

## Effectiveness of nursing intervention on Body Mass Index level among obese and overweight adults.”: A Study Protocol

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### Abstract:

**Context:** The 21<sup>st</sup> century is experiencing an epidemic of obesity due to bad dietary habits, a lack of physical activity, and a sedentary lifestyle. **Aim:** The aim is to assess the contributing factors to overweight and obesity and evaluate the effectiveness of a nursing intervention on the body mass index (BMI) level in the experimental and control groups. **Setting and design:** The multistage research design will be carried out in Karad taluka. **Subject and methods:** One twenty individuals with obesity, overweight, or both categories of subjects for the experimental and control groups will be participants using a simple random sampling technique. Individuals in this study will be assessed. The nursing intervention will be provided, which includes, a dietary intervention for each participant, and yoga exercise practices to reduce the BMI of overweight and obese adults. The screening test will be conducted before and after nursing intervention for weight and waist-to-hip ratio. This intervention will be provided for 4 months (5 days per week for 45 minutes). After 4 months, the BMI, and waist-to-hip ratio will be evaluated in overweight and obese adults. **Conclusion:** This study will raise the awareness in adults living with overweight and obesity about their good living habits, proper diet and yoga exercise in their daily living habits.

**Keywords:** overweight, obese, adults, BMI, nursing Intervention

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### Introduction:

Overweight in this study is defined as having a body mass index of 25–30 kg/m<sup>2</sup>. Furthermore, body mass index above 30 kg/m<sup>2</sup> is considered obesity in this study. It is a major risk factor for many non-communicable diseases (NCDs) and a real public health threat in the world.<sup>1</sup>

The Body Mass Index (BMI) is the most commonly used reference metric for classifying individuals as overweight or obese. Although other parameters for measuring body fat allow a deeper and more individualised assessment, the BMI can be useful for a first classification.<sup>2</sup>

The World Health Organization (WHO) estimates that between 39% and 13% of adult global population over the age of 18 suffers from obesity or being overweight in 2016. In 2019, the Organization for Economic Cooperation and Development (OECD) released “The Heavy Burden of Obesity, ” highlighting how obesity has increased in recent decades. Obesity is an epidemic of the twenty-first century due to several factors, including poor eating habits, inactivity, and a sedentary lifestyle. Furthermore, it projects that this will result in about 220 million non-communicable diseases over the next 30 years, such as diabetes, heart issues, and shorter life expectancies for cancer patients.<sup>2</sup>

Obesity impacts the quality of life and healthcare costs, but weight loss can reduce risks. Losing 5-10% of body

weight offers health benefits, even if individuals never achieve their ideal weight.<sup>3</sup>

Overweight or obese individuals have a higher weight than healthy for their height, characterized by abnormal or excessive fat accumulation in adipose tissue. BMI is a method of detecting overweight or obesity, calculated as weight divided by height squared. A BMI of 25-30 indicates overweight, while 30+ indicates obesity. Weight and hip circumferences measure body composition and fat distribution, with obesity prevalence increasing globally, affecting all age groups and socioeconomic statuses. High BMI is a risk factor for chronic diseases.<sup>4</sup>

The body mass index (BMI) cutoffs proposed by the WHO expert group for Asian populations have been used which are given as 18.5-24.9 normal weight, 25 to 29.9 as overweight,  $\geq 30.0$  as obese.<sup>9</sup>

A 35-year trend analysis from 195 countries found that obesity affects 603.7 million adults., with a 12.0% global prevalence. High BMI contributed to 7.1% of deaths and 4.9% of disability-adjusted life-years. In 2016, 1.9 billion were overweight, and 650 million were obese; the African region's prevalence nearly doubled.<sup>4</sup>

Low-grade inflammation associated with obesity is connected to several metabolic illnesses, including dyslipidemia, insulin resistance, and diabetes mellitus (DM). It also alters innate and adaptive immunity, making a person more vulnerable to infections. It makes antivirals and antibacterial medications less effective.<sup>10</sup> Obesity has become one of the global health challenges affecting people of all ages in recent times. It is one of the main causes of peripheral vascular and cardiovascular disease risk.<sup>11</sup>

As per this statistical data, the researcher felt that to do the study. Due to a more Inactive Lifestyle, there is a need to be aware of the persons regarding physical exercise. Due to their lack of physical exercise and lifestyle changes, sedentary lifestyles like television and computers and mechanization of jobs are also developing obesity. And the availability of processed and unhealthy foods, and oversized food portions increases the chances of overweight and obesity.

The ancient Indian system of mental, physical, and spiritual practices known as yoga, which translates to "the union," is now widely accepted. Many people today identify yoga with the physical practice, or asanas, which are a set of postures that are frequently performed in different styles. The primary goal of asana practice is building.

## **Materials and methods:**

### **Study design:**

In the study, an experimental research design will be used.

### **Research Approach:**

A mixed approach will be used.

### **Sampling technique:**

There will be usage of a basic random sampling technique.

### **Study duration:**

An ongoing study at the time of this report is being carried out for 3 years.

### **Study setting:**

This study is being carried out on overweight and obese adults residing in Karad taluka.

### **Sample size:**

85% of those who receive intervention reduce BMI significantly to the reference by Lorena-Rodriguez, et al<sup>7</sup>, "Effectiveness of two-year multicomponent intervention for the treatment of overweight and obesity in older people". Considering 50% of those who do not receive any intervention may reduce BMI significantly, the minimum number of obese/overweight individuals required to enroll is:

$$\begin{aligned}n &= (p_c q_c + p_e q_e) (Z_{1-\alpha/2} + Z_{1-\beta})^2 / (p_1 - p_2) \\n &= [(50*50) + (85*15)] * 13 / (50-85) \\n &= 40\end{aligned}$$

Assuming 10% dropout during follow-up  $n=40/0.9=45$ , a minimum of 45 individuals in the experimental group and a minimum of 45 in the control group will be enrolled.

