

## EFFECTIVENESS OF COGNITIVE BEHAVIOURAL NURSING INTERVENTION ON SELF EFFICACY AMONG PATINETS WITH TYPE-II DIABETES MELLITUS

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### **ABSTRACT**

#### **Introduction**

Today the process of disease and mortality has been transformed into the world and communicable disease have been replaced with non-communicable diseases. According to International Diabetes Federation Atlas (IDF) 2015, an estimated 69.2 million Indians are diabetic. Self- efficacy is a prerequisite for behavior and should be considered as an independent part of basic skills.

#### **Methods**

Quantitative approach to true experimental research design was used. Samples were patients with type II diabetes mellitus, self efficacy rating scale was used to assess the self-efficacy. Cognitive behavioral Nursing Intervention was given for a period of six months. Self-efficacy was assessed at pretest, 3<sup>rd</sup> month and sixth month.

#### **Results**

98 (93.33%) diabetic patients in the experimental group had low self efficacy in all aspects of diabetic care in the pretest. Whereas 62 (59.05%) had moderate self efficacy in post test-I. Overall self efficacy scores show that 86 (81.91%) of patients with diabetes mellitus had high self efficacy in experimental group during post test-II. the mean self efficacy score in the experimental group was 25.13 in the pre test, mean self efficacy in the control group was 24.68. self- efficacy increased to 48.24 in the experimental group during post test-II and was 25.19 in the control group which is statistically significant at  $p=0.0001$ . This indicates that the cognitive behavioral nursing intervention administered to the patients in the experimental group had a significant effect in improving the self efficacy

**KEYWORDS:** Effectiveness, Patients, Diabetes Mellitus, Self Efficacy, Cognitive Behavioral Nursing Intervention

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### **Article History**

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### **INTRODUCTION**

The World Health Organization (WHO) estimates that by 2020, NCDs will account for 80 percent of the global burden of disease, causing seven out of every 10 deaths in developing countries, about half of them premature deaths under

the age of 70. As India makes its demographic transition toward lower birth rates and higher life expectancy, the prevalence of non communicable disease is on the rise. India is the “Diabetes capital of the world” with over 60 million diabetes in the country.<sup>1</sup> Self-efficacy refers to how much confidence one can take action to deal with certain situations.<sup>2</sup> Assessment of self-efficacy is a bridge between knowledge and self-care behaviors of real. Self efficacy is one of the contributing factors which can have a major role in the success of diabetic control and self care. A majority of subjects had average self efficacy and self care behavior in the domains of diet, exercise, blood sugar monitoring, medication and insulin administration and foot care. A positive correlation was noted between self efficacy and self care behavior.<sup>3</sup>The correlation between self-efficacy and diet and physical activity was 0.5 and 0.67, respectively. The higher the resistance to treatment score, the less confident the patient is in his or her ability to adhere to treatment recommendations. This pattern was not present in adherence to medication intake.<sup>4</sup> Poor awareness and practices among diabetic patients are some of the important variables influencing the progression of diabetes and its complications, which are largely preventable.

## OBJECTIVES

- To determine the effectiveness of cognitive behavioral nursing interventions on self-efficacy, among patients with diabetes mellitus.
- To associate the background variables with the post-test self-efficacy among patients with diabetes mellitus.

## HYPOTHESIS

**H<sub>1</sub>:** There is a significant difference in the self efficacy among patients with diabetes mellitus who receive cognitive behavioral nursing interventions than who do not.

## RESEARCH METHODOLOGY

A quantitative research approach with true experimental, pre-test - post-test design was used to assess the effectiveness of the Cognitive Behavioral Nursing Intervention. The study population consisted of patients with type-II diabetes mellitus, who is diagnosed to have diabetes mellitus and is on treatment, who could understand Tamil and were residing in the selected villages. The exclusion criteria comprised of patients suffering from any form of debilitating illness. The study setting was the two selected rural villages of Kanchipuram district, Tamil Nadu. The sample size consisted of a total of 208 women with 105 in experimental group and 103 in the control group. The independent variable was the Cognitive Behavioral Nursing Intervention. The dependent variable was the self efficacy of patients with diabetes mellitus. Other extraneous variables were age, marital status, educational status, occupation, type of family, family monthly income, type of diet, duration since diabetes, any other systemic illness, etc. Random sampling technique was used to select the villages and patients selected based on the inclusion criteria.

