

**Autosuggestion as a Mediator in Weight Management in  
Female College Students**

**S.Snega Prabha  
(13PCP008)**

**Thesis Submitted to  
Avinashilingam Institute for Home Science and Higher Education for  
Women, Coimbatore-641043**

**In Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Counselling Psychology**

**March 2015**

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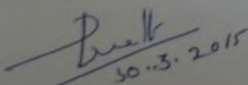
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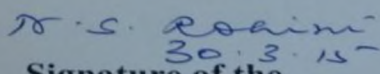
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**Certified as Bonafide Research Work**

  
**Signature of the  
Supervisor**

  
**Signature of the  
Head of the Department**

**ACKNOWLEDGEMENT**

**Acknowledgement**

The investigator pays her reverential homage to late **Dr. T.S. Avinashilingam**, founder and first chancellor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for providing a golden opportunity for learning.

The investigator expresses her gratitude to **Sri.T.S.K.Meenakshisundaram, M.A., M.Phil., Ph.D. (Honoris Causa)**, Chancellor, **Dr. (Mrs.) Sheela Ramachandran M.Sc., P.G., Dip., Ph.D.**, Vice Chancellor, **Dr. (Tmt). A.Venmathi, M.Sc., M.Phil., Ph.D.**, Registrar In-Charge, Avinashilingam Institute for Home science and Higher Education for Women, Coimbatore, for providing all the facilities for the smooth conduct of the study.

She expresses her heartfelt thanks to **Dr. (Mrs.) A. Parvathi, M.Sc., M.Phil., Ph.D.**, Dean, Faculty of Science, and **Dr. N.S. Rohini, M.Sc., M.Phil., Ph.D.**, Professor and the Head of the Department of Psychology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for the encouragement.

The investigator express her deep sense of gratitude and whole hearted thanks to her supervisor **Dr. Preetha Menon, M.A., M.Phil., P.hD., Assistant Professor**, Department of Psychology, Avinashilingam Institute for Home science and Higher Education for Women, Coimbatore, for her meticulous guidance, deep concern, constructive suggestion, continued motivation, chiseled the investigator to carry out the research work. Endurance of support and gentle care facilitated to carry out the study from the initial to the final level successfully.

The investigator expresses her heartfelt thanks to her parents for their motivation, support, concern and care for the successful completion of the study.

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# **ABSTRACT**

**Abstract**

The study titled, “Autosuggestion as a Mediator in Weight Management in Female College Students”, was done with the intention of understanding the role of autosuggestion in helping participants reduce their body weight, with sustained adherence to the intervention. From Avinashilingam Institute for Home Science and Higher Education for Women (Faculty of Engineering), Coimbatore, PSGR Krishnammal College, Peelamedu, Coimbatore, Kongunadu Arts and Science College, G.N. Mills, Coimbatore, Priya Ladies Hostel, Coimbatore, Shri Shivani Ladies Hostel, Coimbatore, 82 female college students were selected for the study by convenient sampling method. The participants selected were assessed for their anthropometric data and they also completed WHO (Five) Well-Being Index. Following that they were randomly assigned to Group A and Group B with 41 in each. The participants of Group A, followed intervention involving Exercise+Diet+Autosuggestion and the participants of Group B followed intervention involving Exercise+Diet. Follow up assessments for body weight and well-being were done on the fifteenth and on the thirtieth days of intervention. The results indicated that there was a marginal but a statistically insignificant difference in the body weight of the participants in both Group A and Group B. There was a statistically significant difference in the well-being of the participants in both Group A and Group B. The results recommended longer periods of behavioural interventions incorporating psychological techniques for adherence to the regimen resulting in sustained weight reduction.

*Key words:* Body weight, weight management, autosuggestion, intervention, female college students

## **ACKNOWLEDGEMENT**

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# Introduction

## Health

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, as stated by the WHO (World Health Organisation, 1948).

Health and wellness are active processes of becoming aware of and making choices toward a more successful existence. Wellness is multidimensional. A popular model adopted by many universities, corporate, and public health programmes encompasses 6 dimensions:

- Social
- Occupational
- Spiritual
- Physical
- Intellectual
- Emotional

With the evolution of man and the gradual but steady growth of modernisation, there has been a significant change in how health, fitness and general well-being is measured or is comprised of. Thus the National Wellness Institute recognises eight dimensions, or essential life areas which collectively comprise the wellness (well-being) of all human beings (OFI, 2000).

