design was adopted for the study. Here only one group was observed twice, before and after introducing the independent variable. The effect of treatment would be equal to the level of the phenomenon after the treatment minus the level of phenomenon before treatment.

Table 1:Representation of Research Design

Group	Pre-test knowledge	Treatment (Instructional demonstration)	Post-test knowledge	Effectiveness
Forty people were selected	O_1	X	O_2	$O_2 - O_1$

O_1: Knowledge test before the intervention of instructional demonstration of the group on self insulin administration technique.

O_2: Knowledge test after the intervention of instructional demonstration of the group on self insulin administration.

X: Instructional demonstration on self insulin administration technique.

Variables

❖ **Independent Variable**

Independent variable is the variable that stands alone and does not depend on any other. In my study the instructional demonstration on self insulin administration technique is the independent variable.

❖ **Dependent Variables**

Dependent variable is the effect of action of the independent variable and cannot exist by itself. In my study dependent variable is

- Knowledge on self insulin administration technique.

❖ **Demographic Variables**

The demographic variables in my study are age, gender, education, duration of illness, injecting person and previous training on insulin administration technique.

Setting

Setting is the physical location and conditions in which data collection takes place.[42]

The study was conducted in Govt Hospital Sagar. The samples were selected using purposive sampling method.

Population

Population means all possible elements that could be included in research. It represents the entire group under study.[43]

The population selected for the study comprised of clinically diagnosed diabetes mellitus patients who are receiving insulin therapy and are admitted and seeking consultation in selected hospitals at Sagar.

Sampling Procedure

Sample and sample size

A finite subset of the population selected from it with the objective of investigating its properties is called a sample.[44]

The sample for the present study consists of 40 clinically diagnosed diabetes mellitus patients who are receiving insulin therapy and are admitted or seeking consultation in selected hospitals at Sagar.

Sampling technique

Sampling is a process of selecting a group of people, events or portion of the population to represent the entire population.[45]

In this study purposive sampling technique is found appropriate to select 40 diabetes patients from selected hospitals.

Sampling criteria

Inclusion criteria

Diabetes mellitus patients who are:

1. Receiving treatment with prescribed insulin therapy within six months.
2. Present during data collection.
3. Willing to participate in the study.
4. Able to understand Hindi and English.

Exclusion criteria

Diabetes mellitus patients who are

1. Unable to co-operate with the study physically.
2. Unable to follow the instructions.

Selection and development of the tool

An instrument is a device used to measure the concept of interest in a research project. The instrument selected in a research, should be as far as possible the vehicle that could best obtain data for drawing conclusions, which were pertinent to the study.

An intense search of related literature, and extensive consultation with the experts in the fields of medical surgical nursing was done for developing an appropriate tool. The first draft of the tool consisted of 33 items. These items were collected, scrutinised, selected and checked for any overlapping, cross checking was done and modification was made in consultation with nursing and medicine experts. Based on the suggestions and recommendations, four items were removed and two items were modified in view of simplifying the language. So the final draft consisted of 29 items.

Development of the tool

A structured interview schedule was prepared to assess the knowledge level of diabetes mellitus patients regarding self insulin administration technique. It consisted of 29 items.

The following steps were carried out in preparing the tool

- Review of literature
- Discussion with experts
- Preparation of Blueprint
- Construction of knowledge checklist
- Content validity
- Pre – testing of the tool

Reliability

Preparation of the blueprint

A blueprint on the knowledge questionnaire was prepared for all 29 items based on knowledge of the people. A blue print of items pertaining to the three domains of learning that is knowledge, comprehension and application was prepared. There were eighteen items (62.1%) on knowledge domain, four items (13.8%) on comprehension and seven items (24.1%) on application.

Description of the tool

This tool (structured interview schedule) was designed to collect relevant information from people regarding their knowledge towards diabetes mellitus and self insulin administration technique and to assess the effectiveness of instructional demonstration on self insulin administration technique

Reliability

The reliability of a measuring tool can be assessed in the aspects of stability, internal consistency, and equivalence depending on the nature of the instrument and aspects of the reliability concept.[47]

To establish the reliability, the interview schedule was administered to ten samples other than the study samples. Split half method was used to estimate homogeneity. The scores of the items were first divided into two equal halves with odd and even numbers of questions and correlations were found using Karl- Pearson's correlation coefficient formula. The correlation was found to be significantr = 0.82.

