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Research Article

Type 2 Diabetes Mellitus

A Study to Assess the Awareness of the Complication of type 2 Diabetes Mellitus and to Evaluate the Effectiveness of Counselling Program for Primary Prevention of Type 2 DM in Young Adult

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The rapidly increasing number of incidences, severity, its complication, and the socio-economic burden greatly demonstrate the need and importance of the preventive action for type 2 diabetes mellitus. It has been become important to emphasize the call for the primary prevention. Objectives of the study is to assess the awareness of cause complication and prevention of about type 2 diabetes mellitus among young adults, to evaluate and assess the effectiveness of a counselling program regarding causes, complication and prevention for the primary prevention of type 2 Diabetes mellitus, and to find the relationship between socio-demographical variables and level of awareness on diabetes mellitus. For this study an evaluative approach was considered. The pre-experimental design consists of pre-test and post-test observation made on different days with only one selected group and without a control group. The overall mean awareness score present in pre-test is 46.1 and the post-test 82.2% and there was enhancement of knowledge score found to be 36.4%. Therefore, it was established that there was significant increase in the awareness level after the counselling program. From this study it was found that demographic variables like educational status, family income, age group has impact on the knowledge of the respondent. The present study has demonstrated that counselling program is sufficiently effective and viable for achievement of the goal for primary prevention of Diabetes Mellitus in ordinary community.

Keywords: Type 2 Diabetes Mellitus, Primary Prevention, Counselling Program

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Introduction

Diabetes Mellitus (DM) is believed to be due to a complex interplay between environmental and genetic factors. However recent epidemiologic studies prove that the current world-wide epidemic of Diabetes Mellitus is mostly resulted from diet and lifestyle [1-3]. The prevention diabetes mellitus becoming more challenging and urgent especially in the developing countries because it is the developing countries which is anticipated to bear the burden of rising diabetes outbreak in the future.

The rapidly increasing number of incidences, severity, its complication, and the socio-economic burden greatly demonstrate the importance and necessity of the preventive action for type 2 DM. It has been become important to emphasize the call for the primary prevention and increase in awareness of type 2 DM. To implement the action for the primary prevention there is need for awareness and increased knowledge about the aetiology, Pathophysiology, and complication. The necessity for prevention of DM2 was recognized as early as 1920 but little was done [4-7].

Since last 15 years, the need for prevention of Diabetes Mellitus was highly emphasized. The main motive to prevent Diabetes Mellitus is to prevent or delay the long-term complication related to this disease and also to minimize the socio-economic brunt and anguish on the society [8].

A randomized control trial was conducted by Diabetes prevention program group, a to compare the safety and efficacy of a rigorous intervention of life style modification or life style recommendations which is standard and was combined with either metformin or placebo had demonstrated that intensive life style modification intervention helped in reduction in type 2 diabetes mellitus risk by 58 percent and was superior to the group that combined metformin [Diabetes Prevention Research Group, 2002]. The objective of current study is to assess the awareness of cause complication and prevention of about type 2 diabetes mellitus among young adults [9]. To evaluate the effectiveness of a counselling program regarding causes, complication and prevention for the primary prevention of type 2 DM. The find the relationship between socio-demographical variables and level of awareness on diabetes mellitus.

Materials and Methods

The present study is to evaluate the effectiveness of counselling program on causes, hazards and prevention of type 2 Diabetes Mellitus and for the objectives to be accomplished, an evaluative approach was considered for the present study. The classical approach for the conduct of evaluative research consists of: Determining the objectives, developing a means of measuring, Collection of data and interpretation of the data. The pre-experimental design consists of pre-test and post-test observation made on different days with only one selected group and without a control group.

The tool was developed by reviewing of literature, preparing the blue print and then developed the structured Knowledge Questionnaire (items). The blue print of the items was prepared based on the four domains of learning, mainly; knowledge on general aspect of Diabetes Mellitus10 items (25%), causes of type 2 Diabetes Mellitus 10 items (25%), Complication of type 2 Diabetes Mellitus 10 items (25%) and prevention of Diabetes Mellitus 10 items (25%) [9-12].

A prior permission was obtained from the authorities of urban family welfare center in West Delhi. The survey was done to identify young adult's age between 20-30 years at Hari Nagar area and sample was drawn for study. The purpose of the study was explained an informed consent was taken before starting the study. A pre-test was conducted by administering a structured knowledge questionnaire on causes complication and prevention of type 2 Diabetes Mellitus. On the same day, the Counseling program was administrated [13-14]. The post-test was conducted by using the same structured knowledge questionnaire after 7th day of the administration of counselling program.

