



Effect of A Planned Teaching Programme on Knowledge Regarding Type 2 Diabetes Mellitus Among Adolescents with Family History of Diabetes Mellitus in Selected Schools at Ernakulam District in Kerala

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Introduction

Diabetes mellitus is a leading cause of death and disability worldwide. Its global prevalence was about 8% in 2011 and is predicted to rise to 10% by 2030. Nearly 80% of people with diabetes live in low- and middle-income countries. Asia and the eastern Pacific region are particularly affected in 2011, China was home to the largest number of adults with diabetes (90.0 million, or 9% of the population), followed by India (61.3 million, or 8% of the population) and Bangladesh (8.4 million, or 10% of the population).¹

Over the past three decades, the number of people with diabetes mellitus has more than doubled globally, making it one of the most important public health challenges to all nations. WHO has already issued a warning, that India is going to be the capital of diabetes mellitus globally.

Obesity is a major risk factor with 85% of all people with type 2 diabetes mellitus being obese. There is a global increase in the prevalence of obesity in children and adolescents. This is closely linked to lifestyle factors such as unhealthy eating habits and decreased physical activity, both of which are widely occurring in developing countries with urbanization. Insulin resistance occurs in early ages are the root cause for diabetes.

A study was conducted from 1999-2006 on adolescents and young adults aged between 15-24 yrs to estimate the morbidity and mortality of adolescents and young adults diagnosed with type 2 diabetes mellitus concluded that adolescents/young adults with Type 2 diabetes lose approximately 15 years from average Remaining Life Expectancy and may experience severe, chronic complications of Type 2 diabetes by their 40s.

A cross-sectional study to determine the magnitude of diabetes complications and to test the hypothesis that diabetes duration is an important contributing factor to these complications, was done among T2DM population who attending Northern General Hospital and Royal Hallamshire Hospital for their clinical care. The subjects were identified from hospital diabetes register. Data on glycaemic control, cardiovascular risk factors (overweight/obesity, hypertension, dyslipidaemia), cardiovascular disease (CVD) and microvascular complications among those diagnosed before (early onset) and after (later onset) 30 years of age at different diabetes durations (<10, 10-20 and >20 years) were analyzed. A total of 2733 subjects were identified, of which 527 had diabetes diagnosed below the age of 30 years. By the sixth decade of life, early onset cohort experienced high complication burden (CVD: 37.2%, retinopathy: 59.3% and neuropathy: 53.1%). Compared with those diagnosed after 30, early onset cohort experienced similar burden of microvascular complications approximately 13-20 years earlier. Diabetes duration was a significant predictor for microvascular and CVD complications. Early onset subjects were more likely to have poorer glucose control (approximately 70-78%), untreated hypertension (26.3%).

Statement of the problem

A study to assess the effect of a Planned Teaching Programme on knowledge regarding type 2 diabetes mellitus among adolescents with family history of diabetes mellitus in selected schools at Ernakulam district in Kerala.

Objectives

Objectives of the study were to:

assess the pre-test and post-test knowledge of the adolescents with family history of diabetes mellitus regarding type

2 diabetes mellitus.

determine the effect of a Planned Teaching Programme on knowledge regarding type 2 diabetes mellitus among adolescents with family history of diabetes mellitus.

find the association of pre-test knowledge on type 2 diabetes mellitus with the selected socio demographic variable.

Hypotheses

H1: The mean post-test knowledge score of adolescents regarding type 2 diabetes mellitus after administration of Planned Teaching Programme is significantly higher than the mean pre-test knowledge.

H2: There is significant association between level of knowledge and selected demographic variables.

