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"A study to assess the effectiveness of an information booklet on complications of Diabetes mellitus among patients with Diabetes mellitus at selected hospital, Kolkata."

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ABSTRACT

In this present study the investigator conducted an experimental study to assess the effectiveness of an information booklet on complications of Diabetes mellitus among patients with Diabetes mellitus at selected hospital, Kolkata. The main purpose of the study is to help patients with Diabetes mellitus to have adequate knowledge about complications of Diabetes mellitus which reduce the occurrence of complications and thereby lead a better quality of life. The research design adopted was the one group pre test and post test research design. The information booklet is found to be effective. These back ground factors were compared with the pre test knowledge score and association was tested among them by using Chi-square test. The study concludes that information booklet can improve knowledge level among patients with Diabetes mellitus. The study ends with a list of recommendations for further study, references and appendices.

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IndexTerms – Diabetes mellitus, Complications, Knowledge, Effectiveness, Quality of life, Hospital, Information boklet.

INTRODUCTION

Diabetes mellitus is a group of metabolic disease characterized by increased level of glucose in the blood resulting from defects in insulin secretion or insulin action or both (American Diabetes Association, 2004).

The human body naturally tightly regulates blood glucose levels as a part of metabolic homeostasis. Glucose is the primary source of energy for the body's cells, and blood lipids (in the form of fats and oils) are primarily a compact energy store. Glucose is transported from the intestines or liver to body cells via the bloodstream, and is made available for cell absorption via the hormone insulin, produced by the body primarily in the pancreas. Glucose levels are usually lowest in the morning, before meal[2].

Diabetes mellitus without proper treatment can cause many complications. Acute complications include hypoglycemia, diabetic ketoacidosis, or nonketotic hyperosmolar coma. Serious long-term complications include cardiovascular disease, chronic renal failure, retinal damage. Adequate treatment of Diabetes mellitus is thus important, as well as blood pressure control and lifestyle factors such as smoking cessation and maintaining a healthy body weight.

Knowledge is required for prevention of Diabetes mellitus. The aim of information booklet is to promote the view of clients towards positive health, incorporating its physical, mental & social aspects & is focused on the specific activities of the client education covering information giving healthy life style advice & encouragement in participation in care, cure & rehabilitation, thus empowering them to improve their own health. As Priggy Janice says "If you treat a client today, you help him today, if you teach a client today. you help him for the rest of his life".

NEED OF THE STUDY.

The rapid increase in population, increased longevity & high ethnic susceptibility to Diabetes mellitus, compiles with rapid urbanization & changes from traditional life styles is almost likely to trigger a Diabetes mellitus epidemics.

Dr. B. Kavita, in 2006 carried out a study on "Management of type diabetes in the west coast of India". The study was done to identify the quality of Diabetes mellitus care provided to patients in west coast of India as per the standards of American Diabetes Association and to assess the current status of Diabetes mellitus control and its complications in the study population. The study result shows most of the diabetes patients having complications without proper diabetes care .

Since education is the foundation of any good therapy, the nurse during her intervention with the patient should guide, motivate and supervise their knowledge regarding complication. During clinical experience the researcher saw a patient unable to attain the clinic and failed to have proper treatment to control blood glucose level within normal limit due to ignorance or lack of knowledge. Then the researcher thought if he will have adequate knowledge on complications of Diabetes mellitus, it will save him from several complications related to Diabetes mellitus .

As a researcher my experience is- the primary purpose of treatment for people with Diabetes mellitus to have enough knowledge on complications of Diabetes mellitus, selfcare management skills.

Therefore the researcher has chosen this topic for the improvement of knowledge among patients with Diabetes mellitus about complications of Diabetes mellitus which is a more important factor to prevent future complications and help them to live healthy life without any complication. The purpose of this study is to develop a valid information booklet that will help in providing knowledge, guidance and practice to those patients with Diabetes mellitus in taking care of their health in relation to manage blood glucose level and its related complications.

POPULATION

The set of all subjects (or what ever is to be investigated) is called the population. The population selected for this study consists of type I and type II patients with Diabetes mellitus.

SAMPLE

According to Talbot, a sample is a portion of the population that has been selected to represent the population of interest.