Data collection procedure

Prior permission was obtained from the concerned authority keeping in mind, the ethical aspect of research. Data were collected after obtaining informed consent from the subjects. The respondents were assured the anonymity and confidentiality of the information provided by them. The researcher himself collected data from the samples. Pre-test was conducted from 09.05.2011XXXX to 11.05.2011XXXfollowed by individual instructional demonstration. Demonstration with explanation was the method of instruction. Charts were used as AV aids. The duration of the session was 30 minutes. After six days a post-test was conducted from 16. 09. 2010XXXXXX to 18 09 2011XXXXXX to the respective samples using the same interview schedule to evaluate the effectiveness of the instructional demonstration.

Plan for data Analysis

Descriptive statistics are useful for summarizing empirical information. Inferential statistics which is based on laws of probability provide a means for drawing conclusions about the population from which data is obtained for sample.

The collected data will be analyzed using descriptive and inferential statistics using the following steps:

- Organizing the data in master sheet
- Frequency and percentage of data will be calculated to describe demographic variables
- Mean, mean percentage and standard deviations of knowledge scores would be used to determine the effectiveness of the instructional demonstration.
- The statistical significance of the effectiveness of the teaching programme would be analyzed by using paired 't' test.
- Analyzed data would be presented in tables, graphs and figures.

III. RESULTS

A result is the final consequence of a sequence of actions or events expressed qualitatively or quantitatively. Reaching no result can mean that the research actions are inefficient, ineffective, meaningless or flawed[50].

Analysis is the process of breaking a complex topic or substance into smaller parts to gain a better understanding of it. In order to achieve the research results the collected data must be processed and analyzed in some orderly coherent fashion so that patterns and relationship can be discerned[46].

This chapter deals with the analysis and interpretation of the data collected from 40 diabetes mellitus patients in accordance with the objectives of the study.

Objectives

The objectives of the study are to:

1. Determine the existing knowledge regarding self insulin administration technique among diabetes mellitus patients as measured by a structured interview schedule.
2. Design and provide instructional demonstration on self insulin administration technique among diabetes mellitus patients.
3. Find the effectiveness of instructional demonstration regarding self insulin administration technique among diabetes mellitus patients as measured by the same structured interview schedule.
4. Find an association between pre–test knowledge score and selected demographic variables.

Organization of the findings

The results have been organized and presented in 6 parts:

Part I: Description of demographic characteristics of the clinically diagnosed diabetes mellitus patients.

Part II: Knowledge of diabetic patients regarding self insulin administration technique.

Section A: Assessment of the level of existing knowledge.

Section B: Area-wise analysis of the pre test knowledge scores.

Part III: Effectiveness of instructional demonstration on self insulin administration technique.

Section A: Area-wise Mean, SD, and Mean percentages of pre test and post-test

Section B: Comparison of level of knowledge in pre-test with post-test and effectiveness of the study

Part IV: Association between Pre-test knowledge scores of patients regarding self insulin administration technique with selected demographic variables.

Part I: Description of demographic characteristics of the clinically diagnosed diabetes mellitus patients

This part deals with distribution of participants according to their demographic characteristics. Data was analyzed using descriptive statistics and are summarized in terms of percentage.

Table 3: Frequency and percentage distribution of sample according to demographic characteristics
N = 40

Demographic variables		Frequency	Percentage (%)
1.	**Age**		
a.	<20	0	0.0
b.	21-40	12	30.0
c.	41-60	13	32.5
d.	>60	15	37.5
2.	**Gender**		
a.	Male	24	60.0
b.	Female	16	40.0
3.	**Education**		
a.	Primary	8	20.0
b.	Secondary	14	35.0
c.	PUC	16	40.0
d.	Graduate	2	5.0
4.	**Duration of illness**		
a.	< 5 years	20	50.0
b.	5-10 years	14	35.0
c.	10-15 years	6	15.0
d.	>15 years	0	0.0
5.	**Injecting person**		
a.	Himself/ herself	18	45.0
b.	Family members	14	35.0
c.	Health personnel	8	20.0
6.	**Previous training**		
a.	Yes	21	52.5
b.	No	19	47.5

Data presented in table 3 shows that 37.5% the participants are in the age group of >60. Among the participants majority (60%) are males. About 40% of the samples have PUC education and 35% have secondary education. Half of the samples (50%) are having the disease duration less than 5 years. The samples who were injecting insulin by themselves contributed (45%). More than half of the patients (52.5%) have got previous training regarding insulin administration.

