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A STUDY TO DETERMINE THE IMPACT OF A COMPREHENSIVE HEALTH PROMOTION PROGRAM ON OBESITY-ASSOCIATED METABOLIC RISK FACTORS AMONG COLLEGE STUDENTS IN SELECTED COLLEGES OF BHOPAL, MADHYA PRADESH

Jasvir Kaur

Ph.D. Scholar, Malwanchal University

Abstract

Background: Obesity among young adults is increasingly associated with metabolic risk factors such as hypertension, impaired glucose regulation, and central adiposity. College students are particularly vulnerable due to sedentary lifestyles, irregular dietary habits, and academic stress.

Objective: To determine the effectiveness of a comprehensive health promotion program on obesity-associated metabolic risk factors among college students in selected colleges of Bhopal, Madhya Pradesh.

Methods: A pre-experimental one-group pretest–posttest design was used. A total of 70 college students (39 males and 31 females) were selected using purposive sampling. Baseline assessment included Body Mass Index (BMI), waist circumference, blood pressure, and fasting blood glucose levels. A 12-week comprehensive health promotion intervention consisting of nutrition education, structured physical activity, lifestyle counseling, and behavioral modification strategies was implemented. Post-test measurements were conducted after completion of the intervention. Data were analyzed using descriptive and inferential statistics.

Results: Significant reductions were observed in mean BMI, waist circumference, systolic and diastolic blood pressure, and fasting blood glucose levels after the

intervention ($p < 0.05$). The program demonstrated overall effectiveness in improving metabolic risk profiles among participants.

Conclusion: The comprehensive health promotion program significantly reduced obesity-associated metabolic risk factors among college students. Structured institutional interventions can play a critical role in preventing long-term metabolic disorders in young adults.

Keywords: Obesity, metabolic risk factors, health promotion, college students, Bhopal, Madhya Pradesh

Introduction

Obesity is a major public health concern affecting both developed and developing nations. In India, the prevalence of overweight and obesity among young adults has increased due to rapid urbanization, sedentary behaviors, consumption of energy-dense foods, and reduced physical activity. College students are at a transitional stage of life where independent lifestyle choices may contribute to unhealthy behaviors.

Obesity during early adulthood is strongly associated with metabolic abnormalities such as elevated blood pressure, insulin resistance, increased waist circumference, and abnormal glucose levels. These factors significantly increase the risk of cardiovascular diseases and type 2 diabetes later in life.

Educational institutions provide a strategic environment for implementing structured health promotion programs. Comprehensive interventions focusing on dietary modification, physical activity, and behavioral counseling may effectively reduce metabolic risk factors among college students.

This study was conducted to evaluate the impact of a structured health promotion program on obesity-associated metabolic risk factors among college students in selected colleges of Bhopal, Madhya Pradesh.

Objectives

1. To assess baseline obesity-associated metabolic risk factors among college students.

2. To implement a comprehensive health promotion program.
3. To evaluate the effectiveness of the program in reducing metabolic risk indicators.

Hypotheses

- H1: There will be a statistically significant reduction in obesity-associated metabolic risk factors after implementation of the health promotion program.
- H0: There will be no significant difference in metabolic risk factors before and after the intervention.

Materials and Methods

Research Design

A pre-experimental one-group pretest–posttest design was adopted.

Setting

The study was conducted in selected colleges of Bhopal, Madhya Pradesh.

Sample and Sampling Technique

A total of 70 college students were selected using purposive sampling. The sample included:

- 39 males
- 31 females

Inclusion Criteria

- Students aged 18–22 years
- Overweight or obese according to BMI criteria
- Willing to participate and provide informed consent

Variables

- **Independent Variable:** Comprehensive health promotion program
- **Dependent Variables:** BMI, waist circumference, blood pressure, fasting blood glucose

Data Collection Tools

1. BMI measurement (height and weight assessment)
2. Waist circumference measurement
3. Sphygmomanometer for blood pressure
4. Fasting blood glucose testing
5. Structured demographic data sheet

Intervention

A 12-week comprehensive health promotion program was implemented, including:

- Weekly health education sessions on balanced diet and calorie control
- Supervised physical activity sessions (minimum 150 minutes per week)
- Lifestyle counseling and stress management
- Monitoring of dietary habits and physical activity
- Motivational group discussions

Data Analysis

Data were analyzed using SPSS software. Descriptive statistics (mean, standard deviation) were used to summarize data. Paired t-test was applied to determine statistical significance. A p-value < 0.05 was considered significant.

Results

Demographic Characteristics

- Total participants: 70
- Males: 39 (55.7%)
- Females: 31 (44.3%)
- Mean age: 19.8 ± 1.2 years

Changes in Metabolic Risk Factors

Variable	Pre-test Mean ± SD	Post-test Mean ± SD	p-value
BMI (kg/m^2)	28.1 ± 2.3	26.7 ± 2.1	<0.001
Waist Circumference (cm)	94.5 ± 6.2	90.8 ± 5.7	<0.001
Systolic BP (mmHg)	130.2 ± 7.1	123.4 ± 6.5	<0.01
Diastolic BP (mmHg)	85.6 ± 5.8	80.2 ± 5.2	<0.01
Fasting Blood Glucose (mg/dL)	108.4 ± 9.3	99.6 ± 8.1	<0.01

Discussion

The findings indicate that the comprehensive health promotion program was effective in improving obesity-associated metabolic risk factors among college students. Reduction in BMI and waist circumference suggests improvement in body composition. Decreased blood pressure and fasting blood glucose levels reflect improved metabolic health.

The success of the intervention may be attributed to structured physical activity sessions, dietary awareness, and consistent counseling. College-based interventions appear to be an effective strategy for early prevention of chronic diseases.

Limitations

- Absence of a control group
- Short duration (12 weeks)
- Limited generalizability beyond selected colleges in Bhopal
- Self-reported behavioral changes may introduce bias

Conclusion

The study concludes that a comprehensive health promotion program significantly reduced obesity-associated metabolic risk factors among college students in selected colleges of Bhopal, Madhya Pradesh. Institutional-level health promotion initiatives can

serve as an effective preventive strategy in early adulthood to reduce long-term health risks.

Future research with larger samples and randomized controlled trials is recommended to strengthen the evidence base.

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