A Study to Assess the Effectiveness of an Information Booklet on Knowledge Regarding Management of Modifiable Risk Factors of Coronary Artery Disease among Patients with Diabetes Mellitus in Selected Hospitals at Udaipur City

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Abstract: *Introduction: According to survey In India the diabetes population in the year 2000 is 317 million. The risk of coronary artery disease in India is 3-4 times higher than the White Americans, 6 times higher than Chinese and 20 times higher than Japanese. The prevalence of CAD in both urban and rural population of India as observed by various investigators reveals the following figures, Chennai (2001) 11%, New Delhi (1994) 10.9%, Trivandrum (1995) 12.65%, Rajasthan (2014) 9.5%. Research Methodology: An evaluative approach was used to find out the effectiveness of an information booklet on knowledge regarding management of modifiable risk factors of coronary artery disease among patients with diabetes mellitus. In the present study, pre-experimental one group pre-test post-test design was selected for the study. The present study has been conducted in Maharana Bhupal Government Hospital at Udaipur city, Rajasthan, with 60 diabetic patients selected by purposive sampling technique. Result: The majority of the respondents (58.33%) had poor knowledge, 23.33% had average knowledge, 10% had good knowledge, 8.33% had very poor knowledge and nobody had excellent knowledge regarding management of modifiable risk factors of coronary artery disease among diabetic patients in the pre test. Majority of the respondents (70%) had good knowledge, 26.67% had excellent level of knowledge, 3.33% had average knowledge and nobody remains poor and very poor level of knowledge in the post test after the information booklet implementation. This showed enhancement in knowledge of the respondents. Conclusion: The information booklet significantly increased the knowledge of diabetic patients regarding management of modifiable risk factors of coronary artery disease. The information booklet was an effective to enhance the knowledge of diabetic patients so these kind of strategies can be used in the hospitals, community to increase knowledge regarding management of modifiable risk factors.*

Keywords: Assess, Knowledge, Information booklet, Coronary artery disease, Diabetes mellitus, Risk factors, Patients with diabetes mellitus

1. Introduction

The number of people with cardiovascular disease and diabetes mellitus is growing rapidly. To a large extent, this increase is due to lifestyle dependent risk factors, such as overweight, reduced physical activity, and an unhealthy diet. Changing these risk factors has the potential to postpone or prevent the development of diabetes mellitus and cardiovascular disease. It is hypothesized that a cognitive behavioral program, focused in particular on motivation and self - management in persons who are at high risk for CVD and/or diabetes mellitus, will improve their lifestyle behavior and, as a result, will reduce their risk of developing DM and CVD.

The number of people with cardiovascular disease (CVD) and diabetes mellitus type II (T2DM) is growing rapidly. To a large extent, this increase is due to lifestyle - dependent risk factors, such as overweight, reduced physical activity, and an unhealthy diet. Changing these risk factors has the potential to postpone or prevent the development of T2DM and CVD. It is hypothesized that a cognitive behavioral program (CBP), focused in particular on motivation and self - management in persons who are at high risk for CVD and/or T2DM, will improve their lifestyle behavior and, as a result, will reduce their risk of developing T2DM and CVD.3 World Health Organization has predicted that by the year 2020, up to three quarters of deaths in developing countries would result from non - communicable diseases and that Coronary Heart Disease (CHD) will top the list of killers'.

Yamunam. S. S., Lakshmi. A, (2011), A study was conducted On 100 diabetic subjects in selected urban community area, Bangalore. The study also reveals that the age, gender, occupation, duration of being diabetic, religion, and dietary pattern, history of CAD and source of information had no significant association with respondent's knowledge on prevention of CAD. The overall mean and mean percentage of knowledge scores on prevention of CAD among diabetic patients was found to be 12.61 and 36% respectively. It indicates that the respondents had inadequate knowledge on prevention of CAD. Hence, it is concluded that majority of respondent's have inadequate knowledge regarding the prevention of CAD. Providing information booklet on prevention of CAD among diabetic patients will be effective in increasing the knowledge of the respondents

Amani R, Noorizadeh M, Rahmanian S, et al (2011) A cross sectional study was conducted at All India Institute of Medical Sciences, New Delhi, on knowledge of patient's regarding the risk factors of coronary artery disease. Among 450 samples the sampling is done by purposive sampling technique, after the administration of intervention the result

was Only the 41.4% of the participants had a good level of knowledge, whereas 58.6% showing a poor level.