Result

The result deals with the analysis and interpretation of the data collected in order to determine the effectiveness of counselling program on "Causes, complication and prevention of type 2 Diabetes Mellitus" in increasing the knowledge regarding the type 2 Diabetes Mellitus of 40 young adult who completed the three major phases of the study. The results were computed descriptive and inferential statistics based on the objectives of the study.

It is observed from the result that among 40 young adults, 19 (47.5%) were between the age group of 22 to 25 years, 11 (27.5%) were age group of 25 to 27 years and 10 (25%) from the age group of more than 27 years.

Educational status of the respondents reveals that 18 (45%) subjects' educational status are High school, 12 (30%) subjects' educational status are PUC, 5 (12.5%) with middle school and 5 (12.5%) are studied University.

Occupation of the respondents reveal that 24 (60%) of respondents were student, 11(27.5%) of the respondents were employee and 5 (12.5%) of respondents were business.

Percentage distribution of subjects according to the family history of Diabetes Mellitus Majority of the 24(60%) said yes and 16 (40%) said no to family history of Diabetes Mellitus [13-17].

Representing the frequency and percentage of distribution of subjects according to the source of information Majority of subjects that is 28 (70 %) mentioned as source of information as T.V., 6 (15%) mentioned as family members, 6 (15%) mentioned as newspaper.

A. Aspect wise Pre-test Mean Knowledge scores of Respondents on Diabetes Mellitus

Table-1: N=40

No.	Knowledge Aspects on Diabetes Mellitus	Statements	Max. Score	Respondents Knowledge		
				Mean	Mean (%)	SD
I	General aspects	10	10	5.03	50.3	10.3
II	Causes	10	10	4.25	42.5	10.3
III	Complication	10	10	4.85	48.5	10.8
IV	Prevention	10	10	4.33	43.3	17.2
V	Combined	40	40	18.45	46.1	5.3

Table-1 depicts the distribution of aspect wise pre-test mean knowledge score regarding general aspect, causes, complication and prevention of type 2 Diabetes Mellitus.

The mean knowledge score was 50.3% in general aspect, 42.5% in causes, 48.5% Complication and 43.3% in preventive aspect of type 2 Diabetes Mellitus. The total mean pre-test knowledge score was 46.1% with standard deviation of ±5.3. This is depicted in fig.1

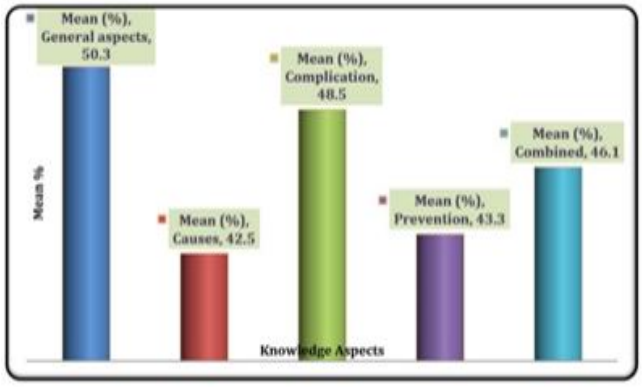

Fig.1: Aspect wise Pre-test Mean Knowledge scores on Diabetes Mellitus

B. Aspect wise Post-test Mean Knowledge scores of Respondents on type 2 Diabetes Mellitus:

Table-2: N=40

No.	Knowledge Aspects on type 2 Diabetes Mellitus	Statements	Max. Score	Respondents Knowledge		
				Mean	Mean (%)	SD
I	General aspects	10	10	8.13	81.3	15.1
II	Causes	10	10	8.50	85.0	8.5
III	Complication	10	10	8.45	84.5	6.8
IV	Prevention	10	10	7.95	79.5	9.6
V	Combined	40	40	33.03	82.6	6.8

Table-2 depicts the distribution of aspect wise post-test mean knowledge score regarding general aspect causes, hazards and preventive aspects.

The mean knowledge was 81.3% in general aspect, 85.0% in cause's aspects, 84.5% in the aspects of complication and 79.5% in preventive aspects.