Part II: Knowledge of diabetic patients regarding self insulin administration technique

This part deals with assessment of the existing knowledge of diabetic patients regarding self insulin administration technique and the area wise analysis of pre-test knowledge.

Section A: Assessment of the level of existing knowledge

This part deals with distribution of level of knowledge of diabetic patients regarding self insulin administration technique.

Table 4: Percentage and distribution of level of knowledge of parents regarding self insulin administration technique

N=40

Range of score	Level of knowledge	No. of respondents	Percentage (%)
0 – 8	Poor	12	30
9 – 15	Moderate	23	57.5
16 – 22	Good	5	12.5

23—29	Very good	0	0
Total		40	100

Data in the Table 4 and Figure 3 shows that majority (57.5%) of the patients had moderate knowledge, 30% of them had poor knowledge, and 12.5% had good knowledge. Nobody had very good knowledge.

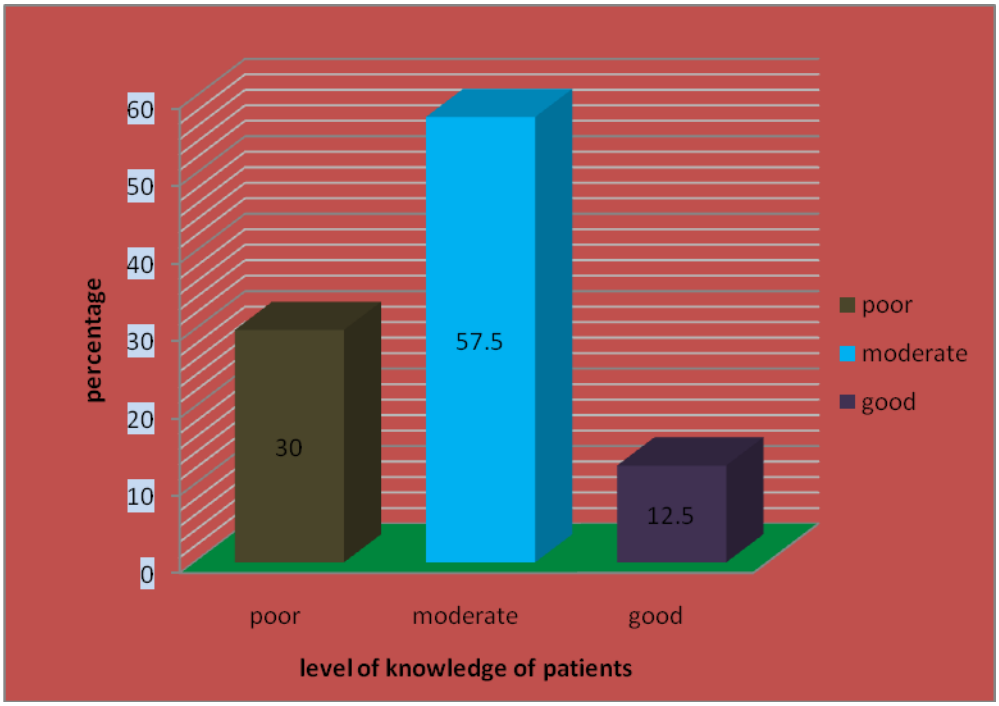

Figure 3: The bar diagram shows percentage distribution of diabetes mellitus patients according to the level of knowledge

Section B: Area-wise analysis of the knowledge scores

This part deals with area- wise mean, SD and mean percentage of pre test knowledge scores of patients regarding self insulin administration technique

Table 5: Area- wise mean, SD and mean percentage of pre test knowledge scores of patients regarding self insulin administration technique

