

IMPACT OF AWARENESS OF DIABETES MELLITUS IN HIGH SCHOOL STUDENTS

Shekar HS*, Venugopal Reddy P., Sateesha SB. and Rajamma AJ.

¹Department of Pharmacy Practice, Visveswarapura Institute of Pharmaceutical Sciences, KIMS Hospital and Research centre, Bangalore, Karnataka, India.²Department of Pharmacy Practice, Al-Ameen College of Pharmacy, Bangalore, Karnataka, India.³Acharya B.M. Reddy college of Pharmaceutical sciences, Bangalore, Karnataka, India.⁴K.L.E. College of Pharmacy, Bangalore, Karnataka, India.*Corresponding Author: shekar_pharmacy@rediffmail.com, pharmacy_shekar@yahoo.com**ABSTRACT**

Children can act as multipliers of knowledge and can help their family members suffering from *Diabetes mellitus* and hence the awareness programme helps to motivate the children for healthy eating habits and lifelong physical activity to delay the onset of diabetes. A pictographical power point presentation on epidemiology, etiology, risk factors, and pathophysiology of *Diabetes mellitus* type-2 was narrated. Also the importance of healthy eating and physical activity in prevention and management of diabetes was explained. Student's knowledge on diabetes was assessed before and after the lecture and a follow up study was done after one month to see the retention of the knowledge. Data is presented using descriptive statistics such as mean \pm SD and numbers as percentage (%). *Chi Square* test and *Z test* was used to analyze continuous variables and level of significance was set at $P < 0.05$. Follow up study after one month revealed that students retained the knowledge with respect to several aspects of *Diabetes mellitus*, like complications (91.78%), regular treatment (88.31%), role of exercise (93.5%) and diet (94.8%), delayed wound healing (87.01%) and need for regular checkups (76.62%). Comparison of knowledge of students before and after awareness lecture, and retention of knowledge revealed significant improvement ($p < 0.05$).

Keywords: Diabetes mellitus, Children, Community health, Chi Square test, Z test.**INTRODUCTION**

Diabetes mellitus (DM) type-2 is fast exploding disorder throughout the world and particularly in India¹. It is estimated that currently there are over 32 million diabetics in India and it could be 79 millions by 2030 according to World Health Organization reports². Type-2 DM, traditionally seen in adults is now increasingly reported to occur in children and adolescents and its incidence is increasing at an alarming rate and attaining epidemic proportions³⁻⁵. Several factors like industrialization, urban life, lack of playgrounds in cities, television, interest in

computer games, easy availability of high fat diet, and high competition for academic scores have progressively decreased physical activity of children and adolescents. Lack of physical activity and change of eating habits made them more susceptible to develop type II DM very early⁶. In recognition of this epidemic incidence of childhood obesity and type II DM, American diabetes association has recommended screening of youth at high risk for type II DM⁷. Several such screenings in school children have revealed that type II DM is starting at a very early age of 7-10 years⁸⁻¹⁰. Early recognition and intervention can delay

the onset and prevent occurrence of microvascular and macrovascular complications. National center for chronic disease prevention and health promotion, center for disease control and prevention (United States) have developed guidelines for school and community programs to promote lifelong physical activity for young people. Educating the school children may bring at least two benefits. The first benefit would be increase in awareness about the role of high fat diet; obesity and lack of exercise in the development of DM. This in turn motivates the children for healthy eating habits and physical activity which may delay the onset of type II DM. Then second benefit would be passing the knowledge on to a diabetic family/ community about the management of DM. Therefore the present study was undertaken to assess the knowledge of school children about diabetes and to study the impact of awareness lecture on the knowledge of school children about diabetes.

METHODOLOGY

Students attending eighth grade, D section of National high school, Basavanagudi, Bangalore were invited to participate in the diabetes education program. Necessary permission from the Head of the institution was obtained prior to the diabetes education lecture. Prior to starting the lecture, students were informed about the objectives of the study. Lecture included a power point presentation along with pictures about epidemiology, etiology, risk factors, pathophysiology of DM. This pictographical presentation also demonstrated the importance of healthy eating and physical activity in prevention and management of DM and treatment of DM. The knowledge of the students about DM was assessed both before and after the lecture using a semi-structured questionnaire. The questionnaire included questions on demographic details, knowledge about disease and its complications, knowledge about the medication, role of exercise and healthy eating habits in the management of DM and the treatment of DM. Students were given 10min to answer the questionnaire. The questionnaire was again administered to the students again after a gap of one month to assess the retention of knowledge in children.

STATISTICAL ANALYSIS

Data is presented using descriptive statistics such as mean \pm SD and numbers as percentage (%). *Chi Square* test and *Z test* was used to analyze continuous variables and level of significance was set at $P < 0.05$.

RESULTS

There were 77 students present in 8th grade D section consisting of 46 male and 31 female students. Out of 77 students 25 students reported that one of their family members is suffering from DM. The demographic details of the students are shown in Table 1. Assessment of students knowledge before the awareness lecture revealed that they possess varied knowledge about different aspects DM. More than 50% of experimented students did not possess necessary knowledge on some aspects of DM, like definition (79.22%), symptoms (68.84%), side effects of antidiabetic drugs and its overcome (68.83), need for regular checkup of sugar levels (83.12%) etc. While more than 50% of students possessed fairly good knowledge on some aspects of DM like diabetes affects both children and adults (77.92), need for regular and lifelong treatment (74.02%), complications (66.23%), need for regular exercise (87.01%) and diet control (88.31) etc. Awareness lecture significantly increased the knowledge of the students on all aspects of DM. Maximum increase in knowledge was observed with respect to knowledge on several aspects of DM like complications (91.78%), regular treatment (88.31%), role of exercise (93.5%) and diet (94.8%), delayed wound healing (87.01%) and need for regular checkups (76.62%). Results are presented in Table 2.

