RESEARCH PAPER

An Evaluation of Nursing Instructional Strategy on Awareness of Preventive Lifestyle Practices for Cardio Metabolic Diseases Among Young Adults

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ABSTRACT

Background: Cardio metabolic diseases represent a major global health concern due to their high prevalence, shared risk factors, and serious complications. Effective prevention strategies, lifestyle modifications, and early interventions are crucial to reduce their burden and improve overall population health. The modifiable risk factors of cardio metabolic diseases fall into three categories: lifestyle factors (comprising elements such as diet, alcohol consumption, smoking, and physical activity), metabolic factors (encompassing hypertension, body mass index, blood sugar levels, and cholesterol levels), and socioeconomic factors (including education, public awareness, and access to healthcare). According to the National Family Health Survey-5 (NFHS-5) report, 38% of men and 9% of women in India continue to use tobacco. Additionally, 18.8% of men and 1.3% of women still engage in alcohol consumption. Alarming statistics reveal that 7.2% of men and 6.3% of women exhibit high blood glucose levels. Furthermore, both men and women have seen a 4% increase in obesity rates. The presence of these risk factors significantly heightens the likelihood of cardio vascular diseases within the Indian population [1]

Methods: One group pre-test post-test design with pre-experimental approach was adopted to assess the effectiveness of video assisted Teaching programme on prevention of cardio vascular disease by healthy life style among young adults. Multi stage random sampling methods were adopted to choose study samples of total 120 college students.

Results: Pre-test assessment revealed that majority (90%) of the respondents had an average level of knowledge on prevention of cardiovascular disease by healthy lifestyle. The total mean percentage of the pretest knowledge score was 38.13% with mean and standard deviation 15.25 ± 3.11 and the mean posttest knowledge score was 73.56% with mean and SD 29.41 ± 3.62. Significance of difference between the pretest and posttest knowledge scores was statistically tested using paired 't' test and it was found to be very highly significant ($t=31.505$, $P<0.005$). The pretest knowledge scores of the young adults in relation to selected demographic factors were compared and tested statistically using chi-square test. Significant association ($x^2=4.6952$; $P<0.05$) was found between the pretest knowledge score of the adolescents and their exposure to previous information on cardio metabolic diseases.

Conclusion: The overall findings of the study revealed that there was very highly significant increase in the knowledge of young adults on healthy lifestyle to prevent cardio metabolic diseases after the administration of nursing intervention. Hence it is concluded that nursing instructional strategy was very highly effective in improving the knowledge of young adults.

Keywords: Cardio metabolic diseases; young adults, nursing instructional strategy, hypertension, diabetes mellitus, obesity, dyslipidemia, knowledge score and evaluation.

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BACKGROUND OF THE STUDY

Cardio metabolic diseases refer to a cluster of interrelated conditions that increase the risk of cardiovascular complications and metabolic dysfunction. These include Cardiovascular Diseases, Type 2 Diabetes Mellitus, Hypertension, Obesity, and Dyslipidemia. These conditions often coexist and share common risk factors, leading to increased morbidity and mortality worldwide. In 2023 global prevalence of metabolic syndrome was 1.54 billion adults.[23] global metabolic syndrome prevalence range is % – 46% worldwide .Hypertension prevalence in India is 29.8% in 2025.[24]. The global burden of cardio metabolic diseases has risen significantly over the past few decades, largely due to rapid urbanization, sedentary lifestyles, unhealthy dietary habits, and increased life expectancy. According to the World Health Organization, cardiovascular diseases alone are the leading cause of death globally, accounting for

