



# EFFECTIVENESS OF HEALTH EDUCATION ON KNOWLEDGE AND ATTITUDE REGARDING DIABETES IN TYPE II DIABETES MELLITUS PATIENTS IN BENGALURU

Chethana Ramegowda<sup>1</sup>, Lakshmi Hulugappa<sup>2</sup>

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## Author's Affiliation:

<sup>1</sup>Associate Professor; <sup>2</sup>PG cum Tutor, Department of Community Medicine, Kempegowda Institute of Medical Sciences (KIMS), Bangalore

## Correspondence:

Dr. Chethana R  
buntychethana@gmail.com

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## ABSTRACT

**Introduction:** Considering the importance of Knowledge and positive attitude in preventing severe debilitating complications and controlling diabetes, the present study was undertaken to assess the effectiveness of health education on knowledge and attitude regarding diabetes in Type II Diabetes Mellitus.

**Materials and methods:** The study was conducted from April 2015 to October 2015 among 70 Type II Diabetes Mellitus patients only on oral anti-diabetic drugs. A pre-tested semi-structured proforma was administered and information about socio-demographic profile, and impact of health education intervention was obtained.

**Results:** Most of the subjects were female (80%), in the age group of 35-45yrs (34%), illiterate (40%), unemployed (67%) with Class IV (78%) socio-economic status. The mean  $\pm$ SD age was 52.47 $\pm$ 11.06 years. Significant improvement in knowledge was observed after intervention regarding symptoms, risk factors, complications and maintenance of blood sugar levels. A positive attitude was observed for periodic eye and cardiac examination and were motivated to exercise regularly.

**Conclusion:** There was significant improvement in knowledge and attitude following health education regarding diabetes. Hence it should be an integrated in comprehensive diabetes care.

**Keywords:** Diabetes Mellitus, Type II, Knowledge, Attitude, Education

## INTRODUCTION

Diabetes is an emerging global epidemic and public health problem. In spite of the drastic increase in both the prevalence and incidence of Type II diabetes worldwide, they have been especially spectacular in societies with economic transition<sup>1</sup>. Currently the number of cases of diabetes globally is projected to be around 347 million, of these more than 90 per cent is Type II Diabetes Mellitus, and is preventable. WHO estimates that diabetes will be the 7<sup>th</sup> leading cause of death by 2030<sup>2</sup>, more than 80% of them prevailing in low- and middle- income countries<sup>3</sup>.

Diabetes is most widespread in South Asia, to a great extent in India. In 2012, in India 1.5 million

deaths were due to diabetes<sup>4</sup>. In 2013 according to International Diabetes Federation, India had 65.1 million diabetics between 20-79 years. By 2030 this figure is estimated to go up to 101.1 million<sup>5</sup>. In 2008, the prevalence of diabetes was 18.6% in the urban population<sup>6</sup>.

Diabetes patients, if not strictly monitored, develop multiple chronic complications leading to irreversible disability and death. Coronary heart disease, lower limb amputation, stroke are more common in diabetics. Micro vascular complications like diabetic nephropathy and retinopathy are severe health problems resulting in progressive worsening of the quality of life and premature death<sup>1</sup>.

Unfortunately there is still insufficient awareness about the real aspect of the problem. There is also lack of knowledge about the existing interventions for preventing diabetes and the management of its complications. India has among the highest number of diabetic patients and knowledge about diabetes is poor<sup>1</sup>. The lack of positive attitude could be an important obstacle for long term management of diabetes<sup>7</sup>. There is a need to increase knowledge regarding diabetes and its complications as it has significant benefits including increase in adherence to treatment, thereby decreasing the complications associated with diabetes<sup>8,1</sup>.

Education is a keystone for diabetes care and unless adequate education is given self care essential for diabetes management is not possible. Hence increasing access to diagnosis, self care, self-management education and affordable and quality treatment are vital components of the response<sup>9</sup>.

The study was undertaken with the objectives to describe the socio-demographic profile and to assess the effectiveness of health education on knowledge and attitude regarding diabetes in Type II Diabetes Mellitus. So far there has been no study done in this field in the state of Karnataka.

## METHODOLOGY

A descriptive and educational interventional study was conducted in urban health training centre of the medical college, Bengaluru from April 2015 to October 2015. Type II Diabetes Mellitus patients only on oral anti-diabetic medication and those willing to give informed consent were included in the study. Subjects who were seriously ill were excluded. Assuming the prevalence of diabetes 18.6%<sup>6</sup> and a relative precision of 10%, and adding 10% error, a purposive sample size of 67 was calculated and rounded off to 70. The subjects were explained regarding the purpose of the study. An institutional ethical committee clearance was obtained.