Methodology

| | |
|----------------------|---|
| Research approach | : Quantitative research approach |
| Research design | : Quasi experimental research design |
| Setting of the study | : Vocational Higher Secondary School, <u>Irumbanath</u> and CCPLM Anglo Indian Higher Secondary School, <u>Pezhannoor</u> |
| Population | : Adolescents with family history of diabetes mellitus. |
| Sample | : 60 adolescents with family history of diabetes mellitus |
| Sampling technique | : Non probability consecutive sampling technique. |

Data collection process

After obtaining approval of ethics committee and permission from the authority, data was collected. 30 sample for experimental and 30 sample for control group were selected by using non-probability convenient sampling technique. In the experimental and control group after introducing self and purpose of the study, written consent was obtained for assuring maximum anonymity and confidentiality. Pretest conducted to assess the knowledge of adolescents regarding type 2 diabetes mellitus by using Structured Knowledge Questionnaire. The Planned Teaching Programme was conducted on the same day for the experimental group after pre-test for about one hour using power point presentation. The posttest was conducted using the same tool on 5th day for both control and experimental group.

Data analysis

The data were analyzed, interpreted and organized under the following headings.

- Section 1 : Description of sample characteristics
- Section 2 : Knowledge of adolescents with family history of diabetes mellitus regarding type 2 diabetes mellitus
- Section 3 : Effect of a Planned Teaching Programme on knowledge of adolescents regarding type 2 diabetes mellitus in both experimental group and control group
- Section 4 : Association of pre test knowledge score of adolescents regarding Type 2 diabetes mellitus with the selected demographic variable

Section 1: Description of the sample characteristics

Table 1: Socio Demographic Characteristics

| Demographic variables | Category | f | | % | |
|-------------------------------------|-------------------------|---------|--------------|---------|--------------|
| | | Control | Experimental | Control | Experimental |
| Age in years | 13 yrs | 9 | 12 | 30 | 40 |
| | 14 yrs | 13 | 10 | 43.33 | 33.33 |
| | 15 yrs | 8 | 8 | 26.67 | 26.67 |
| Gender | Male | 11 | 14 | 36.66 | 46.66 |
| | Female | 19 | 16 | 63.33 | 53.33 |
| Class | 9 th class | 9 | 12 | 30 | 40 |
| | 8 th class | 14 | 11 | 46.67 | 36.67 |
| | 10 th class | 7 | 8 | 23.33 | 23.33 |
| Monthly income of the family | Below Rs. 10000 | 11 | 10 | 36.67 | 33.33 |
| | Between Rs. 10000-20000 | 11 | 10 | 36.67 | 33.33 |
| | Above Rs. 20000 | 8 | 10 | 26.67 | 33.33 |
| Area of residence | Rural | 6 | 1 | 20 | 3.33 |
| | Urban | 24 | 29 | 80 | 96.67 |
| Type of family | Joint family | 2 | 4 | 6.67 | 13.33 |
| | Nuclear family | 22 | 23 | 73.33 | 76.67 |
| | Extended family | 6 | 2 | 20 | 6.67 |
| | Broken family | 0 | 1 | 0 | 3.33 |
| Family member who diagnosed with DM | Father | 7 | 2 | 23.33 | 6.67 |
| | Mother | 7 | 10 | 23.33 | 33.33 |
| | Grandparents | 16 | 18 | 53.33 | 60 |
| | Siblings | 0 | 0 | 0 | 0 |
| Health professional in home | Yes | 1 | 2 | 3.33 | 6.67 |
| | No | 29 | 28 | 96.67 | 93.33 |
| Previous exposure to information | Yes | 7 | 7 | 23.33 | 23.33 |
| | No | 23 | 23 | 76.67 | 76.67 |
| Source of information | Health campaigns | 0 | 7 | 0 | 50 |
| | Mass media | 5 | 0 | 35.71 | 0 |
| | Health personal | 2 | 0 | 14.28 | 0 |