Objectives
1) To assess existing knowledge score regarding management of modifiable risk factors of coronary artery disease among patients with diabetes mellitus.
2) To develop and administer an information booklet on knowledge regarding management of modifiable risk actors of coronary artery disease among patients with diabetes mellitus
3) To evaluate effectiveness of an information booklet on knowledge regarding management of modifiable risk actors of coronary artery disease among patients with diabetes mellitus.
4) To find out association between mean pre test knowledge score with selected demographic variables.

Methodology
- An evaluative approach was used to find out the effectiveness of an information booklet on knowledge regarding management of modifiable risk factors of coronary artery disease among patients with diabetes mellitus.
- In the present study, pre - experimental one group pre - test post - test design was selected for the study. The present study has been conducted in Maharana Bhupal Government Hospital at Udaipur city, Rajasthan. In the present study, 60 diabetic patients were select by purposive sampling technique.

2. Data Analysis and Interpretation

Comparison of Mean Pre and Post - Test Knowledge Scores
This section examined data pertaining to following objectives and hypothesis

Objectives
1) To assess pre test knowledge score regarding management of modifiable risk factors of coronary artery disease among patients newly diagnosed with diabetes mellitus.
2) To evaluate effectiveness of an information booklet on knowledge regarding management of modifiable risk actors of coronary artery disease among patients newly diagnosed with diabetes mellitus.

Hypothesis
H1: There will be significant difference in pre test and post test knowledge scores rega rding management of modifiable risk factors of coronary artery disease in newly diagnosed diabetes mellitus patients.

Table 1: Area Wise Pre test and knowledge Scores regarding management of modifiable risk factors of coronary artery disease in diabetic patients N=60

Factor	Pre Test	
	Score	%
Diabetes	2.47	41.11
Coronary artery disease	4.13	45.93
Management of modifiable risk factors	6.57	43.78
Overall	13.17	43.89

Table 1revealed that in pre test highest mean percentage knowledge scores 45.93% was found in the area of coronary artery disease, 43.78% in the area of management of modifiable risk factors, 41.11% in the area of diabetes and the overall mean percentage knowledge scores in pre test was found 43.89%.

Table 2 Area Wise Post test and knowledge Scores regarding management of modifiable risk factors of coronary artery disease in diabetic patients, N=60

Factor	Post Test	
	Score	%
Diabetes	3.98	66.39
Coronary artery disease	6.22	69.07
Management of modifiable risk factors	10.68	71.22
Overall	20.88	69.61

Table 2revealed that in post test highest mean percentage knowledge scores 71.22% was found in the area of management of modifiable risk factors, 69.07 % in the area of coronary artery disease,, 66.39% in the area of diabetes and the overall mean percentage knowledge scores in post test score was found 69.61%.

Table 3: Area Wise comparison of mean Pre test and post test knowledge Scores N=60

Factor	Pre Test			Post Test		
	Mean	SD	%	Mean	SD	%
Diabetes	2.47	1.05	41.11	3.98	1.11	66.39
Coronary artery disease	4.13	1.23	45.93	6.22	0.88	69.07
Management of modifiable risk factors	6.57	2.06	43.78	10.68	1.38	71.22
Overall	13.17	3.17	43.89	20.88	2.31	69.61

Table 3 revealed, the highest mean pre test knowledge scores 6.57 with SD 2.06 whereas the mean post test knowledge scores 10.68 with SD 1.38 was found in the area of management of modifiable risk factors of CAD. The mean pre test knowledge scores 4.13 with SD 1.23 whereas the mean post test knowledge scores 6.22 with SD 0.88 was found in the area of coronary artery disease. The least mean pre test knowledge scores 2.47 with SD 1.05 whereas the mean post test knowledge scores 3.98 with SD 1.11 was found in the area of diabetes. The overall mean score in pre test 13.17 (69.61%) with SD 3.17 & after post test mean knowledge scores 20.88 (70.64%) with SD 2.31.