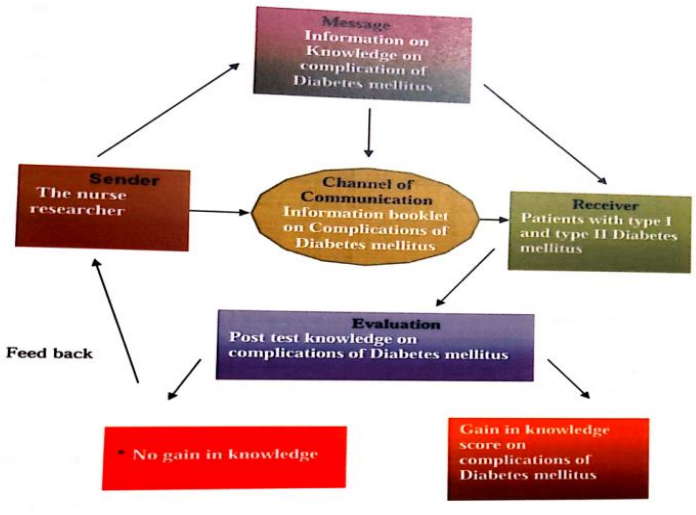
In this study, the samples are patients with Diabetes mellitus of both type-I and type-II. The sample size is decided to be 30, considering the availability of sample.

3.2 Data and Sources of Data

Review of literature related to complication of Diabetes mellitus:

Jaakko (2000) has conducted a study on "Controlling glucose and blood pressure in type 2 Diabetes mellitusstarting treatmrnt earlier may reduce complicqationsThe study concluded that the findings from the observational analysis and trial effects are concordant, which is reassuring and emphasizesthe need for more effective control of glucose concentration and blood pressure in patients with type 2 Diabetes mellitus, the lower level of blood glucose, HbA1c".

3.3 Theoretical framework



* Not under study

Fig1. CONCEPTUAL FRAMEWORK BASED ON S-M-C-R MODEL (1949)

The conceptual frame work in this research study will be based on the Shannon Weaver " S-M-C-R model" (1949). Shannon Weaver model is based on information theory. Information theory is a mechanical approach of communication.

RESEARCH METHODOLOGY

Methodology of research indicates the general pattern, the procedure for empirical study together with the method of obtaining valid and reliable data on problem and the investigation (Burns and Grove, 1997).

The research process moves from the initiation to the culmination stage in a logical sequence of steps. This is reflected in the research design which is the overall plan for obtaining answers to questions being studied and for handling some of the difficulties encountered during the research process (Polit and Hungler, 1999).

This chapter describes the details of methodology for the study. The methodology of research indicates the general pattern for organizing the procedures for gathering valid and reliable data for the study. It includes the research approach, research design, sample and sampling technique, selection and development of data collection tools, research settings, preparation of information booklet and data collection procedure and analysis.

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STATISTICAL TOOLS

The tool used for data collection was prepared by extensive search of references in the library and by consulting the experts.

The tool consists of two categories:-

- Demographic proforma.
- Structured knowledge questionnaire .

Tool I: Demographic Proforma

This part dealt with the background factors that the researcher likes to study in respect of each patient. It will consist of the following:

- Age, sex, educational status, occupational status, family history of Diabetes mellitus, duration of illness, treatment taken for Diabetes mellitus, usually maintained fasting blood glucose level in last 3 months, associated other disease, exercise pattern, food habit, use of tobacco, alcohol intake.

Tool II- Structured Knowledge Questionnaire

This part was meant for assessing the level of knowledge of each patient in respect or the following six areas: Diabetes mellitus, causes of Diabetes mellitus, symptoms of Diabetes mellitus, diagnostic evaluation, possible complications of Diabetes mellitus, preventive measures of complications of Diabetes mellitus.

3.4.1 Analysis and interpretation of data:

1. The table interprets that maximum patients with Diabetes mellitus are from age group 60-79 years, maximum having secondary education, and having maximum duration of illness 0-10 years, most of them takes controlled regular homely diet.

2. that 40% Diabetes patients are in age group 40-59 years, 56.67% are in age group 60-79 years and only 3.33% are in age group ≥80 years.

3. 50% Patient with Diabetes mellitus are both male and female.

4. 3.33% having primary education,33.33% having secondary and 26.67% having higher secondary, 36.67% having graduation and above educational status.

5. 13.33% patients with Diabetes mellitus are business man, 16.67% are service man where as 43.33% are home maker and 26.67 % are unemployed or retired.

6. 16.67% patients with Diabetes mellitus having family history of Paternal 23.33% having family history of maternal where as 20% having family history of both parents and 40% having no family history.

7. 56.67% patients with Diabetes mellitus having duration of illness 0-10 years, 20% of each patients with Diabetes mellitus having duration of illness 11-20 years and 21-30 years whereas only 3.33% having duration of illness >30 years.

8. 10% patients with Diabetes mellitus are on diet control, 46.67% are on only oral hypoglycemic agent, 20% are on only insulin where as 23.33% are on hypoglycemic agent along with diet control.

9. 10% patients with Diabetes mellitus are on diet control, 46.67% are on only oral hypoglycemic agent, 20% are on only insulin where as 23.33% are on hypoglycemic agent along with diet control.

10. 26.67% of patients with Diabetes mellitus having cardiovascular disease and 23.33% having renal disease whereas 50% patients with Diabetes mellitus having other associated diseases.