Table 1: Demographic details of students

Sex		Students from the Diabetic family	
Males	Females	Diabetics	Non diabetics
46	31	25	52

Table 2: The knowledge of the students before and after the Diabetes awareness lecture

S. No.	Questions	Knowledge of the students on Diabetes		
		Before lecture	After lecture	One month later
1	What is diabetes mellitus?	16	39**	29**
2	DM affects both	60	77*	73*

	children and adults			
3	Duration of treatment for DM	53	71**	67**
4	Symptoms of Diabetes mellitus	24	59*	48*
5	Complications	51	72*	67**
6	Wound healing time	53	67**	61**
7	Side effects of antidiabetic drug upon overdose	40	64*	52**
8	What should be done in the event of side effects	24	44**	39**
9	Is it important to take medicines regularly	57	68**	64**
10	Normal fasting blood sugar level	40	66*	63*
11	Role of exercise, brisk walk, jogging on DM management	67	72	71**
12	Should a diabetic patient reduce eating sweet and control his diet	68	73	71**
13	How frequently should the diabetic patient check his blood sugar levels?	13	59*	53*

N=77, Statistics: Chi square test = *p<0.05, **=p<0.0001.

At the time of follow up after one month out of 77 students who were present during the awareness lecture only 73 students were present. Assessment of knowledge of the students after one month revealed that majority of the students retained the knowledge gained in the awareness lecture. Maximum retention in the knowledge was observed with respect to knowledge on many aspects of DM (Table 2). Comparison of knowledge of students before and after awareness lecture, and retention of knowledge revealed significant improvement ($p<0.05$). Comparison of improvement of knowledge about diabetes among students from a diabetic family and non diabetic family using *Z test* revealed significant improvement in the knowledge in all students. Particularly students from diabetic family exhibited more interest and paid more attention to the awareness lecture and learnt several aspects of diabetes when compared to students from non-diabetic family (Table 3).

DISCUSSION

The incidence of type-2 DM in children and adolescents is rapidly growing all over the world. Over eating, less physical activity, obesity have further increased the prevalence of DM. Awareness about the disease helps

both diabetics and non-diabetic people. Awareness about the risk factors, need for lifelong treatment, and risk of complications may often motivate the young people to adopt life style changes so that onset is delayed. It is far easier to educate the children about the disease than adults of the same family because children will have more enthusiasm to learn new things, children are more receptive and grasping power will be more and a large group can be found easily at one place i.e, one school, and one class room. It will be more difficult to bring that many numbers of diabetics or family members to give awareness lecture. Educating the school children about chronic diseases like diabetes and asthma is commonly done in western countries. In this study we attempted to increase the awareness of diabetes in school children. The results of our study revealed that diabetes awareness lecture significantly increased the knowledge of school children on all aspects of DM. Students showed significant retention in the knowledge of many aspects of DM when tested after one month (Table 2). Our results also revealed that out of 77 students who participated in the diabetes awareness lecture 25 students had a diabetic in their family. We observed that these students who had a diabetic in the family paid more enthusiasm, attention to the awareness lecture and their increase in knowledge was more when compared to other students (Table 3). Overall all students exhibited significant improvement in their diabetes knowledge and resolved to take necessary steps to delay the onset in their student community and help the family members in better management. All the students and school Head Master expressed satisfaction about this awareness lecture and felt that such kind of lectures will certainly promote the health and well being of not only students but also their family members.

CONCLUSION

Educating the younger generation about the *Diabetes mellitus* and its management will delay the onset of diabetes in school children and these children can help the family members in managing their diabetes appropriately. Also follow up study after one month revealed that students retained knowledge about all the aspects of disease and felt that their increase in knowledge is really useful to them.

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Table 3: Comparison of the knowledge of students from diabetic and non-diabetic family

S. No.	Questions asked	Diabetic family		Non-diabetics family	
		knowledge before lecture with knowledge after the lecture	knowledge before lecture with knowledge after one month	knowledge before lecture with knowledge after the lecture	knowledge before lecture with knowledge after one month
1	What is diabetes mellitus?	3.52	3.12	2.81	1.18
2	DM affects both children and adults	2.18	2.82	4.16	4.16
3	Duration of treatment for DM	2.5	2.5	0.84	0
4	Symptoms of Diabetes mellitus	4.24	8.98	5.039	2.7
5	Complications	2.88	2.5	4.22	3.40
6	Wound healing time	3.42	3.42	0.29	0.70
7	Side effect of antidiabetic drug upon overdose	4.43	4.43	3.15	1.11
8	What should be done in the event of side effect	2.88	2.5	4.00	3.03
9	Is it important to take medicines regularly	0.47	1.02	2.81	2.37
10	Normal fasting blood sugar level	2.88	2.5	5.47	4.63
11	Role of exercise, brisk walk, jogging on DM management	1.47	1.47	0.89	1.96
12	Should a diabetic patient reduce eating sweet and control his diet	2.5	2.5	0.00	0.77
13	How frequently should the diabetic patient check his blood sugar levels?	5.21	4.80	19.96	8.40

Statistics: Z test, Z test value above 1.96 is considered significant

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