



## A STUDY TO ASSESS THE EFFECTIVENESS OF INFORMATION EDUCATION COMMUNICATION ON KNOWLEDGE REGARDING HYPOGLYCEMIA AMONG PATIENTS WITH DIABETES MELLITUS IN A SELECTED COMMUNITY AREA

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### ABSTRACT

A quasi experimental study to assess the effectiveness of information education communication on knowledge regarding hypoglycemia among patients with diabetes mellitus. The 60 study samples selected by non probability sampling technique. The data collected with the help of demographic data, clinical variables and self structured questionnaire regarding hypoglycemia. The study results shows that after the IEC the level of knowledge improved as 80% had moderately adequate level of knowledge, 16.67% had inadequate level of knowledge and 3.33% had adequate knowledge in experimental group. The effectiveness of IEC is proved effective at  $p < 0.05$  level. The study conclude that the Nurses are health care providers actively involved in prevention and early detection of diabetes and its complications by conducting various education methods.

**KEYWORDS:** Diabetes mellitus, Hypoglycemia, Management, Awareness, Information Education and Communication.

### INTRODUCTION

Diabetes Mellitus (DM) is a major health problem in the world. Diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hypoglycemia with disturbances of carbohydrate, fat and protein metabolism. Hyperglycemia is an increase in blood glucose level. Hypoglycemia is lower than normal level of blood glucose.

Over time, repeated episodes of Hypoglycemia can lead to Hypoglycemia unawareness. The body and brain no longer produce signs and symptoms that warn of a low blood sugar, such as shakiness or irregular heartbeats. When this happens, the risk of severe, life-threatening Hypoglycemia is increased. Diabetes occurs due to changes in lifestyle and industrial process, incidence of diabetes and its complications have been increased. Accordingly hypoglycemia is considered as a common complication of diabetes. Nurses are health care providers actively involved in prevention and early detection of diabetes and its complications.

The nurse's role could be in the health care, health, community education, health systems management, patient care and improving the quality of life. Screening programmes should be initiated to detect problems earlier so that future complications can be prevented. The

outcome of this study may help the personnel to identify the presence of hypoglycemic episode in future and prevention of hypoglycemia and immediate management.

### Aims

This study aimed to improve the level of knowledge on Hypoglycemia among diabetes mellitus patients.

### Objectives

To assess the level of knowledge among patients with Diabetes Mellitus regarding Hypoglycaemia before and after information education communication in both control and experimental group.

To evaluate the effectiveness of information education communication on knowledge of Hypoglycaemia in experimental group.

To associate the post test level of knowledge regarding Hypoglycaemia with selected demographic variables among experimental and control group.

### MATERIALS AND METHODS

1. Setting and participants: This study is conducted at selected community area i.e for Experimental group (Nazerthpet) and for Control group (Meppur) area.

The participants in this study were 60 patients diagnosed as type 2 diabetes mellitus & who coming for checkup during data collection period.

2. Tools and Techniques: In this study the tools used were demographic variable, self administered questionnaire to assess the level of knowledge on hypoglycaemia and its prevention, information education and communication.
3. Description of Intervention: There are of 20 items to assess the level of knowledge regarding general, signs, management and prevention aspects on hypoglycemia.
4. Ethical Considerations: The investigator took written consent from the patients by explaining the purpose of the information and the confidentiality mentioned and it will be used for the purpose of research.
5. Statistical Methods: the descriptive statistical analysis method such as mean, standard deviations and inferential statistics.

## RESULTS

1. Description of the demographic variables of patients with diabetes mellitus in the experimental and control group
2. Assessment of level of knowledge regarding hypoglycemia among patients with diabetes mellitus in the experimental and control group.
3. Effectiveness of Information Education Communication on Knowledge regarding Hypoglycemia among Patients with Diabetes Mellitus in the experimental and control group.
4. Association of posttest level of knowledge regarding Hypoglycemia among patients with diabetes mellitus with selected demographic variables in the experimental and control group.