## Eight Dimensions of Wellness

- **Spiritual:** The individual's willingness to seek meaning and purpose in human existence, to question everything, and to appreciate the things which cannot be readily explained or understood. A spiritually well person seeks harmony between what lies within as well as the forces outside. The “self-actualisation” phenomenon that is discussed by many psychologists is similar to that of a spiritually healthy individual.
- **Emotional:** This dimension means to be aware and accept a wide range of feelings in yourself and others. An emotionally well person can freely express

and manage their feelings, thoughts, and behaviour. An emotionally well person functions autonomously, yet is aware of personal limitations and understands the value of seeking support and assistance.

- **Intellectual:** The ability to engage in self-directed behaviour, which includes continuous learning, development, creative application and articulation of critical thinking and expressive/intuitive skills and abilities. An intellectually well person incorporates what is learned in the classroom with what is experienced outside the classroom in order to enhance their potential for living a more fulfilling life.
- **Physical:** The decision to pursue an active lifestyle. A physically well person actively understands the relationship between nutrition, activity, performance, and health.
- **Cultural:** Being aware of one's own cultural background and becoming knowledgeable about, respectful of, and sensitive to the culture of others.
- **Occupational:** The personal satisfaction and enrichment one experience through work. An occupationally well person has integrated their commitment to work into a total lifestyle that is rewarding and seeks to express personal values through that involvement.
- **Social:** Denotes the individual's capacity to actively participate in and contribute to the common welfare of your community. A socially well person lives in harmony with fellow human beings, seeks positive interdependent relationships with others, develops healthy sexual behaviour, and generally works for harmony in both personal and community environments.
- **Environmental Precepts for Wellness:** It is the willingness to actively participate in and contribute to efforts to protect and renew the environment. An environmentally well person recognises the importance of individual efforts in preserving the environment through recycling, energy conservation, careful product selection, etc.

There are multifarious reasons that contribute to health and wellness. Similarly there are many reasons that contribute to poor health, the abundant growth of illnesses and diseases. Many researches and study leans towards the fact that there is a strong impact of one's lifestyle and food habits on the health factor. One cannot deny the

fast-food's attribution to the problems such as obesity in the present generation. With the world turning its life style similar to the western countries, there has been an increase in the number of people suffering from health complications related to weight gain, obesity and reproduction, etc. The human body's balance of its components determines the individual's health, the modernisation has deprived one's ability to maintain a healthy balance in his/her body and mind (Blackburn, 1994).

### **Overweight and Obesity**

Overweight is having extra body weight from muscle, bone, fat, and/or water. These individuals are at high risk to becoming obese and should work immediately at changing their life-style, diet and physical exercises. It's more or like the beginning stages of obesity and an indication that the body needs to be maintained before it's too late. Overweight is defined as a body mass index (BMI) of 25 or higher; obesity is defined as a BMI of 30 or higher.

Obesity is having a high amount of extra body fat. This category denotes that the individuals have already past the warning stages and are at high risk to acquire diseases and illness associated with it. It cannot be managed without clinical assistance and proper medication and control (OFI, 2000).

### **Body Mass Index (BMI)**

Body mass index (BMI) is a useful measure of overweight and obesity. BMI is a number calculated by dividing a person's weight in kilograms by his or her height in meters squared. BMI is used in determining obesity. Obesity is most commonly calculated using BMI. An adult with a BMI of 30 or greater is clinically obese. BMI is not used to determine a person's actual percentage of body fat, but it is a good indicator to categorize weight in terms of what is healthy and unhealthy (Chakraborty, 2012).

### **Calculation of BMI**

BMI is calculated the same way for both adults and children. The calculation is based on the following formulas:

Formula:  $\text{weight (kg)} / [\text{height (m)}]^2$

Formula:  $\text{weight (lb)} / [\text{height (in)}]^2 \times 703$

Eg: If an individual's weight is 54 and Height is 153, the BMI will be  $54 / (1.53)^2 = 22.5$ .

### **Interpretation of BMI for Adults**

For adults 20 years old and older, BMI is interpreted using standard weight status categories that are the same for all ages and for both men and women. For children and teens, on the other hand, the interpretation of BMI is both age- and sex-specific.

The standard weight status categories associated with BMI ranges for adults are shown in the following table.

<b>BMI</b>	<b>Weight Status</b>
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

## **Prevalence**

The problems of being overweight can be seen in at least 3 of 10 individuals. These problems are always accompanied by behavioural, emotional and psychological issues. The study on a systematic analysis for the Global Burden of Disease Study 2013 had revealed the top 10 countries with the highest number of obese people. According to the statistics, India is the third leading country in obesity. The US and china have preceded and have the 1<sup>st</sup> and 2<sup>nd</sup> place in the list. According to the study, number of overweight and obese people globally increased from 857 million in 1980 to 2.1 billion in 2013. This is one-third of the world's population (Sharma, 2014).