millions of deaths each year. In developing countries like India, the prevalence of these conditions is increasing at an alarming rate, posing a major public health challenge. Cardio metabolic diseases are closely linked through underlying mechanisms such as Insulin Resistance, chronic inflammation, and endothelial dysfunction. These mechanisms contribute to the development of a condition known as Metabolic Syndrome, which significantly increases the risk of heart disease and diabetes. Several modifiable risk factors play a key role in the development of cardio metabolic diseases, including unhealthy diet, physical inactivity, tobacco use, and excessive alcohol consumption. Non-modifiable factors such as age, genetics, and family history also contribute to disease susceptibility. Early identification and management of these risk factors are essential to prevent complications. Indians face higher risks due to genetic predispositions, rapid lifestyle changes, and rising rates of obesity, hypertension, and diabetes, leading to premature heart attacks and strokes, with the average age for a first heart attack significantly [4] Heart attacks in young adults are rising due to lifestyle factors like poor diet (processed foods), inactivity, smoking and high stress, coupled with increasing rates of obesity, diabetes, and high blood pressure. Substance abuse (cocaine, stimulants) and potential post-COVID effects also contribute, worsening underlying conditions like undiagnosed heart defects or arrhythmias demanding better awareness, regular checkups, and healthier habits for prevention. [4] The main risk factors of cardio vascular disease are High Blood Pressure (Hypertension), High Cholesterol, Obesity & Diabetes, Family History of Early Heart Disease and PCOS (Polycystic Ovary Syndrome) in women [4] Rising heart issues in young Indians, linked to lifestyle and post-COVID effects, with statistics showing early-onset heart attacks (half under 50, quarter under 40), stressing the urgency for awareness and intervention in India's youth. Poor lifestyle choices are significant drivers of this trend. Therefore the need for immediate attention to heart health in India's youth is urgent [5] The main age-related risk groups for cardio metabolic disease are **older adults (65+), middle-aged individuals (40-60), and increasingly, younger adults (<40)**, with risk escalating significantly with age, especially after 45 for men and post-menopause for women, though the most deaths occur in those 65+, however, rising rates in younger people are a growing concern. Risk factors like high blood pressure, cholesterol, diabetes, smoking, and obesity compound these age-related increases, affecting everyone from their 40s onwards [2]. Increased time on electronic devices or watching TV among children and young adults was associated with higher cardio metabolic disease risk, such as high blood pressure, high cholesterol and insulin resistance, based on data from over 1,000 study participants in Denmark. The link between screen time and cardio metabolic risks was strongest among youth who slept fewer hours, suggesting that screen use may harm health by “stealing” time from sleep, researchers said the findings underscore the importance of addressing screen habits among young people as a potential way to protect long-term heart and metabolic health. Therefore Preventive strategies are essential to combat the epidemi c of Cardio metabolic diseases. primary prevention of cardio metabolic diseases are i.e., prevention of risk factors by encouragement of positive health behavior s and promotion of theconcept of health as a social value. Behavioral and environmental changes relevant toprimo rdial prevention are changes in eating pattern, smoking h abit,physical activityand stress management and the spec ial target groups are children, adolescents andfamily unit s. A nation wide improvement in life style, including a lo w fat proteindiet,regular physical activityand avoidance o f risky behaviors could result insignificant decrease in th e incidence of Cardiometabolicdiseases and could also ha ve an important in reducing the health care expenditures. India is in a state of socio demographic transition. Superimposed on an already heavy burden of rheumatic heart disease is the increasing adoption of Western lifestyles, leading to atherosclerotic cardiovascular disease becoming the number one cause of death here. Given that the process of atherosclerosis begins in the second decade of life, preventive efforts beginning at this stage are crucial. Yet, there are no national or regional educational programs in India for the prevention of Cardio metabolic diseases that target young adults. So, India potentially faces a looming crisis of cardio metabolic diseases. We aimed to evaluate the nursing instructional strategy regarding on awareness of preventive lifestyle practices for cardio metabolic diseases among young adults.[7]. In accordance with the World Health Organization, India accounts for one-fifth of these deaths worldwide especially in younger population. The results of Global Burden of Disease study state age-standardized cardiovascular disease death rate of 272 per 100000 populations in India which is much higher than that of global average of 235. Cardio vascular disease strike Indians a decade earlier than the western population. [8].Community education targeting the adolescent population is very much needed and no longer can be delayed. young adults should be empowered through education and skill development to assume increasing responsibility for their own health behaviors. Health care providers should assume some responsibility for the prevention, detection and intervention relevant to cardio metabolic risk factors in young adults [7]

METHODS AND MATERIALS:

The present study was carried out to determine the existing knowledge of young adults on healthy life style to prevent Cardio metabolic diseases using a structured

knowledge questionnaire. Develop and administer nursing instructional strategy to prevent cardio metabolic diseases among young adults, Evaluate the effectiveness of nursing instructional strategy awareness of preventive lifestyle practices for cardio metabolic diseases, in terms of gain in knowledge using the same structured knowledge questionnaire.4) Determine the association between the pre-test knowledge of adolescents on healthy life style to prevent cardio metabolic diseases and selected demographic factors. **Research approach and design** Quantitative approach and quasi experimental one group pre and posttest design was adopted to conduct the present study. **H1**: The mean posttest knowledge scores of young adults will be significantly higher than the mean pre-test knowledge scores. **Sampling**: multi stage random sampling design was used to select total 120 young adults (18 to 25 years old) who fulfilled the inclusion criteria were selected as study samples from different colleges at Varanasi. That is Multi-stage random sampling technique was found appropriate for this study. There are six colleges in Varanasi city, which offer BA, B Com and B SC courses. In the first stage, three colleges were selected by simple random sampling through lottery method. In the second stage, one of the three courses was selected at random from each college by lottery method. In the third stage, proportional stratified random sampling method was used to select sample from each stratum. The strata were formed on the basis of the year of study and the age criterion. Thus two strata were formed in each college. Students were selected from each stratum by simple random sampling using lottery method. After ethical approval tool was developed. **The tool** contains part -1 with two sections. Section A contains demographic variables and section B contains 40 structured questionnaires regarding prevention of cardio vascular diseases by using life style modification. Part 2, 3 and 4 was statistically analyzed based on study objectives. **Tool validity**: Content validity of the tool was ascertained in consultation with experts in the fields of medicine and nursing for its accuracy, relevance, appropriateness and degree of agreement. Suggestions of the experts were incorporated into the tool and the tool was modified accordingly. **Reliability:** Reliability of the tool was tested by test-retest method. The correlation between test and retest scores was calculated using Karl Pearson's correlation formula. There was a significant correlation between the scores of the test and retest, $r=0.89$: $p< 0.001$. The tool was found to be reliable. **Development of teaching intervention plan:** video assisted teaching plan was developed by using 8 steps such as 1.Review of literature regarding healthy life style to prevent Cardio metabolic diseases.2) Setting preliminary information with regard to background information of the group.3) Framing the outline of the teaching plan.4) Preparation and organization of the content of nursing instructional strategy .5) Deciding the method of instruction and audio-visual (A.V) aids .6) Ascertainment of the content validity of video assisted teaching.7) Preparation of final draft of intervention 8) Editing the video assisted teaching content. **Pilot study:** After conducting the pilot study, it was found that the study was feasible, the concerned authority and the sample were found to be co-operative, the questionnaire and video assisted teaching was relevant and the time and cost for the study was within the limit. **Data collection procedure:** Before collecting the data prior permissions were obtained from the concerned authorities of the selected colleges. Keeping in mind the ethical aspect of research, the data were collected after obtaining informed consents of the sample. The respondents were assured the anonymity and confidentiality of the information provided by them. Pre-test was conducted in three different sessions followed with video assisted teaching intervention was given in three selected colleges from 12/02/2024 to 17/2/2024. Post-test was, conducted five days after the administration of intervention from 23/02/2024 to 27/02/2024 **Data analysis:** Descriptive and inferential statistics were used to analyses the collected data. Distribution of subjects with respect to demographic variables was presented using frequencies and percentages. Mean standard deviation and mean percentage was used to describe the knowledge of young adults. One group pre-test (x1) and post-test (x2) design (before and after study design) was used to evaluate the effectiveness (x2-x1) of the video assisted teaching intervention. Further statistical significance of the effectiveness of the study intervention was analyzed using paired' test. Association between demographic variables and knowledge scores of adolescents was tested by using chi-square test.