**Table 1: Frequency and percentage distribution of demographic variables of patients with diabetes mellitus in the experimental and control group N = 60(30+30).**

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
<b>Age</b>				
36 - 45 years	4	13.33	2	6.67
46 - 55 years	7	23.33	6	20.00
56 - 65 years	16	53.33	16	53.33
Above 65 years	3	10.00	6	20.00
<b>Sex</b>				
Male	17	56.67	11	36.67
Female	13	43.33	19	63.33
<b>Marital status</b>				
Married	30	100.00	30	100.00
Unmarried	0	0.00	0	0.00
<b>Level of education</b>				
Uneducated	9	30.00	11	36.67
Elementary	16	53.33	19	63.33
High school	5	16.67	0	0.00
Graduate	0	0.00	0	0.00
PG and above	0	0.00	0	0.00
<b>Type of family</b>				
Nuclear	7	23.33	4	13.33
Joint	23	76.67	26	86.67
<b>Residence</b>				
Urban	0	0.00	0	0.00
Rural	30	100.00	30	100.00
<b>Occupation</b>				
Private employee	7	23.33	7	23.33
Government employee	0	0.00	9	30.00
Business	0	0.00	0	0.00
Daily wages	21	70.00	6	20.00
None	2	6.67	8	26.67
<b>Family income (per month)</b>				
Rs.5000 - 10000/-	6	20.00	4	13.33
Rs.10001 - 20000/-	20	66.67	23	76.67
>Rs.20000/-	4	13.33	3	10.00

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
<b>Family history of diabetes</b>				
Yes	7	23.33	3	10.00
No	23	76.67	27	90.00
<b>Duration of diabetes mellitus</b>				
2 - 5 years	8	26.67	13	43.33
5 - 10 years	19	63.33	13	43.33
>10 years	3	10.00	4	13.33
<b>Type of treatment</b>				
Only OHAs	30	100.00	30	100.00
Only insulin	0	0.00	0	0.00
Both OHAs and insulin	0	0.00	0	0.00
<b>Source of information</b>				
Television / Radio / Newspaper / Other media	0	0.00	0	0.00
Friends	0	0.00	0	0.00
Relatives	0	0.00	7	23.33
Medical workers	30	100.00	23	76.67
None	0	0.00	0	0.00
<b>Dietary pattern</b>				
Vegetarian	5	16.67	3	10.00
Non-vegetarian	25	83.33	27	90.00

**Table 2: Frequency and percentage distribution of pretest and post test level of knowledge regarding hypoglycemia among patients with diabetes mellitus in the experimental group. N = 30.**

Knowledge	Inadequate (6 – 20)		Moderately Adequate (21 – 34)		Adequate (35 – 49)	
	No.	%	No.	%	No.	%
pretest	30	100.0	0	0	0	0
posttest	5	16.67	24	80.0	1	3.33

**Table 3: Frequency and percentage distribution of pretest and post test level of knowledge regarding hypoglycaemia among patients with diabetes mellitus in the control group N = 30.**

Knowledge	Inadequate (6 – 20)		Moderately Adequate (21 – 34)		Adequate (35 – 49)	
	No.	%	No.	%	No.	%
Pretest	30	100.0	0	0	0	0
Posttest	30	100.0	0	0	0	0

**Table 4: Comparison of pretest and post test level of knowledge scores regarding hypoglycaemia among patients with diabetes mellitus between the experimental and control group. N = 60(30+30).**

Knowledge	Group	Mean	S.D	Mean difference score and %	Student Independent 't' Value
Pretest	Experimental	8.87	1.85	0.37 (0.75%)	t = 0.755 p =0.453 N.S
	Control	8.50	1.91		
Post Test	Experimental	24.17	3.74	14.97 (30.55%)	t = 19.763 p =0.0001 S***
	Control	9.20	1.79		

\*\*\*p<0.001, S – Significant

**Table 5: Association of post test level of knowledge regarding hypoglycaemia among patients with diabetes mellitus with selected demographic variables in the experimental group N = 30.**