N=40

Areas	Minimum score	Maximum Score	Mean	SD	Mean%
Area I	4	12	7.43	2.650	62.00
Area II	2	7	4.00	1.770	57.14
Overall knowledge	7	16	11.43	3.003	59.57

Data in the Table 5 and Figure 4 revealed that patients had highest knowledge in the Area I that is, knowledge regarding diabetes mellitus with a mean percentage of 62% followed by Area II which is knowledge regarding self insulin administration technique with a mean percentage of 57.14%, The mean knowledge score was 11.43±3.003, with a mean percentage of 59.57 % revealing that the overall knowledge of the diabetes mellitus patients regarding insulin administration is moderate.

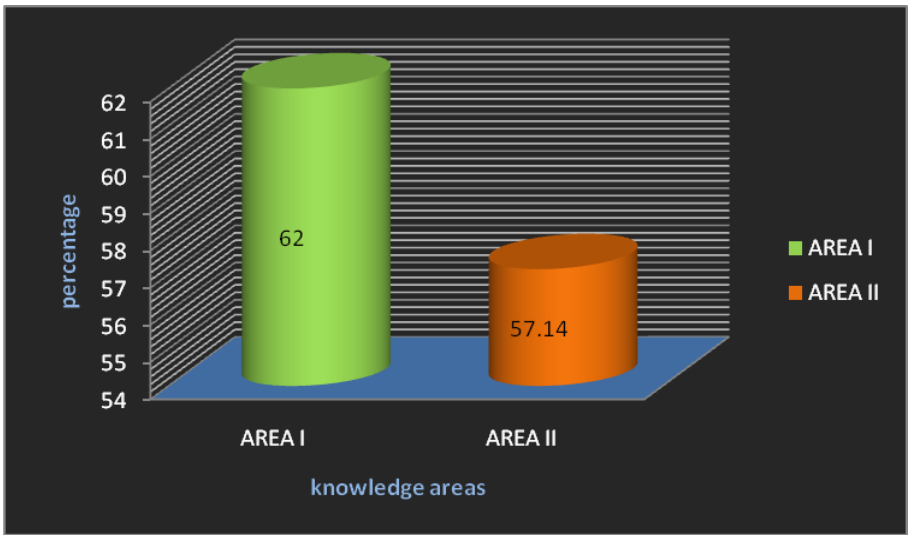

Figure 4: The cylinder diagram shows area-wise percentage distribution of diabetes mellitus patients' knowledge

Part III: Effectiveness of instructional demonstration on self insulin administration technique

This part deals with Area-wise Mean, SD, and Mean percentagesof pre test and post-test knowledge scores and comparison of level of knowledge and effectiveness in pre-test with post-test

Section A: Area-wise, Mean, SD, and Mean percentages of pre test and post-test

This part deals with area-wise Mean, SD,and Mean percentages of pre test and post-test knowledge scores

Table 6: Mean, SD, Mean difference of pre test and post-test

N=40

Areas	No. of items	Knowledge score								
		Pre-test(A)			Post-test(B)			Effectiveness(B-A)		
		Mean	SD	Mean%	Mean	SD	Mean%	Mean	SD	Mean%
Area I	17	7.43	2.650	62	14.30	1.506	84.11	6.87	2.95	22.11
Area II	12	4.00	1.77	57.14	10.10	1.392	91.81	6.1	1.65	34.67
Total	29	11.43	3.003	59.57	24.40	2.744	87.14	12.97	3.7	27.57

The data presented in the table 6 shows that the total mean knowledge score is increased by 27.57% with mean ±SD of 12.97±3.7 after the administration of instructional demonstration

Comparison of the area wise mean and SD of the knowledge scores showed that, the effectiveness of instructional demonstration in the area of knowledge regarding diabetes mellitus had increased 22.11% in the mean percentage knowledge scores with the mean and SD of 6.87± 2.95 was observed with that of 62% in pre-test and 84.11% in the post-test. In the area of knowledge regarding self insulin administration technique had increased 34.67% in the mean percentage knowledge scores with the mean and SD of 6.1± 1.65 was observed with that of 57.14% in pre test and 91.18% in post-test. The results reveal that the overall knowledge was more compared to that of the pre test as the post-test knowledge score come under good knowledge level which was average in the pre test assessment.

