



## Development and Utilisation of a Health Education Booklet for the Prevention of Cardiovascular Disease Among Obese Adults.

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### ABSTRACT:

Obesity increases the risk of cardiovascular disease due to associated dyslipidaemia, type 2 diabetes, hypertension, and sleep disorders. Independent to other cardiovascular risk factors, obesity leads to increase in morbidity and mortality related to the cardiovascular disease. In the present study, knowledge regarding prevention of cardiovascular disease among 100 obese adults was assessed in Sangli, Miraj and Kupwad corporation area. A descriptive study design was planned. Non- probability, convenient sampling technique was adopted to recruit total of 100 subjects. A structured knowledge questionnaire was used to collect the data. A detail evaluation of different domains of knowledge regarding prevention of cardiovascular disease was assessed. The weak knowledge domains were identified. Based on the findings, an educational booklet was developed, targeting to improve the knowledge in weak domains. The booklet was distributed among the obese adults in the community to enhance the knowledge of the obese adults about prevention of cardiovascular disease.

**Keywords:** Obese adults, Knowledge, Cardiovascular disease, Prevention.

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## 1. Introduction

Despite advancements made over the past fifteen years as a result of educational and public awareness initiatives (1). 'adults' knowledge of cardiovascular disease (CVD) remains below average. Body mass index (BMI), a commonly used indicator of human obesity, has been linked positively to CVD mortality in numerous large-scale studies, making obesity one of the most significant independent risk factors for CVD (2,3,4). Even in developing nations, obesity and CVD are becoming more common due to dietary shifts toward westernized diets that are high in sugar and fat (5,6).

The World Health Organization (WHO) lists CVD as one of the top 10 global health problems, with industrialized and developing nations particularly at risk (7,8). Obesity increases cardiac output and total blood volume, and the burden on the heart is typically higher (8). Obesity, especially moderate-to-severe obesity, is a major risk factor for cardiac disorders, either directly or indirectly through other risk factors such as diabetes, hypertension, dyslipidaemia, and other intervening risk factors.

Enhancing CVD knowledge is still a priority since it is crucial to encouraging healthy habits and disease prevention (8). The multifactorial feature of obesity includes a separate risk factor for cardiovascular disease (CVD). The cornerstones of managing CVD in poor nations should be health promotion and illness prevention. Unfortunately, the rising prevalence of CVD is not yet recognized in India as a problem for public health, and very little initiatives have been made to prevent it.

## 2. Methods

The research design used for the present study is descriptive survey research design. In present study, variables were knowledge regarding prevention of cardiovascular disease among obese adults and demographic variables such as gender, age, educational status, occupational status, family history of cardiovascular disease, type of diet etc.

The present study setting was selected as per need and criteria. Population of the study consisted of obese adults. The target population of the study consisted of obese adults residing at Sangli, Miraj, Kupwad Corporation area of the Maharashtra state.

The inclusion criteria were the obese adults who are between age group 18- 59 years, having BMI more than 30 and able to read and speak Marathi, English, Hindi the exclusion criteria were already diagnosed with cardiovascular disease, and on treatment of other comorbidities, not willing to participate. The sample size was determined using power analysis formula. The sample size comprises of 100 obese adults. Non-probability convenient sampling technique was used in this study.

The data collection tool included development of tool, description of tool and scoring system. Development of tool was done based on the study objectives. Data collection tool was prepared by doing extensive review of literature related to the cardiovascular disease. After an extensive review of literature, referring the books and journals, abstracts, research articles, discussion with guide and expert opinions the tool was developed for the data collection.

The tool was divided into 2 sections.

Section -I: Demographic data

Section-II: Structured questionnaire to assess the knowledge regarding prevention of cardiovascular disease among obese adults.

To ensure the content validity of the tool, the tool was submitted to experts. With suggested

corrections needed changes were done after the discussion with guide and final tool was prepared.

Institutional Ethics Committee, meeting was held in Bharati Vidyapeeth Deemed to be University College of Nursing, Sangli and the research proposal was approved. Permission was obtained from authority to conduct pilot study and main study. Informed written consent was obtained from each study participants prior to conducting the study. Data was collected from 100 obese adults who met the study criteria.