Results and Discussion:

Tool 1 Section A described distribution of demographic variables of young adults **Age**: According to their age in completed years shows that the highest percentage (42.5%) of the respondents was in the age of 20 years and 31.67% of them were 19 years old. Only 25.83% of them were 22 years old. **Gender:** young adults with respect to their gender shows 56.67% of them were males and 43.33% of them were females. **Course:** Percentage distribution of adolescents in relation to the course of study shows that the highest percentage (63.33%) of them was from B. Com course and 30.84% of them were from B. A. course. Only 5.83% of the participants were from B. Sc. course. **Family history of cardio metabolic disease:** Analysis reveals that majority (89.16%) of the sample reported no family history of Cardio metabolic diseases. Only 6.67% of the sample reported a family history of hypertension and 4.17% of the sample reported a family history of heart disease**.**

Distribution of adolescents according to their exposure to previous information on prevention of Cardio metabolic diseases shows that majority (85%) of them had never received any information about the topic where as 15% of them had previous information on cardio metabolic diseases. **Percentage distribution of adolescents according to source of source of information:** Study reveals that the highest percentage (43.33%) of the sample relies mainly on television for health related information and 30.83% of them depend on newspaper and magazines. Among the participants, 25.84% of them reported health professionals as their main source of health relatedinformation.**Percentage distribution of adolescents according to the copingmechanism they use to deal with stress** **Percentage** distribution of the young adults in relation to the coping mechanismthey use to deal with stress reveals that 50% of the young adults share their problemwith others and 29.17% of them pray to God in stressful situations. Only 20.83 of the participants cry to deal with stress. **Percentage distribution of young adults according to the frequency of consumption of fast foods and beverages:** Sample distribution with regard to the habit of consumption of fast food and beverages shows that the highest percentage (41.67%) of young adults consumes them occasionally and 37.5% of the participants consume them rarely. Only 20.83% of them reported frequent consumption of fast food and beverages. **Percentage distribution of young adults according to daily performing Activities:** Analysis reveals that 24.17% of the young adults play computer and video games daily and 21.67% of the participants perform a variety of activities daily. More or less similar percentage of the participants play out door games (20.83%) and follow self-scheduled exercise programme (20%) daily. Very few of them (13.33%) practice in gymnasium daily.

Tool 1 Section B: Level of knowledge of young adults on preventive lifestyle practices for cardio metabolic diseases

.**Table -2**

Comparison of mean percentage of the knowledge scores of the pre-test and post-test

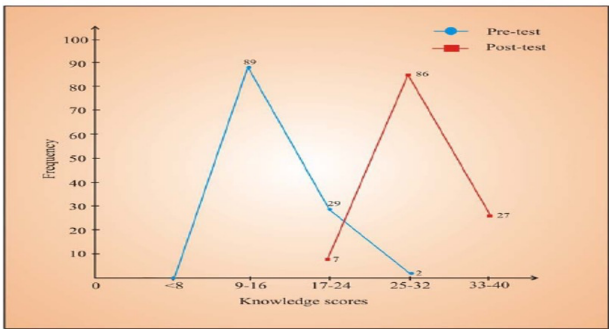
Table -2 describes comparison of mean percentage of the knowledge scores of the pre-test and post-test reveals an increase of 35.4% in the mean knowledge score of the adolescents after PTP. Comparison of area wise mean and SD of the knowledge scores in the area of 'cardiovascular system' shows that the pre-test mean knowledge score was 43.29% (3.03±0.96) whereas post-test mean knowledge score was 68% (4.76±1.19). This shows an increase of 24.71% in the mean knowledge scores of the young adults. In the area of knowledge on 'major forms of Cardio metabolic diseases', the mean pre-test knowledge score was only 32% (1.6±1.02) whereas post-test mean knowledge score was 74.6% (3.73±1.17), showing an effectiveness of 42.6%. Effectiveness of video assisted teaching programme observed in the area of 'risk factors of Cardio metabolic diseases' were 31.75%. The net increase of knowledge in the area of 'healthy life style to prevent Cardio metabolic diseases' was found, to be 40.56% after given nursing instructional strategy. The overall findings reveal that the percentage of post-test knowledge score was more when compared to the pre-test knowledge score. Hence it indicates that the nursing instructional strategy was effective in enhancing the knowledge of young adults on healthy life style to prevent Cardio metabolic diseases.