So, for the present study, the sample size for experimental and control groups will be 60 individuals for each group. 120 individuals will be enrolled for the control and experimental group.

#### **Study population and inclusive and exclusive criteria:**

The adults are in the age group of 20-60. In exclusive criteria, the adults those are; undergone a similar training program in the last 6 months taking any treatment for reducing weight, are not available at the time of data collection, pregnant and lactating mothers, mentally ill condition.

#### **Tool**

##### **Section I: Sociodemographic data**

This section addresses points such as age, gender, education, diet, occupation, marital status, and family monthly income consumption of tobacco and alcohol. This formulation will be the base for further study.

##### **Section II:**

This section contains the distribution of investigation components among overweight and obese adults in 2 parts.

Part A involves screen viewing activity which covers the use of TV/DVD, computer/mobile on weekdays and weekends for the last 6 months.

Part B includes anthropometric measurements of adults, including height, weight, BMI, and Waist-hip ratio.

##### **Section III:**

This section covers the distribution of a questionnaire about lifestyle among overweight and obese adults in part IV.

Part I includes the eating and dietary habits of adult questionnaire.

Part II consists of a dietary questionnaire among overweight and obese adults.

Part III consists lifestyle screening scale.

Part IV contains a knowledge questionnaire on yoga.

#### **Nursing intervention**

The dietary intervention will be provided to each individual according to his/her habits of taking food. The diet pattern will be formed as per the person's choice whether they want to continue the veg or non-veg diet. This diet plan will be formed up to 1600 kcal. Which includes all the necessary ingredients and easily available materials. Another intervention is yoga. Yoga asanas involve **Chaturanga Dandasana – Plank Pose, Virabhadrasana – Warrior Pose, Trikonasana – Triangle pose, Sarvangasana – Shoulder Stand Pose, Sethu Bandha Sarvangasana – Bridge pose, Parivrtta Utkatasana – Twisted Chair pose, Dhanurasana – Bow Pose, Surya Namaskara – Sun Salutation Pose.** This yoga exercise demonstration will be followed by participants 5 days/week for 45 minutes daily for 4 months.

#### **Recruitment of the study participants**

After getting permission from the respective authority, the primary information will be obtained. 4 PHCs will be selected by lottery method each for experimental and control groups. The written informed consent will be obtained by the individuals before enrolling into the study. These individuals will be approached at their residences. Till getting 60 individuals for the study the researcher will continue to collect the data for every individual and it will be included in the study as per their geographical boundary and those are fulfil the inclusive criteria.

#### **Data collection and management**

Data will be collected after selecting the individuals. These individuals will be approached for the experimental and control groups at their residences. First, the data will be collected about the investigation component among overweight and obese adults involving screen viewing activity, and anthropometric measurement. Another section

involves a questionnaire about the eating and dietary habits of adults, a dietary questionnaire, a lifestyle screening scale and a knowledge questionnaire on yoga.

Those participants who are in the experimental and control group will undergo the nursing intervention for diet, exercise and yoga techniques. After the 4 months of intervention, the BMI and waist-to-hip ratio will be again measured for the possibility of overweight and obesity.

#### **Ethical consideration:**

The institutional ethics committee of Krishna Vishwa Vidyapeeth, deemed to be university in Karad, has accepted the study (Ref. no. KIMSDU/IEC/07/2023)

Permission from the Taluka Health Officer and the selected Medical Officer's permission has been obtained. Detailed information about the nature and objectives of the study will be provided to each participant. Prior to gathering data, participants' written informed consent will be sought.

#### **Discussion**

The World Health Organization published its report in the year 2016, the result shows that 39% and 13% of the adult world population over 18 years of age suffer from overweight and obesity are public health problems. The Heavy Burden of Obesity, a report published in 2019 by the Organization for Economic Cooperation and Development (OECD), detailed the rise in obesity over the previous few decades. Obesity is a 21st-century epidemic due to poor dietary habits, lack of physical activity, and sedentary lifestyles. It is estimated to cause 220 million non-communicable diseases, including cardiovascular problems, diabetes, and reduced life expectancy in cancer patients.<sup>2</sup>

NFHS: According to data from the National Family Health Survey, 4.0% of men and 6.4% of women in India between the ages of 15 and 49 are obese, whereas 17.6% and 18.9% are overweight but not obese. This means about a fourth of young women are overweight and over a fifth of men are above normal body weight.<sup>5</sup>

Literature calls for immediate, collaborative efforts to combat overweight and obesity, but lacks comprehensive, multi-centre studies and small sample sizes.<sup>4</sup>

As per this statistical data, the researcher felt that to do the study. Due to a more Inactive Lifestyle, there is a need to be aware of the persons regarding physical exercise. Due to their lack of physical exercise and lifestyle changes, sedentary lifestyles like television and computers and mechanization of jobs are also developing obesity. And the availability of processed and unhealthy foods, and oversized food portions increases the chances of overweight and obesity.

Yoga, an ancient Indian system of mental, physical, and spiritual practices, is now widely accepted and often associated with physical asanas, sequenced postures for building.

#### **Conclusion**

The study investigates factors contributing to overweight and obesity, aiming to determine and detect changes in BMI over a 4-month follow-up period in experimental and control groups.

#### **Financial support and sponsorship**

Nil

#### **Conflicts of interest**

None

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