Demographic Variables	Inadequate (6 – 20)		Moderately Adequate (21 – 34)		Adequate (35 – 49)		Chi-Square Value
	No.	%	No.	%	No.	%	
<b>Age</b>							$\chi^2=16.147$ d.f=6 P = 0.013 S*
36 - 45 years	3	10.0	1	3.3	0	0	
46 - 55 years	0	0	6	20.0	1	3.3	
56 - 65 years	1	3.3	15	50.0	0	0	
Above 65 years	1	3.3	2	6.7	0	0	
<b>Sex</b>							$\chi^2=0.848$ d.f=2 P = 0.654 N.S
Male	3	10.0	13	43.3	1	3.3	
Female	2	6.7	11	36.7	0	0	
<b>Marital status</b>							-
Married	5	16.7	24	80.0	1	3.3	
Unmarried	-	-	-	-	-	-	
<b>Level of education</b>							$\chi^2=2.222$ d.f=4 P = 0.695 N.S
Uneducated	2	6.7	7	23.3	0	0	
Elementary	3	10.0	12	40.0	1	3.3	
High school	0	0	5	16.7	0	0	
Graduate	-	-	-	-	-	-	
PG and above	-	-	-	-	-	-	
<b>Type of family</b>							$\chi^2=1.165$ d.f=2 P = 0.559 N.S
Nuclear	2	6.7	5	16.7	0	0	
Joint	3	10.0	19	63.3	1	3.3	
<b>Residence</b>							-
Urban	-	-	-	-	-	-	
Rural	5	16.7	24	80.0	1	3.3	
<b>Occupation</b>							$\chi^2=1.595$ d.f=4 P = 0.810 N.S
Private employee	2	6.7	5	16.7	0	0	
Government employee	-	-	-	-	-	-	
Business	-	-	-	-	-	-	
Daily wages	3	10.0	17	56.7	1	3.3	
None	0	0	2	6.7	0	0	
<b>Family income (per month)</b>							$\chi^2=12.008$ d.f=4 P = 0.017 S*
Rs.5000 - 10000/-	3	10.0	2	6.7	1	3.3	
Rs.10001 - 20000/-	1	3.3	19	63.3	0	0	
>Rs.20000/-	1	3.3	3	10.0	0	0	
<b>Family history of diabetes</b>							$\chi^2=0.373$ d.f=2 P = 0.830 N.S
Yes	1	3.3	6	20.0	0	0	
No	4	13.3	18	60.0	1	3.3	
<b>Duration of diabetes mellitus</b>							$\chi^2=8.298$ d.f=4 P = 0.081 N.S
2 - 5 years	3	10.0	4	13.3	1	3.3	
5 - 10 years	1	3.3	18	60.0	0	0	
>10 years	1	3.3	2	6.7	0	0	
<b>Type of treatment</b>							-
Only OHAs	5	16.7	24	80.0	1	3.3	
Only insulin	-	-	-	-	-	-	
Both OHAs and insulin	-	-	-	-	-	-	
<b>Source of information</b>							-
Television / Radio / Newspaper / Other media	-	-	-	-	-	-	
Friends	-	-	-	-	-	-	
Relatives	-	-	-	-	-	-	
Medical workers	5	16.7	24	80.0	1	3.3	
None	-	-	-	-	-	-	
<b>Dietary pattern</b>							$\chi^2=8.160$ d.f=2 P = 0.017 S*
Vegetarian	2	6.7	2	6.7	1	3.3	
Non-vegetarian	3	10.0	22	73.3	0	0	

\*p&lt;0.05, S – Significant, N.S – Not Significant

**Table 6: Association of post test level of knowledge regarding hypoglycemia among patients with diabetes mellitus with selected demographic variables in the control group. N = 30.**