Table -1

Level of Knowledge	Range of Scores	Percentage of Scores	Number of respondents	Percentage (%)
Poor	0-10	0-25	7	5.83
Average	11-20	26-50	108	90
Good	21-30	51-75	5	4.17
Very Good	31-40	76-100	0	0
	Total		**120**	**100**

Table -1 describes assessment of the level of knowledge of the young adults reveals that majority (90%) of the respondents had only average knowledge whose score ranged between 11-20 and 5.83% of the sample had poor knowledge that scored between 0-10. Only 4.17% of the respondents had good knowledge and there were no young adult who had a very good knowledge regarding healthy life style to prevent Cardio metabolic diseases.

Part-II: Figure -1



a. Comparison of pre-test and post-test knowledge scores of young adults

Figure -1 describes the data presented in the form of graph shows that there is an increase in the knowledge scores of young adults after the administration of video assisted Teaching programme. In the pre-test maximum number of students (89) scored between 9-16, where as in the post-test the maximum number of students (86) scored in between 25-32. In the pre-test none of them scored above 27, whereas in the post-test all of the adolescents scored above 21 and 27 young adults scored in between 33-40. Hence the findings show the effectiveness of video assisted Teaching Programme

Knowledge Areas	Maximum	Pre-test (x1)	Post-test (x2)	Effectiveness

		possible score					(x2-x1)	
			Mean ± SD	Mean %	Mean ± SD	Mean %	Mean ± SD	Mean %
a)	Cardio vascular system Major forms of Cardio metabolic diseases	7	3.03± 0.96	43.29	4.76±1.19	68	1.73 ± 1.49	24.71
b)	Risk factors of Cardio metabolic diseases	5	1.6±1.02	32	3.73±1.17	74.6	2.13±1.54	42.6
c)		12	4.77±1.76	39.75	8.58±1.66	71.5	3.81±2.58	31.75
d)	Healthy life style to prevent CVDs	16	5.85±1.86	36.56	12.34± 1.98	77.13	6.49±2.62	40.56
		40	15.25± 3.11	38.13	29.41± 3.62	73.56	14.16± 4.92	35.4

The calculated values were much higher than the table value. Hence the null hypothesis was rejected. Findings reveal that the overall and section wise difference between pre-test and post-test knowledge scores on healthy life style to prevent Cardio metabolic diseases were very highly significant. This indicates very highly significant effectiveness of the video assisted teaching programme

Part -3: Testing Null Hypothesis Area-wise mean, SD and mean percentages of the knowledge scores in pre-test and post-test. Ho: There is no significant difference between the pre-test and post-

. Test knowledge of adolescents on healthy life style to prevent Cardio metabolic diseases.

Table -3

Knowledge Area	Mean effectiveness	't' value	Table Value	Level of Significance
Section A	1.73±1.49	12.713	2.6174	P<0.005 VHS
Section B	2.13±1.54	15.145	2.6174	P<0.005 VHS
Section C	3.81±2.58	16.164	2.6174	P<0.005 VHS
Section D	6.49±2.62	27.190	2.6174	P<0.005 VHS
Total	14.16±4.92	31.505	2.6174	P<0.005 VHS

Testing of Hypothesis to evaluate the effectiveness of video assisted teaching intervention null hypothesis was formulated**.** Paired-t test was used to analyze the difference in knowledge scores of young adults in the pre-test and post-test on healthy life style to prevent Cardio metabolic diseases

Part-4 Table -4 Associations between the pre-test knowledge scores of young adults on life style to prevent Cardio metabolic diseases and demographic variables

Demographic Variables	Df	Calculated Value	Table value	Level of significance
Age	2	5.2375	5.99	P>0.05 NS
Sex	1	2.8402	3.84	P>0.05 NS
Course of Study	1	3.5567	3.84	P>0.05 NS
Family History of Cardio metabolic Diseases	1	0.1409	3.84	P>0.05 NS
Previous information	1	4.6952	3.84	P<0.05 S
Way of coping	2	1.7623	5.991	P>0.05 NS
Source of information	2	1.2545	5.991	P>0.05 NS
Frequency of consumption of fast food	2	1.8824	5.99	P>0.05 NS
Daily Performing activities	4	6.5680	9.49	P>0.05 NS

DF – Degrees of freedom S – Significant NS – Not Significant

Table -4 Analysis reveals that there is significant association ($\square 2$ =4.6952; $p<0.05$) between the pre-test knowledge scores of young adults and their exposure to previous information on Cardio metabolic diseases. However no significant association was found between the pre-test knowledge scores and other demographic variables such as age, sex, course of study, family history of Cardio metabolic diseases, source of information and their personal habits.

