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A Study to Assess the Effectiveness of Structured Teaching Program on Practice and Attitude of Behavioral Risk Factors of Diabetes and Hypertension in Adults of Selected area of Pune City

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Abstract: ***Diabetes mellitus (DM) is one of the most common non - communicable diseases (NCDs) in the world. Non - communicable diseases are widespread in many economically developing nations and newly industrialized nations according to compelling evidence. In most high - income nations, diabetes is 4th or 5th leading cause of death. "Diabetes mellitus is a chronic illness requiring continuous medical care with multi - factorial risk reduction strategies beyond glycemic control. Ongoing patient self - management education and support are critical to preventing acute complications and reducing the risk of long term complications" (Diabetes care, 2014). Diabetes and hypertension are becoming more common due to sedentary behaviour and drug use. In India, the rising frequency of diabetes and hypertension has emerged as a serious health concern. The research study employed a quantitative design. The data is collected from the adult's mainly young and middle aged people of the community. The urban was selected for the data collection. The effectiveness of a structured training programme on behaviour risk factors for diabetes and hypertension among adults in Pune city was evaluated using a pre - experimental one group pre - test and post - test design in addition to a quantitative research technique. It is found that pre - test practice level in which says that good practice is 24%, average practice is 26% and bad practice is 50%, in post - test it is found that good practice is 50%, average practice is 38% and bad practice is 12% and the data of the attitude level in pre - test which says that good attitude is 22%, average attitude is 33%and poor attitude is 45%, in post - test it is found that good attitude is 45%, average attitude is 28%and poor attitude is 27%.***

Keywords: Assess, Effect, Structured teaching program, Practice, Attitude, Behavioral risk factors

1. Introduction

Diabetes and hypertension are becoming more common due to sedentary behavior and drug use. It is estimated that the prevalence of diabetes will increase by 5.5 in 2025, compared to 4 from 1995. [13]In India, the rising frequency of diabetes and hypertension has emerged as a serious health concern. Diabetes can develop when the pancreas fails to create enough insulin or when the body has trouble using the insulin that is produced. Blood sugar levels are controlled by the hormone insulin. [8] Hyperglycemia, commonly known as higher blood glucose or increased blood sugar, is a common side effect of uncontrolled diabetes that, over time, adversely damages a number of physiological systems, including the neurons and arteries and veins. [8] Population ageing, growth, urbanization, a lack of physical activity, and a high prevalence of obesity, according to the Institute of Health Matrix and Evaluation (2021), are all factors in the rise in the number of people with DM. [10] According to the World Health Organization, 8.5% of adults 18 and older had diabetes in 2014.2019 had 1.5 million diabetes - related deaths, with 48% of these deaths occurring in adults under the age of 70. Diabetes contributed to an additional 460 000 renal disease deaths, while cardiovascular diseases account for 20% of all deaths. Age - standardized mortality rates for diabetes increased by 3% between 2000 and 2019. According to WHO, the death rate from diabetes increased 13% in lower - middle - income countries. [5]

For the first time in India, data on diabetes and hypertension were gathered by the National Family Health Survey throughout all of the country's states. [5] Therefore, utilising the national representative data, it is necessary to estimate the prevalence of diabetes and hypertension among women as well as the associated risk factors. According to Aubert et al. (1998) a higher percentage of overweight women (20.6%) have hypertension than average (8.9%) and are underweight (5.0%). In one of the cross sectional study prevalence of hypertension in rural area of Maharashtra was identified. [7]

In this cross sectional study total 1297 people aged 19 years and above participated. A house to house survey was conducted and participants were interviewed by pretested standard questionnaire. Overall prevalence of hypertension was 7.24%. The association was identified with variables like age, sex, BMI, additional salt intake, smoking, alcohol consumption and higher economic status. [4]

Pre - diabetes is 12% common while diabetes occurs in 8.5% of Indians. According to recent assessments, diabetes currently affects a startling 10 - 16% of India's urban

population and 5 - 8% of its rural population. Because of population expansion, ageing, urbanisation, a lack of physical activity, and a high rate of obesity, there are more patients with DM than ever before. Enhancing patient knowledge of diabetes mellitus would enable them to more effectively participate in their care and is a minor investment for significant return. Patients must understand the nature of the disease, its risk factors, its therapy, and its complications in order to manage it properly. [11]