The above table shows that the majority of samples in the control group 13 (43.33%) are in the age of 14 yrs and experimental group 12 (40%) are in the age of 13 yrs. In the control group 19 (63.33%) and experimental group 16 (53.33%) were females. 14 samples (46.67%) in the control group were in 9th class and experimental group 12 (40%) were in 8th class. The monthly family income of majority of samples in control group 11 (36.67%) were below Rs.10000 and between Rs. 10000 to 20000 where as in experimental group equal number of samples 10 (33.33%) were belong to all the three categories of monthly income of the family. Majority of samples in the control group 24 (80%) and in experimental group 29 (96.67%) were from urban area. In the control group 22 (73.33%) and experimental group 23 (76.67%) belonged to nuclear family. 16 samples (53.33%) in the control group and 18 samples (60%) in the experimental group had grandparents diagnosed with diabetes mellitus. Majority of samples in the control group 29 (96.67%) and experimental group 28 (93.33%) didn't have any health professionals at home. 23 samples (76.67%) in the control and experimental group didn't have any previous exposure to information regarding type 2 diabetes mellitus. In control group 5 (35.71%) of the samples had their information from mass media and in experimental group 7 (50%) had their information from health campaigns.

Section 2: Knowledge of adolescents with family history of diabetes mellitus regarding type 2 diabetes mellitus

Table 2 : Mean and mean percentage of knowledge regarding type 2 diabetes mellitus among the control group and experimental group (N=60)

| Group | Max possible score | Pre-test | | Post-test | |
|--------------|--------------------|----------|------------|-----------|------------|
| | | Mean | Percentage | Mean | Percentage |
| Control | 32 | 9.83 | 30.71 | 11.1 | 34.69 |
| Experimental | 32 | 12.8 | 40 | 25.2 | 78.75 |

This table shows that the mean post-test knowledge score (25.2) and mean percentage (78.75%) of experimental group was higher than that of the mean pretest knowledge score (11.1) and mean percentage (34.69%) of experimental group. The mean post test knowledge score(25.2) and mean percentage (78.75%) of experimental group was also higher than that of the mean post test knowledge score (11.10) and mean percentage (34.69%) of control group

Pretest knowledge level of adolescents

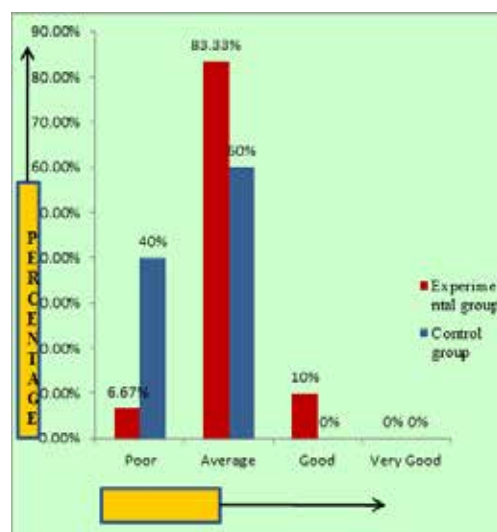


Fig 1 : The bar diagram showed that, in pretest the experimental group 83.3% of samples were belonged to

average level of knowledge followed by 10% of sample belonged to good level of knowledge and 6.67% of sample belonged to poor level knowledge. Where as in control group 60% of sample belonged to average level of knowledge followed by 40% of sample belonged to poor level of knowledge.

Posttest knowledge level of adolescents

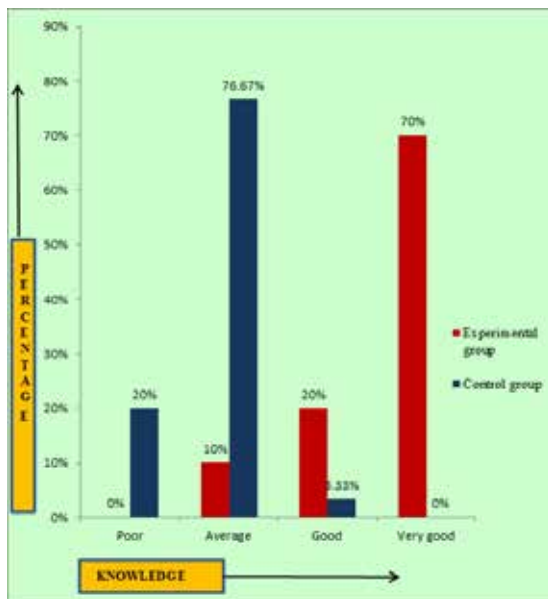


Fig 2 : The bar diagram showed that, in posttest the experimental group 70% of samples were belonged to very good level of knowledge followed by 20% of sample belonged to good level of knowledge and 10% of sample belonged to average level of knowledge. Where as in control group 76.67% of sample belonged to average level of knowledge followed by 20% of sample belonged to poor level of knowledge and 3.33% of sample belonged to good level of knowledge.