DISCUSSION AND SUMMARY

One group pre-test post-test design with Quasi experimental approach was adopted to evaluate the effectiveness of nursing instructional strategy on healthy life style to prevent Cardio metabolic diseases. Multi-stage random sampling technique was used to select a sample of 120 young adults studying in selected colleges. The data

obtained were analyzed using descriptive and inferential statistics. One group pre-test post-test design with Quasi experimental approach was adopted to evaluate the effectiveness of nursing instructional strategy on healthy life style to prevent Cardio metabolic diseases. Multi-stage random sampling technique was used to select a sample of 120 young adults studying in selected colleges. The data obtained were analyzed using descriptive and inferential statistics. The findings are summarized as follows: Distribution of adolescents according to the gender revealed that 56.67% of them were males and 43.33% of them were females. Among the participants 63.33% of them were B. Com students. Majority (85%) of the adolescents had no previous information on prevention of Cardio metabolic diseases. Only 10.84% of the participants reported a family history of Cardio metabolic diseases .Highest percentage (43.33%) of the sample depends on television for health related information. Finding related to the coping mechanism of adolescents showed that half of them share their problems with others to deal with Stress. Frequent consumption of beverages and fast food was reported by 20.83% of adolescents. Distribution of adolescents according to daily performing activities showed 24.17% of them play video and computer games daily whereas rest (75.83%) of them perform various physically active exercises daily. Ninety per cent of the participants had average level of knowledge on healthy life style to prevent Cardio metabolic diseases. Only 4.17% of them had good knowledge and 5.83% of them had poor level of knowledge. There was no young adult who had a very good Knowledge on healthy life style to prevent cardio vascular diseases. The total mean percentage of pre-test score was 38.13%. The highest mean percentage (43.29%) of the pre-test knowledge score was seen in the area of 'cardiovascular system'

Comparison of pre-test and post-test knowledge scores of adolescents showed that maximum number (89) of students scored between 9-16, where as in the post-test maximum number of students (86) scored between 25-32. In the pre-test none of them scored above 27, where as in the post-test all of them scored above 21 and 27 young adults scored between 33-40. Quartiles of knowledge scores of the pre-test and post-test showed a difference of 14 between the pre-test median (15.5) and post-test median (29.5). This revealed an increase in knowledge level of young adults after the administration of nursing instructional strategy. A very highly significant ($t = 31.505$; $P < 0.005$) difference was observed between the pre-test and post-test scores of study samples on healthy life style to prevent Cardio metabolic diseases, which shows the effectiveness of nursing instructional strategy intervention. Significant association was found between the pre-test knowledge scores and young adults' exposure to previous information on cardio metabolic diseases ($\chi^2=4.6952$; $P<0.05$). However no statistically significant association was found between the pre-test knowledge scores of samples and other demographic variables such as age, sex, course of study, family history of Cardio metabolic diseases, source of information and their personal habits.

IMPLICATIONS

From the findings of the study the following implications are stated. Present study would help nurses and other health care personnel to understand the level of knowledge of young adults about healthy life style to prevent Cardio metabolic diseases. Based on this knowledge nurse researchers can undertake similar studies among other age groups. The findings suggest that there is increased need for awareness programmes and periodical educational sessions by nurses for the public. Hence public health nursing administration can plan and implement different health education strategies for the community to ensure an overall healthy population.

RECOMMENDATIONS

Based on the findings of the study following recommendations are stated. Similar study can be undertaken with a large sample to generalize the findings. This study can be conducted to find out the interrelationship between knowledge, practice and attitude. A similar study can be conducted for family units so that healthy life style can be inculcated early in the childhood. A similar study can be undertaken with a control group design

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