### Description of Research Tools

The tool was prepared based on the objectives of the study. The data Collection tool consisted of

### Part I: Background Variables

**Section-A:** Demographic Variables 12 items

**Section-B:** Diabetes -related variables 6 items.

**Section-C:** Only for female diabetic patients 3 items.

**Part II: Self-efficacy rating scale was used** to assess the self-efficacy of diabetic patients. It had 20 statements about various aspects of diabetes treatment to measure patients' confidence in following a treatment regimen. A total number of items was 20.

### **Scoring and Interpretation**

Each item was measured on a 3 point rating scale ranging from not at all confidence (1) to very confidence (3). The maximum score a sample can receive is 60 and the minimum score is 20.

Low self-efficacy- 20-30

Moderate self-efficacy- 31-45

High self-efficacy- 46-60.

**Content Validity of the Tool:** Item-Content validity index and sum of the content validity index as follows:  
Background variables - I-CVI= 0.857; S-CVI= 0.977.

Self efficacy scale - I-CVI= 1.00; S-CVI= 1.00.

**Reliability of the Tool:** The reliability of the research tools is as follows:

**Split-Half** – Self-efficacy - 0.96 and **Test- Retest Method** Self-efficacy - 0.96

## **INTERVENTION**

### **Cognitive Behavioral Nursing Interventions**

The intervention included (a) Cognitive nursing interventions and (b) Behavioral Nursing Interventions.

#### **(a). Cognitive Nursing Interventions**

It refers to the one to one interactive teaching and learning sessions on various aspects of diabetes mellitus such as diabetes mellitus (definition, risk factors, path physiology, signs and symptoms, diagnostic evaluation, management, and prevention) with help of the Flashcards, Dietary guideline and Medication was discussed using PPT, Exercise and glucose monitoring with Handouts, Complications using pamphlets and Footcare was taught using handouts and demonstration. Teaching sessions were split into four sessions spaced over one month each for 30-40 minutes.

#### **(b). Behavioral Nursing Interventions**

It refers to the demonstration of foot care and counseling of patients for compliance with the treatment regimens and for regular follow up. The steps, general instructions regarding foot care were explained through lecture cum discussion and demonstration methods in 40 minutes. Patients with Type II diabetes mellitus were advised to practice them regularly.

## **DATA COLLECTION PROCEDURE**

### **Phase-1: Identification of Subjects**

The Simple random sampling technique was used to select the villages for control or experimental group. All diabetic patients fulfilling the inclusion criteria were identified, they were enrolled in either experimental or control

group based on the village they belong to. Based on the random selection of the villages, a number of samples available in a particular village was identified and administered a Cognitive Behavioural Nursing Intervention for a period of six months.

### **Place of Data Collection**

Data collection was done at the respective samples residence which consisted of

### **Phase II (1-4 Weeks): Cognitive Nursing Intervention**

Which included teaching and demonstration of foot care. **Month-3 and Month-5** – Reinforcement, Post test-I at a 3<sup>rd</sup> month and Post test-II at 6<sup>th</sup> month.

Patients were seated comfortably in a well-ventilated place, with adequate privacy after obtaining written informed consent and ensuring confidentiality. The background data of the sample was collected. The self-efficacy was assessed individually, by interview method using the self-efficacy Rating Scale for the samples in the experimental group. This took approximately 10 min for each sample. On the same day, the Cognitive Behavioral Nursing Intervention was administered to the patients in the experimental group taking about 30 min. patients were meeting regularly every week for four weeks during the first month of the study period for teaching and counseling. The post-test assessment was done using the respective tools at the end of 3 months following which reinforcement was given and again 5<sup>th</sup> months reinforcement and counseled as necessary. At the end of the sixth months post test-II was given. Similarly, the pre-test and post-test data was collected from the samples in the control group. These patients were encouraged to maintain their routine treatment.

## **RESULTS AND DISCUSSIONS**

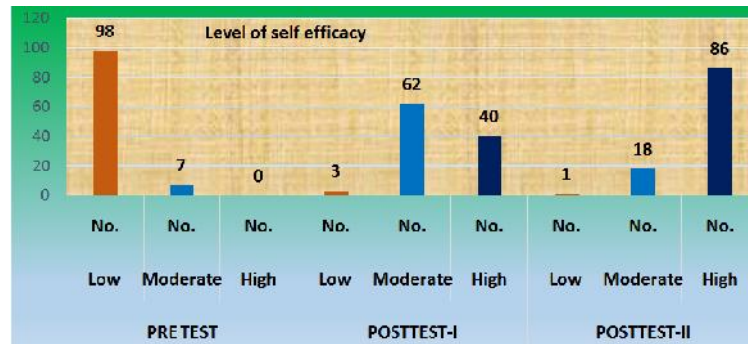
### **Section 1: Frequency and Percentage Distribution of Demographic Variables of Patients with Diabetes Mellitus**

With regard to age, 51(46.42%) in the experimental group and 47 (41.96%) in control group belonged to 41-50 years. Food pattern of diabetic patients shown that 103 (91.96%) in the experimental group and 94 (83.93%) in control group eats non-vegetarian food. 67 (59.82%) in the experimental group and 77 (68.75%) in the control group have no family history of diabetes mellitus. Leisure time activity of patients with diabetes mellitus identifies, 103 (98.10%) in the experimental group and 100 (97.09%) in control group spends their time in watching TV. Classification of socio-economic status shown that, 81 (72.32%) in the experimental group and 82 (73.21%) in control group belonged to lower-upper class.

