Evaluation of the Impact of Diabetes Education Intervention Among the Diabetics

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Abstract : Diabetes Mellitus has been known for centuries as a disease related to sweetness. It is a syndrome caused by the imbalance between insulin supply and demand in which the blood glucose level ranges above 120 mg/dl in the fasting blood sugar estimation. The objective of the study is to evaluate the impact of diabetes education intervention on knowledge on diabetes and health status of the diabetics. The result of this research study revealed that the dissemination of knowledge on diabetes through education intervention had a positive impact on their knowledge on diabetes, health status such as Body Mass Index (BMI), Blood glucose and blood pressure levels of the Diabetics. It is proved that a well planned diabetes education can bring about a change in their knowledge, attitude and practices. It may increase the effectiveness of diabetes therapy and will delay the onset or the progression of complications, improve the length and quality of life for Diabetic patients and reduce the associated medical cost.

Index Terms –Diabetes, Diabetics, Diabetes Knowledge, Diabetes Education, Health Status, Impact.

I. INTRODUCTION

Good health is a major resource and is an important dimension of the quality of life. But in the present time changes in lifestyle and dietary pattern stemming from rapid modernization have favoured an increase in non-communicable diseases among the people. Among the non-communicable diseases diabetes is now recognized as one of the fastest growing threats to public health in almost all countries of the world.

Diabetes Mellitus has been known for centuries as a disease related to sweetness. It is a syndrome caused by the imbalance between insulin supply and demand in which the blood glucose level ranges above 120 mg/dl in the fasting blood sugar estimation. The prevalence of diabetes has risen dramatically during recent decades, and it's now a serious global health burden. It has been estimated that world prevalence of diabetes is 366 million people in 2011 and the number is set to increase up to 522 million people by 2030.

Globally, an estimated 463 million adults are living with diabetes, according to the latest 2019 data from the International Diabetes Federation. Diabetes prevalence is increasing rapidly; previous 2017 estimates put the number at 425 million people living with diabetes. The number is projected to almost double by 2030.

Diabetes related complications are rise and contribute significantly to overall morbidity and mortality. Every year, over four million people die from diabetes and tens of millions more suffer disabling and life-threatening complications such as heart attack, stroke, kidney failure, blindness and amputation. Diabetes is also implicated in and has negative consequences for certain infectious diseases, other non-communicable diseases (NCDs) and for mental health.

The low levels of education and poor awareness of the disease in the country are enhancing its impact on health of the population. Also most of the people in rural areas with diabetes cannot access diabetes education due to factors such as cost, distance and the lack of appropriate services. Though people are aware of diabetes but they are unaware of healthy dietary habits and they face practical risks to follow it. Due to this, neuropathy and nephropathy can occur overtime in uncontrolled conditions.

People with diabetes report that diet and exercise are the most difficult aspects to manage. Approximately 75% of diabetic patients report deviating significantly from recommended dietary guidelines at least weekly. Diabetes can be a debilitating disease, but it can be prevented entirely by a few simple methods and managed through diet and exercise, eliminating the painful shots of insulin and the fear of insulin dependence. Diet has been recognized as a corner stone in the management of diabetes mellitus. World Health Organisation (WHO, 2011), reported that, simply life style measures have been shown to be effective in preventing or delaying the onset of type 2 diabetes.

In order to effectively manage their disease, people must acquire the necessary knowledge, skill, confidence and engage in particular behaviours such as testing blood glucose and emotional management. Research suggests patients who are informed about their illness and its treatment, are more likely to succeeded in managing their illness. Diabetes education has been an essential component of diabetes management and it has been shown to play an important role in patient care. Without diabetic education, patients are four times more prone to develop major complications.

According to Anne Belton diabetes education are to enhance knowledge and behavour change in order to promote self management, that implies person with diabetes will understand the impact factors, such as food intake, exercise, stress and medication on blood glucose and will be able to make appropriate adjustments to maintain glucose with in a target level. Diabetes education consists of providing tools and support to patients as they learn to mange their diseases.

The new trend in diabetes education is "Pattern Management". This means, that patients are taught to look for patterns in their lives and adjust their meals, activity and medication to achieve the best glucose levels possible(www. worldwidediabetes.com). Simple interventional strategies like "Eat less, Eat on time and Walk more" can go a long way in preventing this chronic disorder among present as well as in the future generations.

Proper education and awareness programme can help on diabetes care, management and improve the patients out comes, glycemic control and quality of life in patients with diabetes mellitus. There is clear and compelling evidence from many countries that diabetes and its complications can be prevented or significantly delayed through relatively simple and cost effective interventions.

Education is a powerful means by which an individual comes out from ignorance to elegance. The community can be educated by creating awareness through various means about the importance of proper diet, healthy life style and exercise by creating awareness through various means can help to pave the way to control the diabetes in future. This situation intended to made the researcher to take up this research study and to find out the impact of the diabetes education intervention among the diabetics.