Section B: Comparison of level of knowledge in pre-test with post-test and effectiveness of the study

This part compares level of knowledge and mean of pre test and post-test and it also deals with mean difference in pre test and post-test and t value thus finds the effectiveness of the study. To evaluate the effectiveness of instructional demonstration, a null hypothesis was formulated. A paired 't' test was used to find the effectiveness. The value of 't' was calculated to analyses the difference in knowledge score of parents in pre-test and post-test.

H_{01}: There is no significant difference between the pre-test and post-test mean knowledge of diabetes mellitus on self insulin administration technique.

Table 7: Comparison of level of knowledge and effectiveness in pre-test with post-test and effectiveness of the study

N=40

Level of Knowledge	Pre-test			Post-test			Mean Difference	t-test
	Frequency	Percentage	Mean	Frequency	Percentage	Mean		
Poor	12	30	11.43	0	0	24.40	12.97	22.19*
Moderate	23	57.5		5	12.5			
Good	5	12.5		16	40			
Very good	0	0		19	47.5			

$p < 0.05$ * = Significant

The data presented in the table 7 and figure 5 shows that the pre-test knowledge level of all the diabetes patients were graded as moderate 57.5%, poor 30% and good 12.5%, and post-test knowledge level showed very good 47.5%, good 40% and moderate 12.5%.

The findings in table 7 revealed that the mean post-test score was significantly higher than their mean pre test score. The calculated 't' value (22.19, $P<0.05$) in knowledge aspect was greater than the table value (1.83) at 0.05 level of significance. Therefore, the null hypothesis was rejected and the research hypothesis was accepted indicating the gain in knowledge was not by chance. Hence it is concluded that there is very highly significant gain in knowledge of diabetes patients on self insulin administration technique.

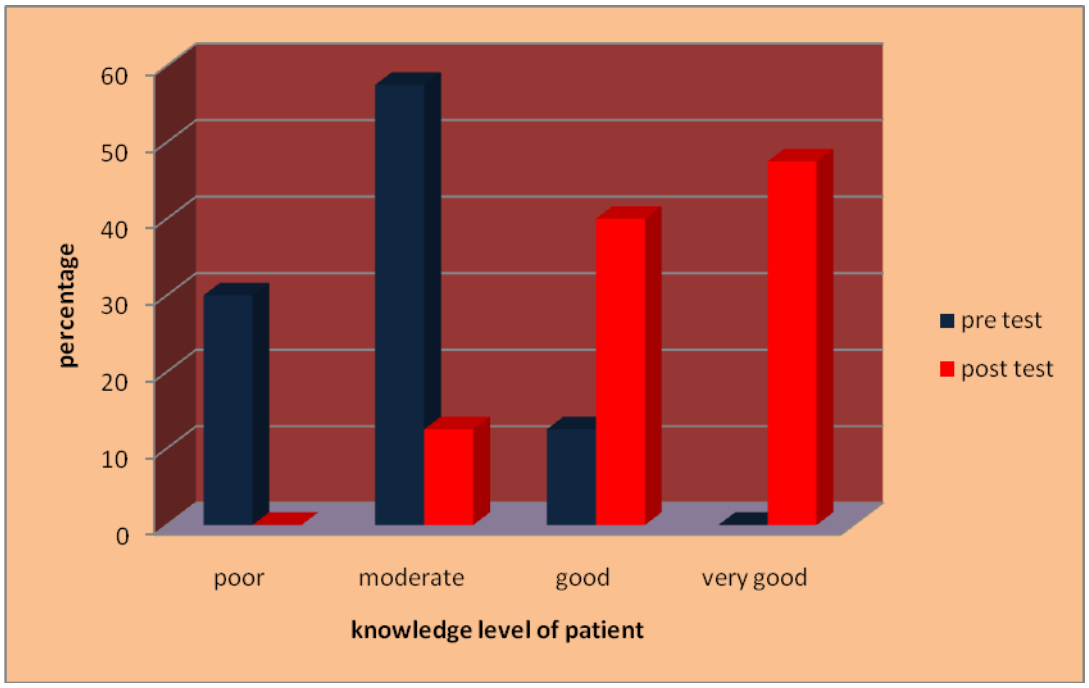

Figure 5: The bar diagram compares pre-test and post-test knowledge scores of patients regarding self insulin administration technique