Duration of having diabetes mellitus showed that 39 (34.82%) in the experimental group and 44 (39.29%) in the control group suffered with diabetes mellitus for 1-3 years. Type of treatment for diabetes mellitus identified that only 3 (2.86%) patients in the experimental group and control group follows a combination of diet, oral hypoglycemic drugs and exercises. With regard to the presence of comorbid conditions identified that 69 (61.61%) in experimental group and 63 (56.25%) in control group have comorbid diseases. Homogeneity was maintained in the distribution of background variables in both the groups.

### **Section 2: Effectiveness of Cognitive Behavioral Nursing Interventions on Self Efficacy**

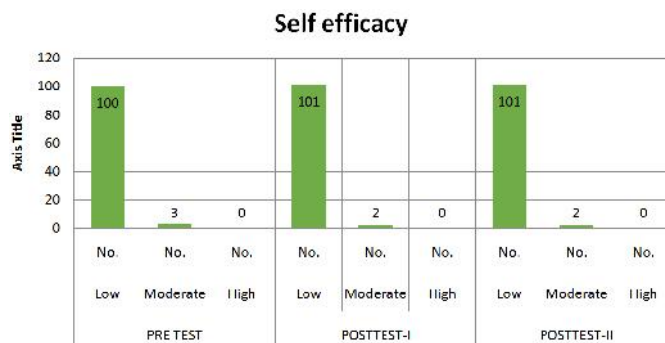
Overall 98 (93.33%) diabetic patients in the experimental group had low self efficacy in all aspects of diabetic care in the pretest. Whereas 62 (59.05%) had moderate self efficacy in post test-I. Overall self efficacy scores show that 86 (81.91%) of patients with diabetes mellitus had high self efficacy in experimental group in post test-II



**Figure 1: Frequency Distribution of Level of Pretest, Posttest-I and Post Test-II Self Efficacy among Patients with Diabetes Mellitus in the Experimental Group**

Post test-I and II scores of self efficacy had improved after the cognitive behavioral nursing intervention. This clearly indicates that the cognitive behavioral nursing intervention had significant impact on the self efficacy of diabetes patients.

Overall 100 (97.09%) had low self efficacy in all aspects of diabetic care in the pretest, 101 (98.06%) in post test-I, 101 (98.06%) in post test-II in the control group.



**Figure 2: Frequency Distribution of Level of Pretest, Posttest-I and Post Test-II Self Efficacy among Patients with Diabetes Mellitus in the Control Group**

**Table 1: Comparison of Self Efficacy among Patients with Diabetes Mellitus during Pretest, Post Test-I and Post Test –II**

Self Efficacy	Experimental Group (105)		Control Group (103)		Chi-Square Value
	No.	%	No.	%	
<b>Pre test</b>					$\chi^2=1.601$ P = 0.206 N.S
Low self efficacy	98	93.33	100	97.09	
Moderate self efficacy	7	6.67	3	2.91	
High self efficacy	0	0	0	0	
<b>Post test-I</b>					$t^2=188.59$ <b>P = 0.0001</b> <b>S***</b>
Low self efficacy	3	2.84	101	98.06	
Moderate self efficacy	62	59.05	2	1.94	
High self efficacy	40	38.10	0	0	
<b>Post test-II</b>					$t^2=196.83$ <b>P = 0.0001</b> <b>S***</b>
Low self efficacy	1	0.95	101	98.06	
Moderate self efficacy	18	17.14	2	1.94	
High self efficacy	86	81.91	0	0	

\*\*\*p<0.001, S – Significant, N.S – Not Significant

Table 1- depicts the comparison of self efficacy among patients with diabetes mellitus during pretest, post test-I and post test –II.

The groups had no significant difference in the pretest as shown by the chi square value of 1.601 with  $p=0.206$ . This homogeneity between the groups is maintained.

The comparison of self efficacy level between experimental and control group during posttest I and posttest II revealed that a highly significant difference at  $p<0.001$  existed between the groups. This indicates an improvement in self efficacy among patients with diabetes mellitus in the experimental group.