11. 36.60% patients with Diabetes mellitus practicing exercise regularly, 26.67% practicing irregularly whereas 36.67% are not practicing exercise at all.

12. 73.34% of patients with Diabetes mellitus takes controlled regular homely diet and 23.33% makes excessive use of outside food and homely diet both whereas only 3.33% of patients with Diabetes mellitus takes makes excessive use of outside food.

13. 20% patients with Diabetes mellitus smokes whereas 13.33% uses tobacco in the form of chewing and 3.33% uses tobacco in the form of smoking and chewing both whereas 63.33% not using at all .

14. 33.33% patients with Diabetes mellitus used to take alcohol in the past but do not take now and 10% takes occasionally where as 56.67% has never taken alcohol.

- ☞ Obtained pre test score ranged from 7-24 and post test score range from 19-30. There is a marked increase in the post test knowledge score. Data further indicated that majority of the patients with Diabetes Mellitus patients (43.33%) obtained the score in the range of 13-15 in the pretest where as in the post test majority (36.67%) patients with Diabetes Mellitus were in range of 25-27.

Range, mean, median and standard deviation of the pre test and post test knowledge scores

n=30

Sl. No.	Knowledge Score	Range	Mean	Median	Standard deviation
1.	Pre test	7-24	14.9	14.58	3.72
2.	Post test	19-30	24.4	24.5	2.76

Data presented in table 3 shows that the post test mean knowledge score is apparently higher than pre test mean knowledge score. The median of the post test score higher than the median of pre test scores. This shows there is a

knowledge gain in the post test. The standard deviation is decreased in the post test scores in comparison with the pre test scores.

Mean, mean difference, standard deviation and "t" value of pre test and post test knowledge score of patients with Diabetes mellitus

n=30

Sl No	Knowledge score	Mean	Mean difference	Standard devision	"t" value
1.	Pre-test	14.9	9.5	3.72	12.18
2.	Post test	24.4		2.76	

t (29) = 2.04. $p<0.05$

The data presented in the above table show that the mean difference between pre and post knowledge score is 12.18 and "t" value was computed to find out the significance difference between the two correlated mean of the pre test and post test knowledge scores and "t" value found significant t (29) = 2.04, $p<0.05$. Hence the researcher rejected the null hypothesis and accepted the research hypothesis.

Maximum possible score of mean percentage of pre-test and post-test knowledge score obtained by patients with Diabetes mellitus.

n=30

Sl. No.	Areas Of Knowledge	Maximum scores	Pre-test Mean	Pre-test Mean%	Post-test Mean	Post-test Mean%
1	What is Diabetes mellitus.	1	0.17	17%	0.7	70%
2.	Causes of Diabetes mellitus.	1	0.47	47%	0.93	93%
3.	Symptoms of Diabetes mellitus.	2	1.2	60%	1.93	96.5%
4.	Diagnostic evaluation.	4	2.1	52.5%	3.33	83.25%
5.	Possible complications of Diabetes mellitus.	9	4	44.44%	6.8	75.56%
6.	Preventive measures of possible complications.	13	6.93	53.33%	10.73	82.56%

Maximum score 30

Data presented in table 5 indicate that the total post-test mean knowledge score (**24.42**) in all areas of complications of Diabetes was higher than the total pre-test mean knowledge score (**14.87**). The mean post-test in six areas were apparently higher than mean pre test score.

Table:- Area wise mean percentage of pre-test and post-test knowledge score, Actual gain and Modified gain score of patients with Diabetes mellitus

n=30

Sl. No.	Areas Of Knowledge	Mean %		Actual gain	Modified gain
		Pre test	Post test		
1	What is Diabetes mellitus.	17%	70%	**53**	0.64
2.	Causes of Diabetes mellitus.	47%	93%	46	0.87
3.	Symptoms of Diabetes mellitus.	60%	96.5%	36.5	**0.91**
4.	Diagnostic evaluation.	52.5%	83.25%	30.83	0.65
5.	Possible complications of Diabetes mellitus.	44.44%	75.56%	31.12	0.56
6.	Preventive measures of possible complications.	53.33%	82.56%	29.23	0.63

The data presented in table 6 shows that maximum actual gain (53) in the area of what is Diabetes mellitus and maximum modified gain (0.91) in the area of symptoms of Diabetes mellitus.