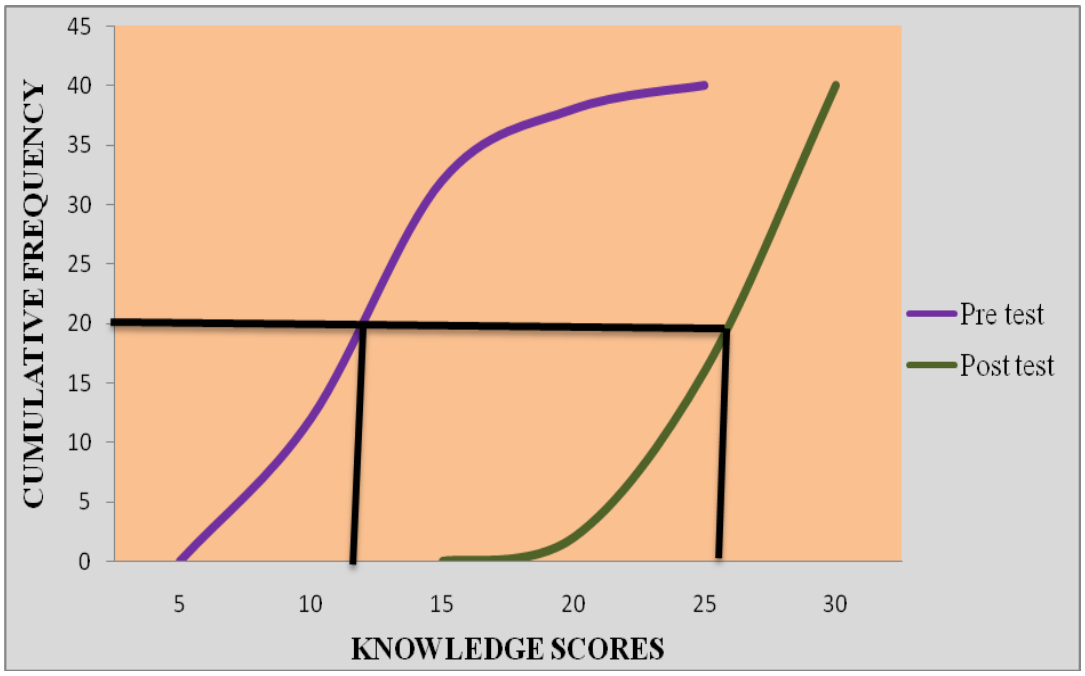

Figure 6: Ogive of the pre-test and post-test knowledge scores of diabetes patients patients regarding self insulin administration technique

The cumulative frequency distribution of pre-test and post-test knowledge scores is shown in the Ogives. The data presented in the Ogives show significant difference between the pre-test and post-test scores. The knowledge pre-test median was 12.00 where as the post-test median score was 25.50. It shows a difference of 13.50 in knowledge. The Ogives plotted shows that the first quartile score of post-test is higher than third quartile score of pre-test. This indicates that there is a significant increase in the knowledge of diabetes patients on self insulin administration technique.

Part IV: Association between Pre-test knowledge scores of diabetes patients on self insulin administration technique with selected demographic variables

Chi-square test was computed to test the association between the knowledge of the subjects and selected demographic variables; the following null hypothesis was formulated.

H_{02}: There will be no significant association between knowledge score with selected demographic variables.

Table 8: Association between pre-test knowledge with demographic variables

N = 40

		Knowledge		
Demographic variable	**χ^2**	**df**	**P value**	**Inference**
Age	1.862	2	0.394	NS
Sex	0.080	1	0.928	NS
Education	1.694	3	0.638	NS
Duration of illness	4.323	2	0.115	NS
Injecting person	0.249	1	0.618	NS
Training	1.889	1	0.169	NS

Tablevalue= 3.84, df=1 NS=Not significant

Data presented in table 8 shows that there is no significant association between the selected demographic variables and pre test knowledge scores. Therefore H_0 is accepted.