The total mean post-test knowledge score was 82.6 % with standard deviation of ±6.8. This is depicted in fig.2

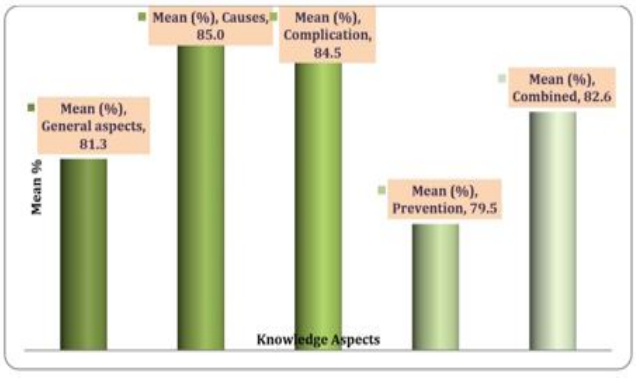

Fig 2: Aspect wise Post-test Mean Knowledge scores on type 2 DM

C. Aspect wise mean Pre-test and Post-test Knowledge on type 2 Diabetes Mellitus [18-20]

Table–3: N= 40

No.	Knowledge Aspects on type 2 Diabetes mellitus	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	General aspects	50.3	10.3	81.3	15.1	31.0	15.0	13.07*
II	Causes	42.5	10.3	85.0	8.5	42.5	13.3	20.21*
III	Complication	48.5	10.8	84.5	6.8	36.0	11.3	20.15*
IV	Prevention	43.3	17.2	79.5	9.6	36.3	16.4	14.00*
	Combined	46.1	5.3	82.6	6.8	36.4	7.8	33.85*

* Significant at 5% level t (0.05, 39 d.f) = 1.96

Table-3 Depicts that young adult has lowest knowledge score in the general aspects (31%) and highest in the causes (42.5%) The pre-test and post test score in general aspect were 50.3% and 81.3% and mean percentage 31% respectively. The knowledge in the aspect of causes were 42.5%(pre-test) and 85% (post-test) with mean percentage 42.5% respectively. The pretest and post-test knowledge score in the complication aspects were 48.5% and 84.5% with mean percentage 36 % respectively the pre-test and post test score in the preventive aspect were 43.3 % and 79.5% with mean percent 36.3% respectively.

The statistical paired "t" test implies that the difference in pre-test and post-test knowledge score in various aspects found statistically significant at 5% level. The post-test mean knowledge enhancement was 31.0 with paired "t" value of 13.07* in the general aspect of type 2 diabetes mellitus. The post-test mean knowledge score in the aspect of causes is 42.5% with paired "t" value of 20.21* %. The post-test mean knowledge enhancement of in the aspect of complication was 36.0% with a paired "t" value of 20.15*%. The post-test mean knowledge enhancement in preventive aspect was 36.3% with a paired "t" value of 14.00*%. The combine post-test knowledge enhancement was 36.4 with a paired "t" value of 33.85*.

Classification of Respondents on Knowledge level on Causes, Complication, and Prevention of type 2 diabetes mellitus [21-23]

Table– 4

Knowledge Level	Category	Classification of Respondents			
		Pre test		Post test	
		Number	Percent	Number	Percent
Inadequate	< 50% Score	26	65.0	0	0.0
Moderate	51-75 % Score	14	35.0	15	37.5
Adequate	> 75 % Score	0	0.0	25	62.5
Total		40	100.0	40	100.0

Table: 4 shows that the knowledge level of young adults regarding causes, complication and prevention of type 2 diabetes mellitus that result indicate that 26 (65%) of respondents had inadequate knowledge on pre-test, 14 (35%) of respondents noticed with moderate knowledge on pre-test. After post-test 25 (62.5%) of respondents got adequate knowledge level and 15 (37.5%) Respondents got moderate knowledge on cause hazard and prevention of type 2 diabetes mellitus.

However, the difference in the knowledge level of respondents between pre and post-test found to be statistically significant.

Association between demographic variables and pre-test knowledge scores [23-24]

Table 5 N=40

S. N	Variable	Category	Knowledge scores					c2 value	d.f	Table value
			Inadequate		Moderate		Total			
			N	%	N	%				
1	Age (Years)	22-25	16	84.2	3	15.8	19	6.36*	2	5.991
		25-27	6	54.5	5	45.5	11			
		>30	4	40.0	6	60.0	10			
2	Religion	Hindu	16	55.2	13	44.8	29	4.47*	1	3.841
		Others	10	90.9	1	9.1	11			
3	Educational level	High school	1	20.0	4	80.0	5	10.05*	2	5.991
		PUC	16	88.9	2	11.1	18			
		University	9	52.9	8	47.1	17			
4	Occupation	Student	14	58.3	10	41.7	24	3.17NS	2	5.991
		Business	5	100.0	0	0.0	5			
		Service	7	63.6	4	36.4	11			
5	Family income		19	79.2	5	20.8	24	5.29*	1	3.841
		>Rs.20,000	7	43.8	9	56.2	16			
6	Type of family	Nuclear	14	70.0	6	30.0	20	1.06NS	2	5.991
		Joint	5	71.4	2	28.6	7			
		Extended	7	53.8	6	46.2	13			
7	Father history of Diabetes	Yes	15	62.5	9	37.5	24	0.17NS	1	3.841
		No	11	68.7	5	31.3	16			
8	Source of information	Television	18	64.3	10	35.7	28	1.49NS	2	5.991
		News paper	3	50.0	3	50.0	6			
		Family member	5	83.3	1	16.7	6			

NS: Non Significant P value: 0.05 *: Significant at 5% level

Table 6 describe significant association between age, religion, education and family income with the pre-test knowledge score young adults. Hence research hypothesis H2 is accepted.