II. OBJECTIVE OF THE STUDY

The objective of the study is to evaluate the impact of diabetes education intervention on knowledge on diabetes and health status of the diabetics.

III. METHODOLOGY

3.1 Selection of the Study Area

The study was conducted in Athoor Block of Dindigul District, Tamil Nadu. The Dindigul District consist of 14 Blocks. The Athoor Block is one among the 14 Blocks. It has 26 panchayats distributed in 23 Revenue villages. The total population of the Block is 1,07,752 (Male: 53,507, Female: 54,245) (Ref: Census of India, 2011). In Athoor Block three villages namely Athoor, N.Panchampatti and Perumalkovilpatti was selected for this study.

3.2 Selection of the Samples

For the study 500 Diabetics were selected from the list of screened Diabetics obtained from the selected Primary Health Centres (PHCs). Among these 500 Diabetics, 100 Diabetics in the age group of 30 – 50 years were purposely selected by purposive random sampling method. The following table indicates the selection of samples for the study from the selected three villages.

Table 1: Selection of the Samples

S.No.	Name of the Village	No. of Diabetics
1.	Athoor	34
2.	N.Panjampatti	44
3.	Perumalkovilpatti	22
Total		100

3.3 Formulation of the Interview Schedule

In order to collect the required data the interview schedule was framed and the same was pre-tested and finalized. The finalized schedule was used to collect the data from the selected diabetics. Two separate tools were constructed.

3.3.1 Interview Schedule-I

The Interview Schedule – I was used for collecting the data related to their health status such as assessment of Body Mass Index, Blood Glucose and Blood Pressure levels.

3.3.2 Interview Schedule-II

The Interview Schedule - II was used to collect the data on knowledge on diabetes and its management. The knowledge on diabetes and its management of the diabetics were assessed by administering a set of 50 questions related to diabetes and its management such as prevalence, characteristics, diagnosis, normal blood glucose levels, types, etiological factors, symptoms, complications and management. To assess the knowledge on diabetes among the diabetics the scores were given. The maximum scores were fifty. The scores obtained were classified in to five groups as: 1-10 (Very Poor), 11-20 (Poor), 21-30 (Fair), 31-40 (Good) and above 40 (Very Good).

3.4 Pre Assessment

3.4.1 Assessment of Health Status of the Diabetics

3.4.1.1 Body Mass Index (BMI)

The height and weight of the 100 diabetics were recorded and the corresponding Body Mass Index was computed before intervention.

3.4.1.2 Recording the secondary data on blood glucose and blood pressure levels

The fasting and post prandial blood glucose levels and blood pressure of the selected diabetics were recorded from the records maintained by them issued by the Hospital during their monthly check-up either by Government or private.

3.4.2 Assessment of knowledge on diabetes and its management

The knowledge on diabetes of the diabetics were assessed by administering a set of 50 questions related to diabetes and its management

3.5 Preparation of the educational intervention module

The analysis of the pre-assessment the researcher felt need to create an awareness on diabetes and its management. Based on the needs, an education module was designed and it was finalized with the help of the nutrition experts.

3.6 Implementation of the educational intervention

The intervention programme consist of 15 sessions. It was conducted in all the three villages separately by considering the convenient time mentioned by the respondents. The topics of the intervention programme was dealt through lecture method with the support of power point presentation, teaching aids such as charts, food models and CD-ROM containing the content of the intervention programme. The average time taken for each session was 2 ½ hours. 2 hours of teaching and 30 minutes for interaction.

3.7 Post Assessment

The post assessment on knowledge on diabetes and its management and health status of the diabetics was carried out after 3 months to evaluate the impact of the intervention programme and compared the values with pre assessment.

3.8 Analysis of the data

The data was analyzed using the Statistical Package of Social Sciences (SPSS 16.0) programme. The statistical measure i.e. simple percentage was used in the analysis and inferences were drawn.

IV. Results and Discussion

Table 2: Pre and Post – Assessment of Diabetes Knowledge Scores of the Diabetics

Knowledge Scores	Diabetics			
	Pre Assessment		Post Assessment	
	No	%	No	%
1 – 10 (Very Poor)	49	49.0	---	---
11 – 20 (Poor)	51	51.0	---	---
21 – 30 (Fair)	---	---	55	55.0
31 – 40 (Good)	---	---	38	38.0
> 40 (Very Good)	---	---	7	7.0
Total	100	100.0	100	100.0

The knowledge level of the Diabetics was assessed before and after intervention programme. The above table shows the impact of diabetes education intervention on knowledge on diabetes among the Diabetics. All very poor (49%) and poor scores (51%) have moved to the upper level i.e. fair (55%), good (38%) and very good (7%) levels after intervention.