Diabetes mellitus can be significantly avoided by changing one's lifestyle in regard to obesity, eating patterns, stress management, and reduced alcohol and tobacco use. The development of behavioural techniques to change these lifestyle behaviours has advanced recently. For instance, the cardiovascular risk associated with diabetes may be reduced if patients with the condition maintain a balanced diet and engage in regular physical activity. [11, 14]

Public - private partnerships comprising the government, partner organizations, health service providers, community, and persons with diabetes mellitus are the best way to attain a healthy lifestyle. It is critically necessary to develop efficient methods to lower the prevalence of diabetes mellitus and provide support for addressing the underlying problems. [5]

2. Objectives

1) To assess the Pre - interventional practice and attitude regarding the behavioral risk factors of diabetes and hypertension disease.
2) To assess the post - interventional attitude and practice regarding the behavioral risk factors of diabetes and hypertension disease.
3) To determine the effectiveness of structured teaching program.
4) To find out the association between practice and attitude with selected demographic data.

3. Research Methodology

For this study, a researcher employed a pre - experimental one group pre - test post - test quantitative research methodology [5]. This has taken sample size of 100. The study used the non - probability convenience sampling method. Adults in metropolitan areas make up the study's target group. In order to perform the study, adults in the Pashan area were the target group. Adults from 18 to 40 years old made up Pune's accessible population. The written consent was taken from the individual participants before taking the pre - test. The data were collected by using convenience sampling technique. On the first day pre - test was taken and structured teaching program was given. Teaching were given to the participants by using the PowerPoint presentation and charts. The education material was prepared according to the need to improve the healthy lifestyle modification. The education was given to motivate people to adapt healthy lifestyle in individual and in community. After the teaching on 8Th day the post - test were taken. In the 7 days of interval researcher wanted to find out the change of habit practice and attitude of behavioral risk factors like smoking, alcohol consumption, obesity and sedentary lifestyle. The participants were having the freedom to whether to participate or not. Behavioral risk factors effect on the prevalence of the diabetes and hypertension were assessed by the checking their living pattern, habits followed by the participants and the thinking as well as attitude regarding the adaptation of healthy lifestyle habits. Analysis of the study was done by using the python software.

4. Result

It comprises of 9 sections:
Section I: Assessment of demographic variables
Section II: Assessment of pre - test practice score regarding behavioural risk factor
Section III: assessment of pre - test attitude level regarding behavioural risk factor
Section IV: assessment of post - test practice score regarding behavioural risk factor
Section V: assessment of post – test Attitude level regarding behavioural risk factor.
Section VI: evaluation of effectiveness of structured teaching program on practice level regarding behavioral risk factors among adult of community in Pune city.
Section VII: evaluation of effectiveness of structured teaching program on attitude level regarding behavioral risk factors among adult of community in Pune city.
Section VIII: Association between selected demographic variables with pre – test practice score
Section IX: Association between pre – test attitude score with selected demographic variables.

Section I: assessment of demographic variables.

Table 1: demographic distribution of data, N=100

S. No.	Demographic Data	Frequency	Percetange
01	**Age (19 - 60 years)**		
	a) 18 - 24	36	36%
	b) 24.1 - 29	19	19%
	c) 29.1 - 34	24	24%
	d) 34.1 - 40	21	21%
02	**Gender**		
	a) Female	40	40%
	b) Male	60	60%
	c) transgender	0	0%
03	**Occupation**		
	a) Student	29	29%
	b) Government employee	26	26%
	c) Private employee	18	18%
	d) business	20	20%
	e) Other	7	7%
04	**Education**		
	a) Illiterate	7	7%
	b) Primary	7	7%
	c) Secondary	18	18%
	d) Higher secondary	26	26%
	e) Graduate	29	29%
	f) Post graduate	13	13%
05	**Marital status**		
	a) married	41	41%
	b) unmarried	37	37%
	c) widow	3	3%
	d) divorced	19	19%
06	**Monthly income**		
	a) Upper	59	59%

