

Original Research Article

Assessment of health education on knowledge regarding oral antidiabetic drug adherence in urban area, Bengaluru

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ABSTRACT

Background: Diabetes mellitus is a chronic disease with a high mortality and morbidity. Knowledge regarding the disease is required for the management of drug adherence in diabetes, hence the present study was taken to assess the effectiveness of health education on knowledge regarding oral anti-diabetic drug adherence.

Methods: The study was conducted at urban health training centre of a medical college, Bengaluru from October 2015 to July 2016. A total of 70 type 2 diabetes mellitus patients were involved in this descriptive and interventional study. The study subjects included only on oral anti-diabetic drugs and willing to give informed consent. A pre-tested semi-structured proforma was administered and information about socio-demographic profile, and impact of health education intervention on knowledge was obtained.

Results: Most of the subjects were female (80%), in the age group of 35-45 years (34%), illiterate (40%), unemployed (67%) with class IV (78%) socio-economic status according to Modified Kuppaswamy classification 2014. The mean±SD age was 52.47±11.06 years. Significant improvement in knowledge regarding adherence to oral anti-diabetic medication was found in study subjects following health education intervention.

Conclusions: The study revealed that health education regarding the importance of drug adherence is needed in study subjects and there was significant improvement in knowledge after health education.

Keywords: Health education, Knowledge, Oral anti-diabetic drugs, Type 2 diabetes mellitus

INTRODUCTION

Diabetes is an uphill global epidemic and a long-term non-communicable disease with fluctuating clinical manifestations and progression. The underlying cause of diabetes is the defective production or action of insulin, a hormone that controls glucose, fat and amino-acid metabolism. It leads to a number of complications-cardiovascular, renal, neurological, ocular and others such as intercurrent infections.¹ Globally over 425 million people are currently living with diabetes. 1 in 2 people currently living with diabetes are undiagnosed. India has

more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus. The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India. Managing diabetes effectively requires daily treatment, regular monitoring, a healthy diet and lifestyle and ongoing education. Self-management education and support of the family members is the need of the day.²

Adherence to oral- anti diabetic medication is crucial to prevent complications and deteriorating health condition of type 2 diabetes mellitus patients. Adherence is impacted by the level of knowledge of the patient, fallacy, misconceptions, perceptions and incorrect and irrelevant assumptions on the matter. Health education of the targeted group play an important role in the adherence level of patients. It is vital to educate patients and convince them of the benefits of treatment. The relationship between the healthcare provider and the patient is crucial and should be based on healthy communication, trust and motivation. A well planned structured and targeted education helps in significant improvements in glycaemic control, and also increases the understanding of the disease process. Hence this study was undertaken to assess knowledge of oral anti-diabetic drugs before and after health education in study subjects.

METHODS

A study was conducted in urban health training centre, Bengaluru from October 2015 to July 2016. It was a descriptive and educational interventional study. The study subjects included were type 2 diabetes mellitus patients only on oral anti-diabetic medication for ≥ 6 months. They were interviewed after obtaining informed consent. Assuming the prevalence of diabetes 18.6% and a relative precision of 10%, and adding 10% error, a purposive sample size of 67 was calculated and rounded off to 70.⁴

The subjects were administered a pre-tested semi structured proforma regarding socio-demographic characteristics such as age, sex, education, occupation,

marital status, medical and family history. Modified Kuppaswamy classification 2014 was used to classify socio-economic status of families. A pilot study was conducted for validation of the proforma.

Knowledge questions included a total of 11 questions on drug adherence. Health education was given to study subjects using audio visual aids with minimum of 5-6 subjects in each session in local language. Health education session included the epidemiological determinants, screening for diabetes, prevention and care, importance of drug adherence, complications due to non-adherence. After 3 months the same proforma was used for post -test.

Study subject's knowledge was assessed, with 0, 1 scale for knowledge. With 0 as wrong knowledge, 1 for correct knowledge. The general physical examination, systemic examination, records of investigation done and treatment given were recorded. Random blood sugar levels estimation was done.