Table 4: Interpretation of level of knowledge scores among diabetic patients regarding management of modifiable risk factors of CAD, N=60

Knowledge score	Pre Test		Post Test	
	N	%	N	%
Poor	40	66.67	0	0.00
Average	14	23.33	2	3.33
Good	6	10.00	42	70.00
Excellent	0	0.00	16	26.67
Total	**60**	**100.00**	**60**	**100.00**

Table 4 depicted that overall knowledge scores in the pre test (66.67%) respondents were found poor but in post test no one respondents were found poor, 3.33% respondents were found average in the pre test which were improved after post test 23.33%, good respondents in the pre test were found very rare (10%), which were increased after post test

(70%), there were no excellent respondents in the pre test but after post test excellent respondents were found (26.67%). The findings revealed that there was a significant increase in knowledge regarding management of modifiable risk factors of coronary artery disease.

Table 5: Effectiveness of an information booklet on knowledge regarding management of modifiable risk factors of coronary artery disease N=60

Test	N	Mean	SD	t	Df	Result
Pre Test	60	13.17	3.17	18.17	59	***
Post Test	60	20.88	2.31			

Table 5, The paired 't' value was computed to determine Effectiveness of an information booklet on knowledge regarding management of modifiable risk factors of coronary artery disease. The following hypothesis was stated.

H$_1$: There will be a significant difference between the pre test and post - test knowledge scores regarding management of modifiable risk factors of coronary artery disease among diabetic patients.

Table 5 Illustrated that the mean post test knowledge scores 20.88 was greater than the mean pre test scores 13.17. The mean difference between pre test and post test scores was 7.71. the 't' value 18.17 was significant at 0.001 levels; hence research hypothesis H$_1$ was accepted. This indicates that the information booklet was found effective in increasing the knowledge regarding management of modifiable risk factors of coronary artery disease among diabetic patients.

Association between Pre test Knowledge Scores with Selected Socio Demographic Variables
This section examined data pertaining to following objectives and hypothesis.

Objective
To find out the association between mean pre test knowledge scores with selected socio - demographic variables.

Hypothesis
H$_2$: There will be a significant association between the mean pre test knowledge scores with socio - demographic variables.

Table 1: Associations between Pre Test Knowledge Scores and Age N= 60

Age	N	Mean	SD	F	Df	Result
30 - 40 years	5	11.40	1.52	1.809	3.56	NS
41 - 50 years	24	12.42	2.90			
51 - 60 years	26	14.00	3.30			
Above 60 years	5	14.20	4.09			

NS= Not Significant at P<0.05 Level

Table 1 revealed that in association between mean pre test knowledge scores and age of the respondents, the highest knowledge scores was found in age group of above 60 years with mean of 14.20 and the least 11.40 was in the age group of 30 - 40 years. F calculated value was 1.089 at df 3, 56,

Which is less than at 0.05 level of significance, Which indicate that these no significant association between mean pre test knowledge scores and Age of respondent.

Table 2: Association between Pre - Test knowledge score and Gender, N= 60

Gender	N	Mean	SD	T	Df	Result
Male	33	13.33	3.37	0.447	58	NS
Female	27	12.96	2.97			

NS= Not Significant at P<0.05 Level

Table 2 revealed that according gender the highest knowledge scores were found in males with mean of 13.33 and the least knowledge scores was in the females with mean of 12.96. 't' calculated value was 0.447 at df 58, which is less than the 0.05 level of significance, Which indicate that these no significant association between mean pre test knowledge scores and gender of respondent.

Table 3: Association between Pre Test Knowledge Scores and Educational Qualification, N= 60

Education	N	Mean	SD	f	Df	Result
Primary	24	10.88	2.19	26.342	2, 57	***
Upper Primary	20	13.40	2.56			
Graduate and higher	16	16.31	2.21			
Others	0	0	0			

*** significant at P>.001 level

Table 3 revealed that in association between mean percentage of pre test knowledge and educational qualification, The highest knowledge scores was found in respondents with education of graduation and above with 16.31 and the least was in the respondents with secondary education with mean of education 10.88. F calculated value was 26.342 at df 2, 57 which is more than the 0.001 level of significance, Which indicate that there was a significant association between mean pre test knowledge scores and Educational qualification of respondents.