	b) Upper middle	11	11%
	c) Lower middle	30	30%
	d) lower	10	10%
07	**Religion**		
	a) Hindu	67	67%
	b) Muslim	10	10%
	c) Christian	20	20%
	d) Others	3	3%
08	**Type of family**		
	a) Joint family	32	32%
	b) Nuclear family	32	32%
	c) Single family	26	26%
	d) Extended family	10	10%
09	**Weight**		
	a) Underweight	23	23%
	b) Over weight	57	57%
	c) Obese	27	27%
	d) Normal	33	33%

Table 1 displays the behavioural risk factors for diabetes and hypertension in percentage terms according to their demographic features. Data gathering involved the use of a convenience sampling method. The information was gathered to define the sample populations characteristics including age, gender, education, occupation, marital status, monthly income, family structure, religion, and body weight. Maximum participants seen in age group 18 - 24 and minimum found in age group 24 - 29. The male participants were 10% more than the female participants. The most participants were students and only 7 people were having other occupation than mentioned in the research. Only 7% people from research had education till primary and 29% were graduated. Maximum participants were married and 3 participants were widow. In this study 67% participants were Hindu and 3% were belong to other religion than mentioned in the data. Maximum participants were belong to joint family or nuclear family and only 10% were having extended family. It is seen than more participants were overweight and 27% were obese.

Section II: assessment of pre - test practice score regarding behavioral risk factor

Table 2: Practice score

Score	Frequency	Percentage
Good practice	24	24%
Average practice	26	26%
Poor practice	50	24%

Table no 2 represents the data of the practice level of behavioral risk factors of diabetes and hypertension. The questions were asked about the smoking, alcohol consumption, obesity and sedentary lifestyle where it is found that maximum participants were practicing poorly even after having the sufficient knowledge of the after effect on individual.26% sample from the research study were practicing average it can say that they are concerned about their health and want to have healthy body.24% participants from the study having good knowledge and practicing good habits to prevent any comorbidity in the future. They want to live healthy life.

Section III: Assessment of pre - test attitude level regarding behavioural risk factor

Table 3: pre - test attitude score

Score	Frequency	Percentage
Good attitude	22	22%
Average attitude	33	33%
Poor attitude	45	45%

Table 3 shows the data of pre - test attitude score of participant. It is found that maximum people were not that concerned about the and it seen that they may be not have adequate knowledge about the affect of practicing bad habits on health. it is seen that 45% participants were having poor attitude about the behavioral risk factors of diabetes and hypertension. Nearly 33% were having average attitude regarding behavioral risk factors and 22% were having good attitude about the risk factors of diabetes and hypertension.

Section IV: Assessment of Post - test practice score regarding behavioral risk factor.

Table 4: post - test score of practice

Score	Frequency	Percentage
Good practice	50	50%
Average practice	38	38%
Poor practice	12	12%

Table 4 shows the data of the practice score of behavioral risk factors of diabetes and hypertension. The data was collected using convenience sampling method. The result found is there were more people who started practicing good habits to prevent any comorbidity in future specially the Non - communicable disease like DM and HTN.50% people from the study started practicing good habits, 38% people were sometimes practicing good practice and sometimes not and only 12% people from the study were still practicing bad habits.

Section V: Assessment of Post – test Attitude level regarding behavioural risk factor.

Table 5: Post - test attitude score

Score	Frequency	Percentage
Good attitude	45	45%
Average attitude	28	28%
Poor attitude	27	27%

The table 5 shows the data of post - test attitude score of behavioral risk factors of diabetes and hypertension. Compared to the pre - test score in post - test the change is observable the people attitude is changed. The people of having attitude were 45%. Majority of peoples attitude is changed they started thinking to keep their body healthy.28% people from the study were having average attitude and 27% people from the study were having poor attitude regarding the behavioral risk factors of diabetes and hypertension.

Section VI: Effectiveness of structured teaching program on practice level regarding behavioral risk factors among adult of community in city Pune.