Statistical analysis

Data was entered in Microsoft excel and SPSS 20.0 version was used for analysis.

RESULTS

Majority of study subjects were female 56 (80%) with median and interquartile range are 51 and 15, Most of the subjects belonged to upper lower class of socio-economic status according to modified Kuppaswamy classification 2014.

Table 1: Correct response of study subjects regarding knowledge of oral anti-diabetic drugs before and after health education intervention was analysed using Mc-Nemar test.

Knowledge questions	Pre-test proportion	Post-test proportion	Difference	Mc-Nemar χ^2	P value
Q1. How do you identify the drugs?	11/70 =0.16	66/70 =0.94	0.78	55	<0.001
Q2. How do diabetic drugs help you?	45/70 =0.64	65/70 =0.93	0.29	20	<0.001
Q3. How long you should continue the drugs on control of blood sugar levels?	56/70 =0.8	67/70 =0.96	0.16	11	<0.001
Q4. Diabetes can be controlled by	48/70 =0.68	66/70 =0.94	0.26	18	<0.0001
Q5. Can diabetes be cured by drugs?	13/70 =0.18	62/70 =0.88	0.7	49	<0.0001
Q6. Do you know that only allopathy drugs can be used to manage diabetes	29/70 =0.41	65/70 =0.93	0.52	36	<0.0001
Q7. Can diabetes be controlled by ayurvedic/homeopathy/unani drugs	16/70 =0.23	60/70 =0.86	0.63	44	<0.0001
Q8. Do you know that generic drugs are available at subsidized cost?	12/70 =0.17	63/70 =0.9	0.73	51	<0.0001
Q9. Do you know the dose of your medication	12/70 =0.17	57/70 =0.81	0.64	45	<0.0001
Q10. Do you know what other food you have to avoid while taking the diabetic drugs?	54/70 =0.77	69/70 =0.98	0.21	15	<0.0001
Q11. Do you know diabetic drugs can cause side effects if not taken at appropriate time and prescribed dosage?	29/70 =0.41	64/70 =0.91	0.5	35	<0.0001

Effectiveness of health education on knowledge

It may be observed from the above normal Q-Q plot that the difference between Post-test and pre-test knowledge scores are normally distributed (Shapiro-Wilk test, $p=0.096$) and hence Student's paired t-test is used for testing the significant difference between the mean of pre-test and post-test scores.

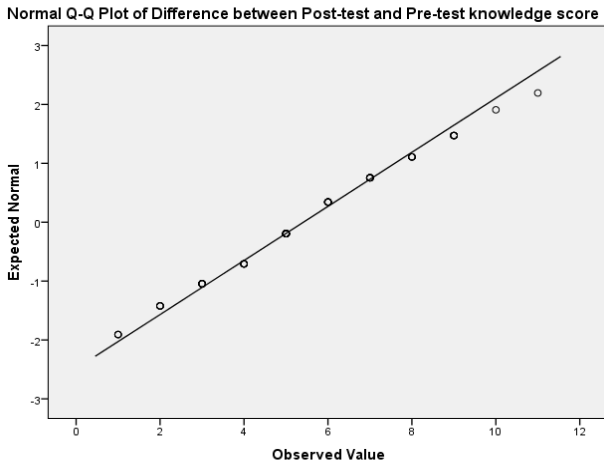


Figure 1: Normal Q-Q plot of difference between post-test and pre-test knowledge score regarding oral anti-diabetic drugs.

Table 2: Comparison of pre and post- test knowledge score among the study subjects about oral anti-diabetic drugs.