Table 4: Association between Pre - Test knowledge score and Area of residence, N= 60

Area of Residence	N	Mean	SD	t	Df	Result
Rural	10	10.20	1.99	- 3.540	58	***
Urban	50	13.76	3.04			

Table 4 revealed that In association between mean of pre test knowledge scores and area of residence of the respondents, The highest knowledge scores was found in urban area respondents with mean percentage of 13.76 and the least was in the rural area respondents with mean percent of 10.20. 't' calculated value was - 3.540 at df 58 which is more than the 0.001 level of significance, Which indicate that there was a significant association between mean pre test knowledge scores and area of residence of respondent.

Table 5: Association between Pre - Test knowledge score and Occupation of the respondents N=60

Occupation	N	Mean	SD	F	Df	Result
Farmer	3	9.00	3.46	6.678	3, 56	***
Self - Employed	23	13.57	2.63			
Employed	15	15.20	3.38			
Unemployed	19	11.74	2.38			

*** significant at P>.001 level

Table 5revealed that in association between mean percentage of pre test knowledge and occupation of the respondents, the highest knowledge score was found in respondents with occupation of employed with 15.20 and the least was in the respondents with occupation farmer with mean 9.00. F calculated value was 6.678 at df 3, 56 which is more than the 0.001 level of significance, Which indicate that there was a significant association between mean pre test knowledge scores and occupation of respondent.

Table 6: Association between Pre - Test knowledge score and Food preference N=60

Food Preference	N	Mean	SD	T	Df	Result
Vegetarian	37	13.76	3.29	1.865	58	NS
Non - Vegetarian	23	12.22	2.78			

NS= Not Significant at P<0.05 Level

Table 6 revealed that in association between mean percentage of pre test knowledge and food preference of the respondents, The highest knowledge scores was found in vegetarian respondents 13.76 and the least was in the respondents non vegetarian with mean 12.22. F calculated value was 1.865 at df 58 which is less than the 0.05 level of significance, Which indicate that there is no significant association between mean pre test knowledge scores and occupation of respondent.

Table 7: Pre - Test knowledge score and period of suffering from diabetes N=60

Year of experience	N	Mean	SD	F	Df	Result
<1 year	9	12.00	1.87	4.456	3, 56	**
1 - 5 years	34	12.38	2.74			
6 - 10 years	13	15.31	3.77			
> 10 years	4	15.50	3.32			

**= Significant at P>0.01 Level

Table 7 revealed that in association between mean percentage of pre test knowledge and since how many years suffering from diabetes of the respondents, The highest knowledge scores was found in > 10 years of respondents 15.50 and the least was in <1 year with mean 12. F calculated value was 4.456 at df 3, 56 which is more than the 0.01 level of significance, Which indicate that there was a significant association between mean pre test knowledge scores and since how many years suffering from diabetes.

Overall, statistical findings revealed that there were significant association between mean pre test knowledge scores and selected demographic variables such as educational qualification, area of residence, occupation, educational status and year of suffering from diabetes. But there was no significant association between mean pre tests knowledge scores and selected socio - demographic variables such as age, gender and food preference. Hence, H_2 state that there will be a significant association between mean pre test knowledge scores with selected socio demographic variables was partially accepted and the H_2 need to be modified.

Level of Knowledge regarding management of modifiable risk factors of coronary artery disease among patients with diabetes mellitus

The majority of the respondents (58.33%) had poor knowledge, 23.33% had average knowledge, 10% had good knowledge, 8.33% had very poor knowledge and nobody had excellent knowledge regarding management of modifiable risk factors of coronary artery disease among diabetic patients in the pre test.

Majority of the respondents (70%) had good knowledge, 26.67% had excellent level of knowledge, 3.33% had average knowledge and nobody remains poor and very poor level of knowledge regarding management of modifiable risk factors of coronary artery disease among diabetic patients in the post test after the information booklet implementation. This showed enhancement in knowledge of the respondents. This revealed that the respondents had statistically significantly improved their knowledge after administration of information booklet.

3. Conclusion

The knowledge of the diabetic patients regarding management of modifiable risk factors of coronary artery disease. Before the administration of the information booklet was very low. The information booklet significantly increased the knowledge of diabetic patients regarding management of modifiable risk factors of coronary artery disease**.** . The information booklet was an effective to enhance the knowledge of diabetic patients so these kind of strategies can be used in the hospitals, community to increase knowledge regarding management of modifiable risk factors of coronary artery disease to reduce morbidity and mortality rate by coronary artery diseases.