Whereas occupation, type of family, family history of type 2 Diabetes Mellitus, and Source of information found non-significant in pre-test. Hence null hypothesis HO2 stated in study is accepted and research hypothesis H2 rejected since there is no significant impact on demographic variables.

Association between demographic variables and post-test knowledge scores:

Table- 6: N 40

S. N.	Variable	Category	Knowledge scores					c2 value	df	Table value
			Moderate		Adequate		Total			
			N	%	N	%				
1	Age (Years)	22-26	7	36.8	12	63.2	19	1.16NS	2	5.991
		27-31	3	27.3	8	72.7	11			
		>31	5	50.0	5	50.0	10			
2	Religion	Hindu	12	41.4	17	58.6	29	0.67NS	1	3.841
		Others	3	27.3	8	72.7	11			
3	Educational level	High school	2	40.0	3	60.0	5	0.86NS	2	5.991
		PUC	8	44.4	10	55.6	18			
		University	5	29.4	12	70.6	17			
4	Occupation	Student	8	33.3	16	66.7	24	0.49NS	2	5.991
		Business	2	40.0	3	60.0	5			
		Private	5	45.5	6	54.5	11			
5	Family income		8	33.3	16	66.7	24	0.44NS	1	3.841
		>Rs.20,000	7	43.7	9	56.3	16			
6	Type of family	Nuclear	8	40.0	12	60.0	20	2.36NS	2	5.991
		Joint	4	57.1	3	42.9	7			
		Extended	3	23.1	10	76.9	13			
7	Family history of Diabetes	Yes	9	37.5	15	62.5	24	0.00NS	1	3.841
		No	6	37.5	10	62.5	16			
8	Source of information	Television	11	39.3	17	60.7	28	0.13NS	2	5.991
		News paper	2	33.3	4	66.7	6			
		Family member	2	33.3	4	66.7	6			

NS: Non-Significant P value: 0.05 *: Significant at 5% level

Discussion

Text In 1994, the WHO study group put forward a powerful implication that the diabetes prevention nationwide program should be given importance. But there was nothing implemented so far. From the abundance of observational data from all over the world, it was apparently evident that the lifestyle factors including obesity and physical inactivity are growing throughout the world and along with these trends, there is a steep rise in the no of prevalence of type 2 diabetes mellitus.

The sedentary life style pattern not only becomes an issue for the adult but also for the children and adolescents.

What is important is there is a need for systematic approach like counselling to target life-style modification in those individuals. Screening of the high-risk individual is not sufficient for effective prevention of DM2.

Conclusion and Recommendation

It has been demonstrated by earlier studies that the lack of awareness of Diabetes Mellitus is the main reason behind high prevalence of this disease in urban areas.

As per a study conducted in South India [CURE study] around 25% of people are not even aware of condition called Diabetes Mellitus. Additionally, it was also noted that the knowledge and awareness regarding the complication of Diabetes Mellitus was poor and less than 50% aware of the fact that Diabetes is preventable. Awareness program and counselling program not only facilitate prevention of Diabetes Mellitus, but also considered as a tool for increasing the awareness of other disease. Several epidemiological studies showed that there is a rapid increase in the prevalence of Diabetes Mellitus in the urban areas. Moreover, there has been a shift in age of onset to younger group of adults which alarming on the nation’s economy.

In conclusion the present study demonstrated effectiveness and feasibility of counselling program in increasing the level of awareness and knowledge level in terms of prevention of type 2 diabetes mellitus.

The study included young adults aged between 20-30 years. The objective was to increase the knowledge level and awareness about life style modification primary prevention of Diabetes Mellitus. It was noted that the counselling program was effective to increase the awareness and knowledge level of the young adult regarding dietary pattern, importance of physical activity and necessity for modification of life style for prevention of type 2 Diabetes mellitus

Acknowledgement: A prior permission was obtained from the authorities of urban family welfare center in West Delhi.

Declaration: We Author(s) of the above titled paper hereby declare that the work included in the above paper is original and is an outcome of the research carried out by the authors indicated in it. Further, We author(s) declare that the work submitted has not been published already.

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