Table 6: Pre - test and post test score of practice

Test	Mean	SD	t	df	p - value
Pre - test	7.51	2.35	21.0222	99	<0.00015
Post - test	10.81	3.19			

The table6 shows the post - test mean score 10.81 and SD score of 3.19, which is higher than the pre - test mean of 7.51 and SD of 2.35. After delivering the education through structured teaching program to the community, there was an increase in the excellent practice changes in the people. At the threshold of 0.05, post - test average practice was discovered to be significant (t=21.022; p<0.0001). Consequently, the null hypothesis is disproved. This proves that the structured teaching method was effective.

Section VII: Effectiveness of structured teaching program on attitude score of behavioral risk factors among adult of community in city of Pune.

Table 7: pre - test post - test score attitude

Test	Mean	SD	t	df	p - value
Pre - test	43	2.93	21.23	99	<**0.005**
Post - test	**53**	**3.61**			

Table 7 shows, this is the data of pre - test and post - test attitude score of behavioral risk factors. The pre - test mean found to be 43 and the post - test mean seen 53 respectively. Standard deviation is found 2.93 in pre - post and 3.61 in post - test. It is seen the increase in post - test attitude regards to the behavioral risk factors of diabetes and hypertension. The post - test average attitude was found to be significant (t=21.23; p<0.005) at the threshold of 0.005.

Section VIII: Association between pre – test practice score with selected demographic variables.

Table 8: Association between practice and demographic variables

Sample Characteristics	**Level of Practice**			**df**	**x**	**p - value**
	Poor	**Average**	**Good**			
1. Age in years						
18 - 24	13	13	10			
24.1 - 29	4	6	9	99	56.24	0.021
29.1 - 34	12	4	8			
34.1 - 40	13	5	4			
2. Gender						
Female	20	10	20	99	27.95	0.05
Male	10	20	20			
Transgender	0	0	0			
3. Occupation						
Student	13	4	12			
Government Employee	6	10	10			
Private employee	3	5	10	99	46.27	0.005
business	9	8	3			
other	1	3	3			
4. Education						
Illiterate	3	3	1			
Primary	4	4	2			
Secondary	3	5	10	99	63.42	0.04
Higher secondary	6	10	10			
Graduate	13	4	12			
Post graduate	5	4	4			
5. Martial status						
Married	12	7	3			
Unmarried	7	6	12	99	55.24	0.03
Widow	12	9	13			
Divorced	10	5	4			
6. Monthly income						
Upper	13	10	2			
Upper middle	2	6	9	99	26.26	0.002
lower middle	3	10	15			
lower	13	10	7			
7. Religion						
Hindu	10	3	4			
Muslim	3	2	1	99	12.36	0.04
Christian	9	15	12			
others	10	12	19			
8. Types of family						
Joint family	7	3	10			
Nuclear family	12	9	13	99	42.25	0.002
Single family	7	6	12			
Extended family	12	4	5			
9. Weight						
Underweight	13	6	4			
Over weight	12	13	6	99	93.25	0.04
obese	10	4	5			

normal	6	9	12			

Here we observe that all p - value <α we reject the null hypothesis at 0.05% level of significance.

Table 8 dedicated to the data of pre - test score data of participants to find out the association with the demographic variables included in the study. the data shows that the in spite of their age, gender, marital status, education, occupation, type of family, religion, monthly income and weight they did not show any connection between their structured teaching program and the demographic variables. As as result the null hypothesis is accepted and alternative hypothesis is rejected. There is no significant relation between pre - test practice score with demographic factors.