The collected data was encrypted, organized, analyzed, and explained using explanatory statistics. Tables and graphs are used to illustrate results.

### 3. Results

Based on the objectives of the study, Analysis and explanation of the results are arranged under the following headings

Section 1- Frequency and percentage distribution of demographic variables

Section 2- Domain-wise mean, standard deviation and mean percentage of knowledge

Section 3- Overall knowledge score of obese adults on prevention of CVD

Section 4- Association between knowledge regarding prevention of CVD with selected demographic variables.

Table no 1: Frequency and percentage distribution of demographic variables.  
N = 100

Demographic variables	Frequency	Percentage
<b>Age (in years)</b>		
18-28 years	19	19%
29-39 years	25	25%
40-49 years	30	30%
50-59 years	26	26%
<b>Gender</b>		
Male	50	50%
Female	50	50%
<b>Education</b>		
No formal education	21	21%
Primary	20	20%
Secondary	26	26%
Graduate	27	27%
Post graduate	6	6%
<b>Occupational status</b>		
Unemployed	38	38%
Laborer	25	25%
Service	20	20%
Self employed	17	17%
<b>Family history of CVD</b>		
Yes	13	13%
No	87	87%
<b>Family member with family history of CVD</b>		
Grandmother	1	1%
Mother	4	4%

Father	8	8%
<b>Habits</b>		
Yes	31	31%
No	69	69%
<b>Habit details</b>		
Alcohol	6	6%
Mishri	11	11%
Tobacco	14	14%
<b>Diet</b>		
Veg	11	11%
Mixed	89	89%

Age -19% of the obese adults in selected areas of Sangli were in group age 18-28 years, 25% of them were in age 29-39 years, 30% of them had age 40-49 years and 26% of them were age group 50-59 years. Gender - 50% of them were males and 50% of them were females. Educational status - 21% of them did not have formal education, 20% of them had primary education, 26% of them had secondary education, 27% of them had completed graduation and 6% of them had completed post-graduation. Occupational status - 38% of them were unemployed, 25% of them were laborers, 20% of them had service and 17% of them were self-employed. Habit - 31% of them had habits, like 6% of them had habit of alcohol, 11% of them had habit of tobacco mishri and 14% of them had habit of tobacco. Diet - 11% of them were vegetarian and 89% of them had mixed diet.

Table no. 2 Domain wise mean, standard deviation, and mean percentage of knowledge.

N = 100

Sr. no.	Domain	Maximum possible score	Mean	SD	Mean %
1	Risk factor	4	2.4	0.94	61.0
2	Causes	3	1.6	0.79	53.7
3	Sign and symptoms	2	1.2	0.64	60.5
4	Diet	5	2.8	0.85	56.6
5	Exercise	2	1.5	0.63	74.0
6	Prevention	5	3.3	0.86	66.4

The above table shows that the average knowledge score among obese adults was 2.4 (61%) regarding risk factors of CVD with standard deviation of 0.94. The average knowledge score among obese adults was 1.6 (53.7%) regarding causes of CVD with standard deviation of 0.79. The average knowledge score among obese adults was 1.2 (60.5%) regarding signs and symptoms of CVD with standard deviation of 0.64. The average knowledge score among obese adults was 2.8 (56.6%) regarding diet of CVD with standard deviation of 0.85. The average knowledge score among obese adults was 1.5 (74%) regarding exercise of CVD with standard deviation of 0.63. The average knowledge score among obese adults was 3.3 (66.4%) regarding prevention of CVD with standard deviation of 0.86.

Table no.3 Overall knowledge score of obese adults on prevention of CVD

Knowledge regarding CVD	Maximum possible score	Mean	Mean %	Standard deviation
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	21	12.9	61.4	1.428
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The above table shows that average knowledge score among obese adults was 12.9 regarding prevention of CVD with standard deviation of 1.428.