Demographic Variables	<Mean		>Mean		Chi-Square Value
	No.	%	No.	%	
<b>Age</b>					$\chi^2=1.651$ d.f=3 P = 0.648 N.S
36 - 45 years	2	6.7	0	0	
46 - 55 years	3	10.0	3	10.0	
56 - 65 years	10	33.3	6	20.0	
Above 65 years	4	13.3	2	6.7	
<b>Sex</b>					$\chi^2=0.660$ d.f=1 P = 0.417 N.S
Male	8	26.7	3	10.0	
Female	11	36.7	8	26.7	
<b>Marital status</b>					-
Married	19	63.3	11	36.7	
Unmarried	-	-	-	-	
<b>Level of education</b>					$\chi^2=0.001$ d.f=1 P = 0.979 N.S
Uneducated	7	23.3	4	13.3	
Elementary	12	40.0	7	23.3	
High school	-	-	-	-	
Graduate	-	-	-	-	
PG and above	-	-	-	-	
<b>Type of family</b>					$\chi^2=0.271$ d.f=1 P = 0.603 N.S
Nuclear	3	10.0	1	3.3	
Joint	16	53.3	10	33.3	
<b>Residence</b>					-
Urban	-	-	-	-	
Rural	19	63.3	11	36.7	
<b>Occupation</b>					$\chi^2=1.565$ d.f=3 P = 0.667 N.S
Private employee	4	13.3	3	10.0	
Government employee	7	23.3	2	6.7	
Business	-	-	-	-	
Daily wages	4	13.3	2	6.7	
None	4	13.3	4	13.3	
<b>Family income (per month)</b>					$\chi^2=0.356$ d.f=2 P = 0.837 N.S
Rs.5000 - 10000/-	2	6.7	2	6.7	
Rs.10001 - 20000/-	15	50.0	8	26.7	
>Rs.20000/-	2	6.7	1	3.4	
<b>Family history of diabetes</b>					$\chi^2=0.016$ d.f=1 P = 0.900 N.S
Yes	2	6.7	1	3.3	
No	17	56.7	10	33.3	
<b>Duration of diabetes mellitus</b>					$\chi^2=1.844$ d.f=2 P = 0.398 N.S
2 - 5 years	10	33.3	3	10.0	
5 - 10 years	7	23.3	6	20.0	
>10 years	2	6.7	2	6.7	
<b>Type of treatment</b>					-
Only OHAs	19	63.3	11	36.7	
Only insulin	-	-	-	-	
Both OHAs and insulin	-	-	-	-	
<b>Source of information</b>					$\chi^2=1.969$ d.f=1 P = 0.161 N.S
Television / Radio / Newspaper / Other media	-	-	-	-	
Friends	-	-	-	-	
Relatives	6	20.0	1	3.3	
Medical workers	13	43.3	10	33.3	
None	-	-	-	-	
<b>Dietary pattern</b>					$\chi^2=5.758$ d.f=1 P = 0.016 S*
Vegetarian	0	0	3	10.0	
Non-vegetarian	19	63.3	8	26.7	

\*p&lt;0.05, S – Significant, N.S – Not Significant.

## DISCUSSION

**The first objective of the study was to assess the level of knowledge among patients with Diabetes Mellitus regarding Hypoglycemia before and after information education and communication in both control and experimental group**

In the pretest, almost all 60(100%) had inadequate knowledge regarding hypoglycemia whereas in the post test after administration of Information Education Communication on knowledge regarding hypoglycemia 24(80%) had moderately adequate level of knowledge, 5(16.67%) had inadequate level of knowledge and only one (3.33%) had adequate level of knowledge in the experimental group.

In the pretest and posttest, almost all 60(100%) had inadequate knowledge regarding hypoglycemia in the control group.

The findings of this present study is supportive by a study done by **Girma Neggezie et al., (2017)** conducted a study on knowledge and practice on prevention of hypoglycaemia among diabetes patients. The cross sectional study was conducted. The result shows that 105 (25.5%) respondents had good knowledge in hypoglycaemia prevention, 213 (51.7%) participants had poor knowledge in identifying symptoms of hypoglycaemia.

**The second objective of the study was to evaluate the effectiveness of information education and communication on knowledge of Hypoglycemia in experimental group**

In experimental group the pretest mean score of knowledge was  $8.87 \pm 1.85$  and the posttest mean score of knowledge was  $24.17 \pm 3.74$ . The mean improvement score was 15.30 i.e., the gain percentage was 31.22%. The calculated paired 't' value of  $t = 20.464$  was found to be statistically highly significant at  $p < 0.001$  level.