IV. Summary

This chapter dealt with the analysis and interpretation of the findings of the study. The data gathered were summarized in the master sheet and both descriptive and inferential statistics were used for analysis. The study findings revealed that the post-test knowledge score (24.40±2.744) was significantly higher than the pre-test knowledge score (11.43±3.003). Paired 't' test was used to find the effectiveness. The calculated 't' value in knowledge (22.19, P<0.005) was greater than the table value (1.68). This showed that gain in the knowledge was significant after administering instructional demonstration. Association between pre-test knowledge with demographic variables revealed that there was no significant association between the existing knowledge with these demographic variables on self insulin administration technique.

V. Discussion

Diabetes mellitus is an endocrine disorder characterised by hyperglycaemia that is high blood sugar levels. This is caused due to a relative or absolute insulin deficiency, a hormone produced by the pancreas. Lack of insulin either relative or absolute affects metabolism of carbohydrates, proteins, fat, water and electrolytes leading to an accumulation of glucose in blood.

Insulin is necessary for normal carbohydrate, protein, and fat metabolism. People with type 1 diabetes mellitus do not produce enough of this hormone to sustain life and therefore depend on exogenous insulin for survival. In contrast, individuals with type 2 diabetes are not dependent on exogenous insulin for survival. However, over time, many of these individuals will show decreased insulin production, therefore requiring supplemental insulin for adequate blood glucose control, especially during times of stress or illness. Proper insulin administration measures are necessary for the effective metabolism of the hormone and hence for the desired effect, that is control of blood glucose level.

The present study was designed to assess the effectiveness of an instructional demonstration on self insulin administration technique among diabetes mellitus patients in selected hospitals, Sagar. In view of the nature of the problem under study and to achieve the objectives, a pre experimental research design was found to be appropriate to describe the study. Purposive sampling technique was used to select the samples. The data were collected from 40 diabetic patients who are taking insulin therapy in selected hospitals at Sagar.

Objectives

Objectives of the study are to:

5. Determine the existing knowledge regarding self insulin administration technique among diabetes mellitus patients as measured by a structured interview schedule.
6. Design and provide instructional demonstration on self insulin administration technique among diabetes mellitus patients.
7. Find the effectiveness of instructional demonstration regarding self insulin administration technique among diabetes mellitus patients as measured by the same structured interview schedule.
8. Find an association between pre–test knowledge score and selected demographic variables.

Hypotheses

Hypothesis will be tested at 0.05 level of statistical significance

H_1: The mean post-test knowledge score will be significantly higher than the mean pre-test knowledge score.

H_2: There will be a significant association between pre-test knowledge score and selected demographic variables.

Major findings of the study

Demographic characteristics of the study

1. Majority (37.5%) the participants were in the age group of >60.
2. Among the participants majority (60%) were males
3. About 40% of the participants had PUC education and 35% had secondary education.
4. Half of the participants (50%) were having duration of disease less than 5 years.
5. About 45% of the participants were injecting insulin by themselves.
6. More than half of the participants (52.5%) had got previous training regarding insulin administration.

Level of knowledge of patients regarding self insulin administration

1. Majority (57.5%) of the diabetes patients had moderate knowledge.
2. Participants having poor knowledge contributed 30% of the population.
3. A small percentage i e, 12.5% were having good knowledge..
4. None of the participants had very good knowledge.

Area-wise analysis of the knowledge scores

- The area-wise analysis revealed that patients scored highest in Area I, the area of knowledge regarding diabetes mellitus with a mean percentage of 62%

The findings of this study were supported by a study conducted to verify diabetes mellitus patients' knowledge about the disease. Data were collected from 84 samples through interviews and analyzed through descriptive statistics. The results revealed that 28.6% of the participants have poor knowledge regarding diabetes mellitus and its causes.[51]

- The area-wise analysis revealed that the patients scored comparatively lower in Area II, the area of knowledge regarding self insulin administration technique with a mean percentage of 57.14%.
- The overall mean knowledge score was 11.43±3.003, with a mean percentage of 59.57 %.