Knowledge score	Mean	SD	t-value	P-value
Pre-test	4.64	2.036	20.809	0.001
Post-test	10.06	1.443		

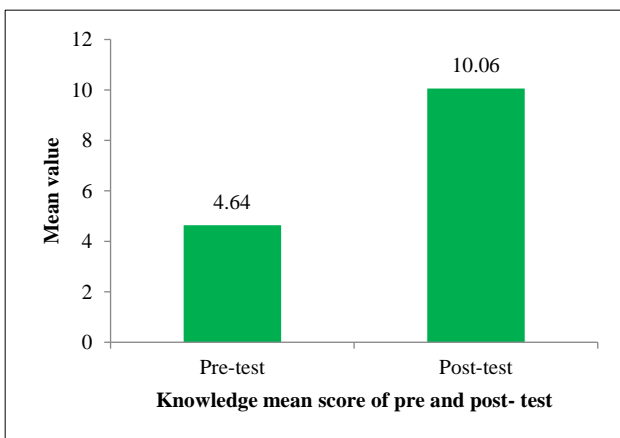


Figure 2: Mean value of pre and post-test knowledge score.

In the study, subject's knowledge was assessed, with 0, 1 scale for knowledge. With 0 as wrong knowledge, 1 for correct knowledge. For the pre-test assessment the

mean±SD of knowledge was 4.64 ± 2.04 and for post-test it was 10.06 ± 1.44 . The difference in the mean was 5.41 with a 95% CI of 4.89 to 5.93 was found to be statistically highly significant ($t=20.81$, $p<0.001$). This implies that there was improvement in knowledge following health education in study subjects.

DISCUSSION

Diabetes is a chronic disease and an important public health problem. In the present study, most of the study subjects were in the age group of 35-45 years i.e., 34.3%, followed by 56-65 years i.e. 28.6% similar to the study by Banu S et al where majority of the patients were in the age group of 40-80 years. Mean age group of the study subjects was 52.47 ± 11.06 years, comparable to the study done by Arulmozhi S et al which was $54 +12$ years, and Sweileh et al, 58.3 ± 10.4 years.⁵⁻⁷

Before health education the mean knowledge score was found to be 4.64 ± 2.04 . In a study done by Upadhyay DK et al in Nepal knowledge score was similar to this study 4.90 ± 3.34 .⁸

A study done by McPherson ML et al to determine the relationship between patient's knowledge about their diabetes medications and their blood glucose control observed that patients with greater understanding and knowledge of their diabetes medications demonstrated better glycemic control.⁹ In a study done by Sommanavur et al there was significant improvement regarding knowledge, more people felt that diabetes can be prevented ($p<0.001$) and a combination of diet and exercise was needed to do so ($p<0.001$).¹⁰

In the present study there was improvement in the knowledge regarding oral anti-diabetic drugs after health education with a mean score 10.06 ± 1.44 . The difference in the mean was 5.41 with a 95% confidence interval of 4.89 to 5.93 was found to be statistically highly significant ($t=20.81$, $p<0.001$).

Similarly, in a study by Abdo NM et al after implementation of the educational message, a significant improvement was revealed in patients' knowledge and attitude with lowering of their mean levels of blood sugar and HbA1c.¹¹

Study by Hawthorne K et al to assess the effectiveness of culturally appropriate diabetes health education on important outcome measures in type 2 diabetes concluded knowledge scores improved in the intervention groups at three months (standardized mean difference (SMD) 0.6, 95% CI 0.4 to 0.7), six months (SMD 0.5, 95% CI 0.3 to 0.7) and twelve months (SMD 0.4, 95% CI 0.1 to 0.6) post intervention.¹²

Study by Palaian et al observed after counselling, knowledge scores in the test group of patients improved, compared with those of the control group, as determined

by the Mann-Whitney test ($p < 0.05$) similar to the present study.¹³

CONCLUSION

The study subjects showed significant improvement in knowledge after health education. Health education regarding diabetes and importance of drug adherence should be given to encourage people to consume oral anti-diabetic drugs as prescribed by the physician. This helps in preventing the complications of diabetes and maintaining the blood sugar levels in the community and thereby reducing the morbidity and mortality.

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