This clearly indicated that the Information Education Communication on knowledge regarding hypoglycemia administered to patients with diabetes mellitus resulted in a significant difference in the level of knowledge and their level of knowledge had increased significantly.

In control group the pretest mean score of knowledge was  $8.50 \pm 1.91$  and the post test mean score of knowledge was  $9.20 \pm 1.79$ . The mean improvement score was i.e., 1.43%. The calculated paired 't' value of  $t = 1.852$  was not found to be statistically significant.

This clearly indicated that there was no significant change in the level of knowledge regarding hypoglycaemia among patients with diabetes mellitus.

The mean score of level of knowledge of experimental group was significantly more than control group .The hypothesis H1 is accepted.

Hence the H1 stated that there will be a significant difference in the knowledge regarding Hypoglycemia among patients with Diabetes Mellitus before and after information education communication in experimental group is accepted.

The findings of this present study is supportive by a study done by **Thenmozhi p et al., (2018)**: among 60 samples in rural India to find out the knowledge regarding hypoglycemia by using a interview technique. Result: 38 (63.33%) of the samples had insufficient knowledge, 12 of them (20%) had moderately sufficient knowledge and 10 (16.67%) of them had adequate knowledge. Data were analyzed by differential and inferential statistics. Age and therapy type are significantly associated with the level of knowledge about hypoglycemia at  $p < 0.05$ . Conclusion: The findings of the study highlighted that most diabetes mellitus patients do not know about hypoglycemia. In education of diabetics on hypoglycemia, the health professionals play an important role in reducing or preventing hypoglycemic episodes and morbidity.

**The third objective of the study was to associate the post test level of knowledge regarding Hypoglycemia with selected demographic variables among experimental and control group**

The demographic variables age, family income and dietary pattern had shown statistically significant association with posttest level of knowledge regarding hypoglycemia at  $p < 0.05$  level ( $\chi^2 = 16.147$ ,  $d.f = 6$ ,  $p = 0.013$ ), ( $\chi^2 = 12.008$ ,  $d.f = 2$ ,  $p = 0.017$ ) and ( $\chi^2 = 8.160$ ,  $d.f = 2$ ,  $p = 0.017$ ).

The other demographic variables had not shown statistically significant association with posttest level of knowledge regarding hypoglycemia among patients with diabetes mellitus in the experimental group.

The demographic variable dietary pattern had shown statistically significant association with post test level of knowledge regarding hypoglycemia at  $p < 0.05$  level ( $\chi^2 = 5.758$ ,  $d.f = 1$ ,  $p = 0.016$ ).

The other demographic variables had not shown statistically significant association with post test level of knowledge regarding hypoglycemia among patients with diabetes mellitus in the control group.

There is statistically significant association between the level knowledge with demographic variables. Hence the hypothesis H2 is accepted. It is supported by a study conducted by **Vanishreeshraam et al., (2015)**: on knowledge of hypoglycaemia & its associated factors among type 2 diabetic patients using interview technique .Result shows that 242 (66.1%) diabetic patients had good knowledge on hypoglycaemia. Higher age, illiteracy, low socioeconomic status were associated with poor knowledge whereas treatment with insulin along with oral hypoglycaemic agents was associated with

good knowledge on hypoglycaemia. Sex and duration of disease were not associated with knowledge on hypoglycaemia.

## CONCLUSION

Hypoglycemia is the state where the blood glucose level goes below the normal level which has serious impact such as coma. So it is important to educate the community to manage it on their own and to maintain by proper screening.

In this study most of them had inadequate level of knowledge regarding hypoglycemia. After teaching programme their knowledge on hypoglycemia was improved. In the control group there was no improvement in knowledge. Hence the study concluded that the information education and communication was effective and education about hypoglycemia is very essential to manage and prevent hypoglycemic attack.

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