The subjects were administered a pretested semi structured proforma. Data regarding socio demographic profile like name, age, sex, education & occupation of the Head of Family, total family income were obtained. Families were classified based on socioeconomic status using Modified Kuppuswamy classification<sup>10</sup>.

The proforma included total 19 questions (10 knowledge and 9 attitude) regarding the diabetes cause, symptoms, risk factors, complications, blood sugar levels, HbA1c, and diabetes diet content. Each correct knowledge and attitude answer was given a score of one and each incorrect answer was

given a score of zero. 5 point Likert scale was used for attitude questions.

A comprehensive health education regarding diabetes was provided in a group of 6 to 7 subjects for 30 minutes in local language using power point presentation. The contents of health education included introduction to diabetes, types, symptoms, risk factors, complications, ideal target values for good glycaemia status of diabetes, monitoring of HbA1c levels, planning the meals, physical activity, importance of adherence to prescribed drugs and regular health check-ups, myths and facts of diabetes. After 3 months post intervention proforma was administered. Blood sugar levels estimation was done.

Data was entered in Microsoft excel and SPSS 16.0 version was used for analysis. Descriptive statistics such as percentages, mean, standard deviation were computed. Mc Nemar test was used to assess improvement in knowledge and attitude following health education.

## RESULTS

Most of the subjects were female 56(80%) in the age group of 35-45yrs 24(34%), followed by 46-55yrs 17(24%), 56-65yrs 20(29%) and 66-75yrs 9(13%). Median and interquartile range are 51 and 15.

**Table1: Socio-demographic profile of study subjects**

Variables	Subjects (n=70) (%)
Age (Mean ± SD)	52.47±11.06 years
Range (35-75) Median & IQR	51 and 15
Age (yrs)	
Male	14(20)
Female	56(80)
Religion	
Muslim	64(91.4)
Hindu	06(8.6)
Education	
Illiterate	28(40.0)
Primary School	17(24.3)
Middle School	22(31.4)
High School	03(4.3)
Occupation	
Unemployed	47(67.1)
Unskilled	17(24.3)
Skilled	06(8.6)
Socio-economic status*	
Upper Middle	01(1.4)
Lower Middle	13(18.6)
Upper Lower	53(75.7)
Lower	03(4.3)

IQR=Inter-quartile range; \*According to Modified Kuppuswamy Classification

**Table 2: Correct response to knowledge questions of diabetes before and after health education (n=70)**

Knowledge regarding diabetes	Pre-intervention	Post-intervention	Difference	P value#
Diabetes is caused by Deficiency of insulin	0	21.4	1	<0.001*
Symptoms of diabetes				
Extreme tiredness	80.0	90.0	10.0	<0.05*
Increased thirst	62.9	88.6	28.6	<0.001*
Burning sensation of limbs	61.4	78.6	18.6	<0.001*
Increased urination	57.1	87.1	32.8	<0.001*
Delayed healing of wounds	57.1	80.0	24.3	<0.001*
Increased hunger	45.7	80.0	37.1	<0.001*
Repeated infections	37.1	74.3	37.1	<0.001*
Weight loss	31.4	71.4	40.0	<0.001*
Risk factors				
Stress	57.1	84.3	27.1	<0.001*
Consumption of saturated rich food	54.2	78.6	24.3	<0.001*
Sedentary life	42.8	77.1	34.3	<0.001*
Obesity	37.1	71.4	35.7	<0.001*
Hereditary	37.1	74.3	40.0	<0.001*
Smoking, alcohol	30.0	72.9	45.7	<0.001*
Complications				
Vision-Yes	67.1	88.6	21.4	<0.001*
Nerves-Yes	47.1	77.1	31.4	<0.001*
Kidney-Yes	40.0	78.6	40.0	<0.001*
Heart-Yes	38.5	72.9	35.7	<0.001*
Best method to test glucose - Blood	21.4	68.6	47.1	<0.001*
Target fasting blood sugar - 80-110mg/dl	27.1	70.0	42.9	<0.001*
Target 2-hr post-prandial blood sugar level - 120-140mg/dl	22.8	67.1	44.2	<0.001*
30 min Physical activity each day	22.8	87.1	32.8	<0.001*
Glycosylated Hemoglobin	01.4	15.7	14.2	<0.001*
Diabetes diet - High in fiber	72.8	92.9	20.0	<0.001*

Values of pretest, posttest and difference were in percentages; #P value calculated using Mc Nemar test; \*P=<0.05 was considered as statistically significant