Table 3: Mean, Mean difference and t value of the pretest knowledge score of control and experimental group (N = 60)

| Group | Pretest mean | Mean difference | SD | t (cal) | t (tab) |
|--------------|--------------|-----------------|-------|---------|---------|
| Control | 9.83 | -2.97 | 12.81 | 0.358 | 2.004 |
| Experimental | 12.8 | | 8.96 | | |

Significance level at 0.05

The mean pretest knowledge score of control group (9.83) was lower than the mean pretest knowledge score of experimental group (12.8). The calculated t value (0.358) of pretest mean is less than the table value (2.004) which indicates that there is no significant difference between both the means. That is the experimental and control group are homogenous.

Section 3: Effect of Planned Teaching Programme on knowledge of adolescents with family history of diabetes mellitus regarding type 2 diabetes mellitus in both experimental and control group

Table 4: Mean, Mean difference and t value of the pretest knowledge score of control and experimental group (N = 60)

| Group | Pretest mean | Mean difference | SD | t (cal) | t (tab) |
|--------------|--------------|-----------------|-------|-----------|---------|
| Control | 11.1 | -14.1 | 8.22 | 14.682*** | 3.46 |
| Experimental | 25.2 | | 19.63 | | |

***Significant at 0.001 level

The mean post test knowledge score (11.1) of control group was lower than the mean posttest knowledge score of experimental group. The calculated t value (t= 14.682) was greater than the table value (t= 3.46). Hence the null hypothesis (H₀) at 0.001 level of significance is rejected and the research hypothesis (H₁) is accepted. This showed that there was significant improvement in the knowledge score of adolescents with family history of diabetes mellitus after the planned teaching programme.

Section 4: Association between pretest knowledge score of the adolescents with family history of type 2 diabetes mellitus regarding type 2 diabetes mellitus with the selected demographic variables.

There is no significant association between the demographic variables and the pretest knowledge of adolescents. Hence the research hypothesis (H₂) rejected and null hypothesis (H₀) is accepted.

Conclusion

Type 2 diabetes mellitus is emerging as a new clinical problem within pediatric practice. Recent reports indicate an increasing prevalence of type 2 diabetes mellitus in children and adolescents around the world. Clinicians should be aware of the frequent mild or asymptomatic manifestation of type 2 diabetes mellitus in childhood. Therefore, a screening seems meaningful especially in high risk groups such as children and adolescents with obesity, relatives with type 2 diabetes mellitus, and clinical features of insulin resistance. Treatment of choice to prevent type 2 diabetes mellitus is lifestyle intervention . The lifestyle of the Adolescents is a major issue in the today's society and it differs though nature & experience of individual. The study concluded that the planned teaching programme with different A V aids resulted in significant improvement of knowledge and practice about healthy lifestyle among adolescents which was very helpful healthy individuals and their family, thus society in future.

Recommendation

Since it is a small sample study it can be replicated on a larger sample for generalizing the findings.

An explorative study can be conducted to assess the attitude of adolescents towards lifestyle modifications.

Qualitative research could be conducted on the same issue to explore the perceptions of the young patients who had developed diabetic complications.

A descriptive study can be done on the prevalence of type 2 diabetes mellitus in adolescents.

A comparative study can be done on adolescents residing urban area and rural area regarding the knowledge on prevention of type 2 diabetes mellitus.

A true experimental study can be conducted on the same topic for the same population.

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