Table 4: Association between knowledge regarding prevention of CVD with selected demographic variables. N = 100

Demographic variable		Knowledge		p-value	Significance
		Average	Good		
Age (in years)	18-28 years	16	3	0.745	Not-significant
	29-39 years	23	2		
	40-49 years	28	2		
	50-59 years	24	2		
Gender	Male	46	4	1.000	Not-significant
	Female	45	5		
Education	No formal education	20	1	0.617	Not-significant
	Primary	19	1		
	Secondary	24	2		
	Graduate	23	4		
	Post graduate	5	1		
Occupational status	Unemployed	36	2	0.728	Not-significant
	Labourer	22	3		
	Service	18	2		
	Self employed	15	2		
Family history of CVD	Yes	12	1	1.000	Not-significant
	No	79	8		
Habits	Yes	30	1	0.267	Not-significant
	No	61	8		
Diet	Veg	10	1	1.000	Not-significant
	Mixed	81	8		

The above table shows that since p-values corresponding to all the demographic variables were large (greater than 0.05), none of the demographic variables was found to have significant association with the knowledge among obese adults regarding prevention of CVD.

#### 4. Discussion

Obesity is now identified as a disease by WHO due to elevated body mass index of 30kg/m<sup>2</sup> or more. It is a complex disease with multifactorial etiopathogenesis. Many genetic, metabolic, lifestyle, socioeconomic, environmental, and psychological factors are involved in the development of obesity. Obesity contributes to increase in the cardiovascular diseases due to collateral risk factor development like dyslipidaemia, type II diabetes mellitus, hypertension, and sleep disorders. Apart from contribution to cumulative risk, obesity as an individual factor is responsible for increase in mortality related to cardiovascular disease (9).

Obesity is considered as a state of chronic inflammation. Adiponectin, a peptide produced by adipose tissue is dysregulated in obesity. This contributes to the imbalance of body homeostasis and anti-inflammatory pathways causing obesity-induced vascular breakdown leading to cardiometabolic alterations. Inflammatory cell infiltrates occur in vital organs elevating inflammatory biomarkers. These proinflammatory cytokines are responsible for endothelial dysfunctions like atherosclerosis (10).

Individuals with high visceral adipose tissue have highest CVD risk regardless of BMI. Randomised controlled studies have shown that lifestyle modifications like caloric restriction and exercise cause significant reduction in the visceral adipose tissue.

Knowledge about the behavioural modification and health is an important factor to inform choices about healthy behaviour. Risk awareness plays vital role in primary prevention of the disease. Previous research demonstrated that men had a higher prevalence of behavioural risk factors than women in terms of obesity along with other contributory factors like tobacco use, binge drinking and eating foods containing fat and cholesterol. Women had a higher prevalence of low physical activity than men (11). Current study however had no significant correlation of gender with the knowledge about obesity as a risk factor. Lack of risk awareness leads to low physical activity, tobacco use, binge drinking and unhealthy dietary behaviour.

Present study demonstrated good mean knowledge score of 61.4% among obese adults. Most of them were willing for much needed behavioural modifications. However, inspite of proper knowledge they were not taking essential steps for these lifestyle modifications. Multiple other factors may be responsible for such type of ignorant behaviour. This is in line with the previous studies which noted that the relationship between risk awareness and health behaviour is not straight forward. Personal beliefs in the value of a preventive action are associated with the probability that the behaviour is performed (12).

Considering the impact of cardiovascular diseases on productivity and health of the population, urgent attention is needed towards the behavioural risk factors like obesity. Although national policy for non-communicable diseases already exists, the efforts need to be accentuated. Interventions targeting young population in educational institutes, Universities should be undertaken. Expert laden structured educational programmes promoting a healthy lifestyle can be incorporated in the university curriculum itself (13). Multiple health behaviour change interventions could be administered through the health centres as a health promotion programme. Current study contributes to these efforts by developing an information booklet about awareness. These booklets need mass distribution through the health centres to improve the health risk related behaviour of the population.

## **5. Conclusion**

The findings of the study revealed that majority of obese adults in the study had good level of knowledge about obesity as a risk factor, however lack of their action is contributing to increase the risk for cardiovascular disease. Large population-based awareness programmes, targeting young individuals is a need of an hour.

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## **Conflict of Interest**

No conflict of interest involved.

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