Table :- Chi square values computed between the pre test knowledge of patients with Diabetes mellitus with the selected variables

n=30

Sl. No.	Selected factors	Below median	Above median	$\chi 2$	df	Significance
1	**Age-**					
1.1	20-39 years.	0	0	1.88	3	NS
1.2	40-59 years.	6	6			(χ^2=7.81)
1.3	60-79 years.	12	5			
1.4	>80 years.	1	0			
2	**Sex –**					
2.1	Male	7	8	3.59	1	NS
2.2	Female	12	3			(χ^2=3.84)
3	**Educational status-**					
3.1	Primary	1	0	4.9	3	NS
3.2	Secondary.	6	4			(χ^2=7.81)
3.3	Higher secondary	5	3			
3.4	Graduation and above	7	4			
4	**Occupational status-**					
4.1	Business man	2	2	4.64	3	NS
4.2	Service man	2	3			(χ^2=7.81)
4.3	Home maker	11	2			
4.4	Unemployed/ retired	4	4			
5	**Family history of Diabetes mellitus-**					
5.1	Paternal.	4	1	4.85	3	NS

5.2	Maternal	4	3			(χ^2=7.81)
5.3	Both parents	2	4			
5.4	No family history	9	3			
6	**Duration of illness-**					
6.1	0-10 years	13	4	3.81	3	NS
6.2	11-20 years.	2	4			(χ^2=7.81)
6.3	21-30 years	3	3			
6.4	>30 years	1	0			
7	**Treatment taken for Diabetes mellitus-**					
7.1	Only diet control	1	2	3.14	3	NS
7.2	Only oral hypoglycemic agent	9	5			(χ^2=7.81)
7.3	Only insulin	3	3			
7.4	Hypoglycemic agent along with diet control	6	1			
8	**Usually maintained fasting blood glucose level-**					
8.1	Below 100 mg/dl	3	1	1.59	3	NS
8.2	101-150 mg/dl	6	6			(χ^2=7.81)
8.3	151-200 mg/d	7	3			
8.4	Above 200 mg/dl	3	1			
9	**Associated other diseases-**					
9.1	Cardiovascular disease	5	3	2.3	3	NS
9.2	. Renal disease	3	4			(χ^2=7.81)
9.3	Peripheral vascular disease	0	0			
9.4	Other associated diseases	11	4			
10	**Exercise pattern-**					
10.1	Regularly done	7	4	3.95	2	NS
10.2	Irregularly done	3	5			(χ^2=5.99)
10.3	Not done at all	9	2			
11	**Food habit-**					
11.1	Controlled regular homely diet	16	6	5.06	2	NS
11.2	Excessive use of outside food	1	0			(χ^2=5.99)
11.3	Regular homely diet and outside food both	2	5			
12	**Use of tobacco in the form of -**					
12.1	Smoking	3	3	3.34	3	NS
12.2	Chewing	2	2			(χ^2=7.81)
12.3	Smoking and chewing both	0	1			
12.4	Not using at all	14	5			
13	**Alcohol intake-**					
13.1	Taking regularly	0	0	3.18	3	NS
13.2	Taking occassionally	1	2			(χ^2=7.81)
13.3	Used to take in past but not now	5	5			

13.4	Never taken	13	4

χ^2 at 0.05 level of significance df (1)=3.84df (2)= 5.99,df (3)= 7.81

S- significant

NS-Non significant

The data presented in table 7 shows that there is no significant association between pre-test level of knowledge of Diabetes Mellitus patients on Complications of Diabetes mellitus and selected variables.

Implications

The challenges faced by the patients with Diabetes mellitus are enormous. The implications made in the study are vital concern to the nursing practice, nursing education, nursing administration and nursing research.

Implication for nursing care:-

Nurses should evaluate the patients with Diabetes mellitus to prevent any complications of Diabetes mellitus and any other aspects of home management. The present study created awareness, stimulated and motivated patients with Diabetes mellitus to practice the exact healthy practices to prevent further complications. Nursing personnel could plan, implement and evaluate various teaching programmes regarding prevention of complications of Diabetes mellitus by patients with Diabetes mellitus.

Implications for Nursing Education:-

Education is a key component in improving the knowledge of an individual. Nursing curriculum should give stress on the health education by nurses regarding complications of Diabetes mellitus. The student nurses may be educated to teach the patients with Diabetes mellitus different aspects of knowledge about Diabetes mellitus and its complications. The study has also drawn the fact that there is a need to educate close relatives regarding knowledge on complications of Diabetes mellitus.

Implications for Nursing Research:-

The finding of the study served as a basis for the nursing personnel and the students to conduct further studies, indifferent aspects of Diabetes mellitus like drug compliance, diet, exercise, foot care and prevention of complications. In depth research studies can be conducted by including assessment of all the three domains, that is cognitive, affective and psychomotor domains of nursing personnel.

Implications for Nursing Administration:-

Nursing administrator could take an initiative role in leading nursing personnel to teach on complications of Diabetes mellitus among patients with Diabetes mellitus. The materials should be supplied to educate the patients in various departments of the hospital (Information booklet). The nursing administrator should supervise the nurses while teaching the patients especially chronic patients. Pamphlets, handouts, patients' booklets should be kept at Diabetic clinic regarding Diabetes mellitus for further use by patients and relatives.

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