**Table 2: Correct response of study subjects on attitude questions of diabetes (n=70)**

Attitude regarding diabetes	Pre-test	Post-test	Difference	P value#
Persons with obese are more prone to diabetes	48.5	84.2	35.7	<0.001*
A diabetic diet consists mostly of special foods	37.1	70.0	32.8	<0.001*
Support from family and a friend is important in dealing with diabetes	95.7	100.0	04.3	0.125
People with diabetes should visit the doctor regularly	97.1	100.0	02.9	0.25
Diabetics should have a periodic eye, Cardiac examination	81.4	95.7	12.9	<0.05*
Doing regular exercise will maintain, improve blood sugar levels	77.1	92.9	15.7	<0.05*
Blood sugar testing is not needed for people with Type II DM	91.4	94.3	02.8	0.125
As long as the diabetes is under control, there is no need to worry about diabetic complications	35.7	74.2	38.5	<0.001*
The best way to check diabetes is by testing urine	08.5	67.1	58.5	<0.001*

Values of pretest, posttest and difference were in percentages; #P value calculated using Mc Nemar test; \*P=<0.05 was considered as statistically significant

Table 2 describes the change in subjects knowledge regarding diabetes after health education. All of the questions showed significant improvement in percent answered correctly from pre- intervention to post intervention (P≤0.05 for all questions)

Significant improvement in attitude that being obese increases the chances for developing diabetes was observed (P≤0.05). A significant improvement and a positive attitude was also noted re-

garding periodic eye, cardiac examination, importance of regular physical exercise, and maintenance of blood sugar levels (P≤0.05) ( Table 3) .

**DISCUSSION**

Majority of studies regarding the epidemiology and prevalence of diabetes have been conducted in South India<sup>11-14</sup> . There is no study regarding effec-

tiveness of health education on knowledge and attitude regarding diabetes in Type II Diabetes Mellitus patients in Karnataka so far. Hence the present study was undertaken.

Majority of subjects in the present study, [76%] belonged to upper lower class of socio economic status according to Modified Kuppaswamy classification, with mean age of the subjects  $52.47 \pm 11.06$  years. Most of them [90%] belonged to Muslim by religion; [40%] being illiterates and unemployed (67%).

In a study conducted by Rani PK et al suggested that literacy, language and religion are interdependent factors associated with knowledge of diabetes and diabetic retinopathy. One useful approach, which was highlighted by them, is to initiate literacy campaigns with a focus on creating awareness of health-related topics for rural populations<sup>15</sup>.

Cochrane database study conducted by Hawthorne K et al, to assess the effectiveness of culturally appropriate diabetes health education on important outcome measures in type 2 diabetes concluded that this appears to have short term effects on glycaemic control and knowledge of diabetes and healthy lifestyles<sup>16</sup>.

A study conducted by McPherson ML et al, to determine the relationship between patients knowledge about their diabetes medications and their blood glucose control, observed that patients with, greater understanding and knowledge of their diabetes medications demonstrated better glycaemic control<sup>17</sup>.

Mass awareness and screening programs are feasible and, through community empowerment, can help in prevention and control of non-communicable diseases such as diabetes and its complications on a large scale<sup>18</sup>

In the current study pre-test knowledge of complications was satisfactory contrary to the study conducted by Viral Shah N et al in Gujarat where knowledge of complications of diabetes, renal complication was least known to patients.

In the present study significant improvement in knowledge was observed after intervention regarding symptoms of diabetes, risk factors, complications and target fasting and postprandial blood sugar levels. Significantly improved positive attitude was to have a periodic eye, Cardiac examination and doing regular exercise will maintain, improve blood sugar levels  $P < 0.05$ .

It was similar to the results conducted by Ranabir Pal et al in Sikkim in an experimental study of non-randomised trial conducted among adults. Significant improvement in knowledge on diabe-

tes was observed regarding risk factors, early symptoms, organs affected by diabetes  $P$ -value  $< 0.05$ . Significant improvement in positive attitude was observed willing to motivate all family members to get their blood sugar tested once a year after 40 years, willing to undergo regular check up and continue medication once diabetes is detected and motivate other family members to do the same.

### Limitations

Since the study was conducted in the Urban Health Training Centre it cannot be generalised to the overall diabetic patients.

### CONCLUSION

There was significant improvement in knowledge and attitude regarding diabetes in study subjects. This study highlighted the importance of group education in subjects for better health information and development of a positive attitude. Health education regarding symptoms, risk factors, complications, diet control, physical activity, regular physical examination and screening will go a long way in achieving better control of diabetes thus reducing disease burden.

### Recommendation

Health education regarding diabetes should be provided to improve knowledge and to bring about positive attitude. It can be done using audio-visual aids to a larger population to prevent and to control diabetes mellitus.

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