**Table 2: Comparison of Pretest, Post Test 1 and Post Test 2 Level of Self Efficacy among Patients with Diabetes Mellitus in the Experimental Group. N=105**

Self Efficacy	Mean	S.D	Mean Diff.	Paired 't' Value
Pretest	25.13	3.24	17.19	<b>t = 26.643</b> <b>p = 0.0001, S***</b>
Post Test 1	42.32	6.26		
Post Test 1	42.32	6.26	5.92	<b>t = 10.886</b> <b>p = 0.0001, S***</b>
Post Test 2	48.24	4.23		
Pretest	25.13	3.24	23.11	<b>t = 53.921</b> <b>p = 0.0001, S***</b>
Post Test2	48.24	4.23		

\*\*\* $p<0.001$ , S – Significant

Table:- interprets the diabetic patients pretest level of self efficacy was significantly increased from 25.13 mean score to 42.32 in post test-I and comparison of posttest-I and post test-II self-efficacy scores showed that there is increase in self-efficacy score (mean =42.32, SD= 6.26) in post test-I to (mean=48.24, SD= 4.23) in post test-II, which was highly significant at  $p <0.001$ . The comparison of mean difference shows that the diabetic patients self efficacy was increased more between pretest and post test-II (mean difference=23.11).

**Table 3: Comparison of Pretest, Post Test 1 and Post Test 2 Level of Self Efficacy among Diabetic Patients with Diabetes Mellitus in the Control Group N=103**

Self Efficacy	Mean	S.D	Mean Diff.	Paired 't' Value
Pretest	24.68	2.56	0.38	<b>t = 2.152</b> <b>p = 0.034, S*</b>
Post Test 1	25.07	2.52		
Post Test 1	25.07	2.52	0.11	t = 0.693 p = 0.490, N.S
Post Test 2	25.19	2.50		
Pretest	24.68	2.56	0.50	<b>t = 2.569</b> <b>p = 0.012, S*</b>
Post Test2	25.19	2.50		

\* $p<0.5$ , S – Significant, N.S – Not Significant

Table: 3- highlights in the control group there was very minimal variation in the mean score of self efficacy in pretest and posttest-I (mean difference =0.38), pretest and posttest-II (mean difference =0.50) at the level of  $p<0.5$ . Comparison of posttest-I and post test-II self-efficacy shows that there was no significant change in the mean score of self efficacy ( $p = 0.490$ ).

**Table 4: Comparison of Pretest to Post Test II Self Efficacy Scores among Diabetic Patients between the Experimental and Control Group**

Self Efficacy	Experimental Group (105)		Control Group (103)		Mean Difference	Independent t' Test
	Mean	SD	Mean	SD		
Pre test	25.13	3.24	24.68	2.56	0.45	t = 1.1101 p=0.2683 NS
Post test-I	42.32	6.26	25.07	2.52	17.25	<b>t = 25.97</b> <b>p=0.0001, S***</b>
Post test-II	48.24	4.23	25.19	2.50	23.05	<b>t = 47.726</b> <b>p=0.0001, S***</b>

\*\*\* $p<0.001$ , S – Significant, N.S – Not Significant

Table: 4- shows that the mean self-efficacy score in the experimental group was 25.13 in the pre test, mean self efficacy in the control group was 24.68. Self-efficacy increased to 48.24 in the experimental group during post test-II and was 25.19 in the control group which is statistically significant at  $p=0.0001$ . This indicates that the cognitive behavioral nursing intervention administered to the patients in the experimental group had a significant effect in improving the self efficacy score in comparison to the control group who did not receive the intervention.

**Table 5: Comparison of Pretest and Post Tests Self Efficacy, Compliance and Bio Physiological Variables in the Experimental and Control Group – Repeated Measures ANOVA**

Self Efficacy	Pre Test		Post Test I		Post Test II		Repeated Measures ANOVA
	Mean	S.D	Mean	S.D	Mean	S.D	
Experimental Group	25.13	3.24	42.32	6.26	48.24	4.23	<b>F = 965.07</b> <b>P = 0.000</b> <b>S***</b>
Control Group	24.68	2.56	25.07	2.52	25.19	2.50	<b>F = 4.216</b> <b>P = 0.016 S*</b>

Table: 5- shows that the difference in self efficacy, compliance and glycemic control among the experimental group after six months is significant at  $p<0.0001$ .