Effectiveness of instructional demonstration on self insulin administration

- The results showed that the total mean knowledge score is increased by 27.57% with mean ±SD of 12.97±3.70 after the administration of instructional demonstration.

Comparison of the area wise mean and SD of the knowledge scores showed that,

- The effectiveness of instructional demonstration in the area of knowledge regarding diabetes mellitus had 22.11% increase in the mean percentage knowledge scores with the mean and SD of 6.87±2.95 was observed with that of 62% in pre-test and 84.11% in the post-test.

The findings of this study were supported by another study conducted on the effects of individual teaching imparted during routine diabetologic counseling in Italy among 42 samples. The results were compared with control group of 57 samples and it revealed that knowledge concerning diabetes mellitus was significantly higher in treatment group. Hence it is concluded that individual teaching can improve the knowledge of the patients.[52]

- In the area of knowledge regarding self insulin administration technique was 34.67% increase in the mean percentage knowledge scores with the mean and SD of 6.1± 1.65 was observed with that of 57.14% in pre-test and 91.81% in post-test.
- The pre-test knowledge level of all the patients was moderate57.5%, poor 30% and good 12.5%.
- The post-test knowledge level very good 47.5%, good 40% and moderate 12.5%.

The overall effectiveness of the study showed that,

– The value of't' was calculated to analyses the difference in knowledge score of diabetes patients in pre-test and post-test.

– The calculated 't' value (22.19, $P<0.05$) in knowledge aspect was greater than the table value (1.83) at 0.05 level of significance. Therefore, the null hypothesis was rejected and the research hypothesis was accepted indicating the gain in knowledge was not by chance.

– Hence it is concluded that there is very highly significant gain in knowledge of parents on self insulin administration technique after the instructional demonstration.

– The findings revealed that the mean post-test score was significantly higher than the mean pre-test score.

VI. Conclusion

Education can gradually change people from their wrong unhealthy perceptions and practices. A major role of nursing practice is to provide health education hat is culturally sensitive, which fits into health believes and practices of the people. Healthy practices should be encouraged and a positive attitude should be reinforced.

Implications for nursing education

The nursing curriculum is concerned with the preparation of the nurses. The present study would help the nurses to understand the level of knowledge of patients clinically diagnosed as diabetes mellitus about self insulin administration technique. This study gives awareness about the different aspects of insulin administration to the nurses as well as nursing students. The hospital and home visit should be a practical field of learning. This study will also help to conduct in service education programmes to improve the knowledge of nurses.

Implications for nursing administration

The nurse administrators should see that the aspect of health promotion while providing nursing care. Nursing administration should implement outreach programmes to make the people aware about safer methods of insulin administration and hence to prevent complications. They should make the society aware about the prevailing complications due to improper practice of insulin administration. Necessary administration support should be provided to conduct several activities.

Implications for nursing research

In Indian studies, there is scarce literature and research done on self insulin administration technique. An untoward effect of self insulin administration technique is increasing rapidly now- a days. This stresses a greater

need for nursing research in areas of safe administration of insulin. Nursing is to care the individual from womb to tomb. Research studies should be conducted to assess the insulin administration technique and effects of faulty practices. Preventive and interventional programmes can be conducted in community areas as well as in the hospitals.

Limitations of the study

- Only one hospital was selected for the study due to limited time for data collection.
- A structured interview schedule was used to collect information on knowledge regarding self insulin administration; the responses were, therefore restricted.
- Samples were selected from only one hospital. So generalization of findings is restricted to selected hospital in Sagar.
- Lack of random sampling technique hinders the generalization of results.
- No attempt was made to assess the improvement in practice of diabetes mellitus patients regarding self insulin administration technique.

Recommendations

Based on the findings of the present study recommendations are offered for further researchers:

– The study can be replicated in a larger sample.

– A comparative study can be conducted to assess the knowledge of diabetes mellitus patients regarding self insulin administration in rural and urban areas.

– A large scale study needs to be carried out to generalize the findings.

– The practice of the diabetes mellitus patients on insulin administration can also be included in this study

– A similar study may be conducted by using a control group.

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