Table 3: **Pre and Post – Assessment on Body Mass Index of the Diabetics**

Classification of Body Mass Index * (Kg/m^2)	**Diabetics**			
	Pre Assessment		**Post Assessment**	
	No	**%**	**No**	**%**
< 18.5 (Under weight)	4	4.0	3	3.0
18.5 – 22.9 (Normal)	69	69.0	87	87.0
23.0 – 24.9 (Over weight)	20	20.0	10	10.0
25.0 and Above (Obese)	7	7.0	---	---

* (Health Ministry, 2008)

The above said table shows the impact of diabetes education intervention on Body Mass Index of the Diabetics. The underweight Diabetics have decreased from 4 percent to 3 percent and the normal weight have increased from 69 percent to 87 percent. The overweight Diabetics decreased from 20 percent to 10 percent and obese have decreased from 7 percent to zero percent.

Table 4: Pre and Post – Assessment on Blood Glucose Level of the Diabetics

Classification of Blood Glucose Level * (mg/dl)	**Diabetics**			
	Pre Assessment		**Post Assessment**	
	No	**%**	**No**	**%**
Fasting < 110 Normal	20	20.0	36	36.0
110 – 125.99 Hyperglycemic	40	40.0	43	43.0
≥ 126 Diabetes Mellitus	40	40.0	21	21.0
Post prandial < 130 Normal	30	30.0	45	45.0
130 – 150 Hyper Glycemic	30	30.0	35	35.0
> 150 Diabetes Mellitus	40	40.0	20	20.0

* (ICMR/WHO) (Source : NNMB: 2005 - 2006)

The table – 4 shows the impact of diabetes education intervention on blood glucose levels of the Diabetics. The number of Diabetics with normal fasting blood glucose level have increased from 20 percent to 36 percent. The hyperglycemics were increased slightly (3%) and the Diabetics whose blood glucose level ≥ 126 mg / dl during pre survey was decreased from 40 percent to 21 percent. The Diabetics with normal post prandial glucose level has increased from 30 percent to 45 percent. The hyperglycemics were increased slightly (5%) and the Diabetics whose blood glucose level > 150 mg / dl during pre survey was decreased from 40 percent to 20 percent among the Diabetics. These significant changes in blood glucose levels of the Diabetics were due to the effective intervention programme.

Table 5: Pre and Post – Assessment on Blood Pressure Level of the Diabetics

Classification of Blood Pressure Level* (mm of Hg)	**Diabetics**			
	Pre Assessment		**Post Assessment**	
	No	**%**	**No**	**%**
Normal (< 130/85)	80	80.0	95	95.0
High Normal (130-139/85-89)	---	---	---	---
Stage –I (140-159/90-99)	17	17.0	5	5.0
Stage –II (160-179/100-109)	2	2.0	---	---
Stage –III (180-209/110-119)	1	1.0	---	---

* (Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure, 1993).

The above said table shows the impact of diabetes education intervention on blood pressure level of the Diabetics. The number of Diabetics with normal blood pressure during pre survey was increased from 80 percent to 95 percent, the Diabetics who falls under the category of stage - I (140 – 159 / 90 – 99) mm of Hg during pre survey was decreased from 17 percent to 5 percent and the category of stage - II (160-179 / 100 - 109) mm of Hg and stage - III (180 – 209 / 110 - 119) mm of Hg also decreased from 2 percent to zero percent and 1 percent to zero percent respectively among the Diabetics.

V. Conclusion

A study done by Badrudin et al., (2002) revealed that the proper education and awareness programme can change attitude of public regarding Type 2 diabetes.

The result of this research study also revealed that the dissemination of knowledge on diabetes through education intervention had a positive impact on their knowledge on diabetes, health status such as Body Mass Index (BMI), Blood glucose and blood pressure levels of the Diabetics. It is proved that a well planned diabetes education can bring about a change in their knowledge, attitude and practices. It may increase the effectiveness of diabetes therapy and will delay the onset or the progression of complications, improve the length and quality of life for Diabetic patients and reduce the associated medical cost.

VI. Suggestions

Medias like Television, Radio and Internet could be effectively used for creating awareness on diabetes and its management in the community. The Central and State Government should allocate the budget for conducting awareness programmes on diabetes and its management in every village through Health Departments and Non-Governmental Organisations (NGOs).

Creating awareness on diabetes and its prevention in the community through different means helps to reduce and prevent the complications and cost effectiveness on the management of diabetes helps to create diabetic free community there by it helps to lead a healthy, happy and long life for the Diabetics.

VII. Acknowledgement

The researcher express her heart felt thanks to the respondents (Diabetics) of this research study and also she express her thanks to those who were helped in various levels to successful completion of this research work.

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