Section IX: Association between selected demographic variables with pre - test attitude

Table 9: Association between attitude and demographic variables

Sample Characteristic	Level of attitude			df	x	p - value
	Poor	**Average**	**Good**			
1. Age in years						
18 - 24	12	13	10			
24.1 - 29	4	8	9	99	56.24	0.005
29.1 - 34	10	4	8			
34.1 - 40	13	5	4			
2. Gender						
Female	20	20	10	99	22.95	0.04
Male	20	10	20			
Transgender	0	0	0			
3. Occupation						
Student	10	4	12			
Government Employee	9	10	10			
Private employee	3	5	10	99	46.27	0.06
Business	8	12	3			
Other	1	1	2			
4. Education						
Illiterate	3	3	1			
Primary	4	4	2			
Secondary	3	5	10	99	63.42	0.04
Higher secondary	6	10	7			
Graduate	13	4	12			
Post graduate	5	4	4			
5. Marital status						
Married	12	7	3			
Unmarried	7	6	12	99	55.24	0.05
Widow	12	9	13			
Divorced	10	5	4			
6. Monthly income						
Upper	13	10	2			
Upper middle	2	6	9	99	26.26	0.02
lower middle	3	10	15			
lower	13	10	7			
7. Religion						
Hindu	10	3	4			
Muslim	3	2	1	99	12.36	0.02
Christian	9	15	12			
others	10	12	19			
8. Types of family						
Joint family	7	3	10			
Nuclear family	12	9	13	99	42.25	0.06
Single family	7	6	12			
Extended family	12	4	5			
9. Weight						
Underweight	13	6	4			
Over weight	12	13	6	99	93.25	0.03
Obese	10	4	5			
Normal	6	9	12			

It is seen that all p - value <α we reject the null hypothesis at 0.05% level of significance.

Table no 9 dedicated to the data of pre - test attitude score data of participants to find out the association with the demographic variables included in the study. The data shows that the despite of their age, gender, marital status, education, occupation, type of family, religion, monthly income and weight they did not show any connection

between their structured teaching program and the demographic variables. As as result the null hypothesis is accepted and alternative hypothesis is rejected. There is no significant relation between pre - test attitude score with demographic factors.

5. Discussion

The findings shows that there is no statistically significant relationship between practice, attitude, and demographic variables. The findings revealed that adopting actions that promote health or controlling health risk factors required more than just attitude. Even though knowledge is an essential component in altering behaviour or a way of life, it's possible that other factors were important in putting knowledge into practice. The majority of people had access to enough information. [5]

To support this study the similar study found which was conducted by the Aubert et al., and he found that only a tiny minority were motivated, desired, and made an attempt to bring about change. A tiny fraction of people had also actively adopted new behaviour after applying their information, which is another limitation. Low expectations for the management of chronic. [7]

The other study found was conducted by Sarkar S's, his study revealed that 28% of people were at risk for diabetes in his sample. The risk of hypertension was also found to be two times higher in overweight and obese responders. People with normal weight and underweight had a 60% – 88% lower risk of developing diabetes than people who were overweight and obese. He concluded by saying that diabetes, hypertension, and other concomitant conditions are strongly correlated with being overweight or obese. [12]

The another study which found very helpful for this study was conducted by Laxmaiah et al. (2015), he discovered that age, education, obesity, smoking, and alcohol consumption are all predictors of hypertension.

6. Implication

The study's conclusions can be examined in four different contexts, primarily nursing practice, nursing education, and nursing research.

The current study has several consequences for the knowledge and attitude of health professionals. The nursing staff in the hospital area might run educational programmes that serve to improve the knowledge and attitude of the healthcare professionals.

In illness prevention and health promotion, the nurse is crucial. People are encouraged to adopt healthy practices in their daily lives, including adjustments to their lifestyles, by educational programmes that use effective teaching tactics and audio - visual aids.

7. Conclusions

Like other cities, Pune city is also experiencing an increasing in the prevalence non - communicable disease. The lifestyle of individual and habits of individual are causing for the diabetes and hypertension. In this study researcher found that the people are practicing bad habits even though they are having good attitude towards health. Community education can be provided through health promotion programs to help individuals avoid non - communicable diseases in future.

However the study helps to predict the future as we all know how the practicing bad habits can lead to have non - communicable disease. In developed countries this is major task to prevent of having the people non - diabetic and non - hypertensive. But now even in developing countries the risk of non - communicable disease has increased tremendously. The government trying to implement the programs and education activities to make people aware.

Conflict of interest: Nil

Ethical consideration: The approval was taken by the institutional research committee.

And from participants the consent were taken before taking the pre - test for the research study. It was clearly informed to the participants about the purpose of involvement.

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