### Section 3: Association of Background Variables with Study Variables

**Association of post test II level of self efficacy with demographic variables of patients with diabetes mellitus in the experimental group** illustrated that the significant association was found between the posttest-II self efficacy and age (**F = 3.654, P = 0.029**), marital status (**t = 2.781, p = 0.014**), family history of diabetes mellitus (**t = 1.992 p = 0.050**), education (**F = 3.266, P = 0.015**) at  $P<0.05$ , self efficacy and income (**F = 4.550 P = 0.001**) at  $P<0.01$ . Self efficacy and work status (**F = 13.343, P = 0.0001**) and socio-economic status (**F = 12.378, P = 0.0001**). There is a significant association between self efficacy and duration (**F = 3.797P = 0.013**) of having diabetes mellitus, comorbid conditions (**t = 4.117, P = 0.0001**) at  $p<0.01$ , intake of other medications (**t = 2.159, P = 0.034**) at  $p<0.05$ . Self efficacy was associated with the type of health education (**t = 2.849, P = 0.008**) received at  $p<0.01$ .

**Association of post test II level of self efficacy with demographic variables of patients with diabetes mellitus in the control group** showed that there is a significant association of self efficacy with frequency of consumption of non- vegetarian foods (**F = 2.751, P = 0.047**), work status (**F = 3.772, P = 0.007**) at  $P<0.05$  and with educational status (**F = 5.754, P = 0.0001**) at  $P<0.001$ . There is no significant association of self-efficacy and diabetic related variables in the control group.

### LIMITATIONS

Matching of all background variables was not possible as a similar number of samples who fulfilled the inclusion criteria was not available in the selected villages, yet the homogeneity between the groups was maintained as indicated by the chi-square test comparing the two groups.

Limited to people living in the selected villages only.

### RECOMMENDATIONS

- A similar study can be conducted with the use of video-assisted or computer-assisted teaching or mobile app method

- Studies may be replicated in other settings, especially including wider community areas.
- Long-term follow up studies for a period of 1-3 years can be conducted
- A multidisciplinary study can be conducted including other healthcare professionals.
- In future practice, it would be ideal if CBNI could become an integrated aspect of diabetes care.

## CONCLUSIONS

Cognitive Behavioral Nursing Intervention is an effective intervention for improving self-efficacy with enduring and clinically meaningful benefits for diabetes self-management and glycemic control in adults with type 2 diabetes. Given the high prevalence of diabetes and the association of poor adherence and outcomes, interventions to treat and improve confidence and compliance could improve diabetes care.

## REFERENCES

1. *International diabetes foundation. The IDF welcomes adoption of WHO global strategy on diet, physical activity and health. 2009. Available from <http://WWW.Idf.Org/home/index.cfm>.*
2. *King, DK, Glasgow. RE, Tobert.DJ, strycker.LA, Estabrooks. PA, Osuna. D, etal. Self-efficacy, problem solving and social environmental support are associated with diabetes self-management behaviors. Diabetes care: 2010; 33(4): 751-3.*
3. *M Mishali, H Omer, A D Heymann; The importance of measuring self-efficacy in patients with diabetes. Fam Pract 2011; 28 (1): 82-87. doi: 10.1093/fampra/cm086*
4. *Nagham Mahmood Aljamali, Aseel Mahmood Jawad & Fatema Mahmood Jawad, Survey on Medical Diagnosis of Diabetes Mellitus Disease, TJPRC:International Journal of Diabetes & Research (TJPRC: IJDDR), Volume 1, Issue 1, January-June 2015, pp. 1-8*
5. *Manjula GB, Dr. Jayarani Premkumar. Effects of a Behavioral Intervention on Self-Efficacy, Self-Care Behavior and HbA1c Values among Patients with Type 2 Diabetes Mellitus. International Journal of Nursing Education. Jul-Sep2016, Vol. 8 Issue 3, p1-5. 5p.*
6. *Rao, Yeluri Seshagiri, and V. Dharma Rao. "Prevalence of Periodontitis among patients with Type-2 Diabetes Mellitus." Int J Gen Med Phrar 5.2 (2016): 15-22.*
7. *Rasheed, Angela M., "The Effect of Diabetes Education on Self-Efficacy and Readmission Rates of Diabetic Patients" (2013). Nursing Theses and Capstone Projects. Paper 81. Gardner-Webb University Digital Commons @ Gardner-Webb University:*
8. *World Health Organization: Global action plan for the prevention and control of non communicable diseases 2013-2020. In. Edited by WHO. Geneva, Switzerland: WHO; 2013: 55.\*
9. *Bandura. 1977. Self Efficacy: Toward Unifying Theory. Psychological Review 1977, Vol 84, No 2, 195, 27 November 2015. <http://psycnet.apa.org/journals/rev/84/2/191.pdf>*