The population of India as per the 2013 survey is 1.252 billion and in those the obese people account for more than 5 % of the total population. The escalation of urbanisation and westernisation has altered the lifestyle, food habits of the people. Younger generations tend to consume very less of the Indian foods and have adopted

the western's as a style statement. The concept of a healthy life also incorporates the cultural boundaries that is pre-existing in India.

### **Causes of Overweight and Obesity**

Being overweight is generally caused by the intake of more calories (by eating) than are expended by the body (by exercise and everyday living). But each of these factors is influenced by a combination of genes and environment. Both can affect an individual's physiology (such as how fast one burn calories) as well as one's behaviour (the types of foods). The interplay between all these factors begins at the moment of the person's conception and continues throughout life. The major causes of over-weight include (Howard, 2000):

#### **Genetic Influences**

To date, more than 400 different genes have been implicated in the development of overweight or obesity, although only a handful appear to be major players. Genes contribute to obesity in many ways, by affecting appetite, satiety (the sense of fullness), metabolism, food cravings, body-fat distribution, and the tendency to use eating as a way to cope with stress. The strength of the genetic influence on weight disorders varies quite a bit from person to person. Research suggests that for some people, genes account for just 25% of the predisposition to be overweight, while for others the genetic influence is as high as 70% to 80%.

#### **Environmental Influences**

Genetic factors are the forces inside an individual that promotes weight gain and sustain the overweight; environmental factors are the outside forces that contribute to these problems. They encompass anything in our environment that makes us more likely to eat too much or exercise too little. Taken together, experts think that environmental factors are the driving force for the dramatic increase in obesity. Environmental influences come into play very early, even before one is born. Many features of modern life promote weight gain. In short, today's "obesogenic" environment encourages us to eat more and exercise less. And there is growing evidence that broader aspects of the way we live — such as how much we sleep, our stress levels, and other psychological factors can affect weight as well (Dalton, 1997).

## **The Food Factor**

Economic growth, modernisation, urbanisation and globalisation of food markets are just some of the forces thought to underlie the epidemic. As incomes rise and populations become more urban, diets high in complex carbohydrates give way to more varied diets with a higher proportion of fats, saturated fats and sugars. Portion sizes for foods commonly consumed outside the home have also increased over the years, and many experts believe this has contributed to overweight and obesity.

## **Stress and Related Issues**

Obesity experts believe that a number of different aspects of the society may conspire to promote weight gain. Stress is a common thread intertwining these factors. Stress and lack of sleep are closely connected to psychological well-being, which can also affect diet and appetite. Studies have demonstrated that some people eat more when affected by depression, anxiety, or other emotional disorders. In turn, overweight and obesity themselves can promote emotional disorders (Dalton, 1997). Other factors that may contribute to this imbalance include:

- Alcoholism
- Eating disorders (such as binge eating)
- Hormonal imbalances (e.g. hypothyroidism)
- Insufficient or poor-quality sleep
- Limited physical exercise and sedentary lifestyle
- Poor nutrition
- Metabolic disorders, which could be caused by repeated attempts to lose weight by weight cycling
- Overeating
- Psychotropic medication (e.g. olanzapine)
- Smoking cessation and other stimulant withdrawal

The Health Risks of Over-weight and Obesity are as follows (Kanders, 1994):

- **Diabetes** which is a disorder where the pancreas is not producing enough or sometimes not any insulin. Diabetes can lead to a whole host of other medical

issues and obesity is one of the main causes due to the body having excess glucose due to overeating.

- **Cancer** has many different forms and types and many of them could be prevented with more attention to eating healthy and avoiding obesity.
- **Congestive Heart Failure** is a condition in which the heart can't pump enough blood to the body's other organs.
- **Enlarged Heart** is another heart condition where the muscle of the heart become larger due to being overworked which naturally happens if one is overweight.
- **Pulmonary Embolism** is a sometimes fatal blockage of an artery. Being overweight causes most people to reduce activity and after time lack of activity can result in an embolism.
- **Polycystic Ovarian Syndrome** is when cysts develop in ovaries. These can burst causing even further problems.
- **Gastro oesophageal Reflux Disease** means that stomach acid and juices flow from the stomach back up into the oesophagus. It is common in overweight people.
- **Fatty Liver Disease** is a reversible condition where large pockets of fat accumulate in liver cells. Fatty liver can be considered a single disease that occurs worldwide in those with excessive alcohol intake and those who are obese.
- **Hernia** is caused when the hole in the diaphragm weakens and enlarges.
- **Erectile Dysfunction** is the inability to develop or maintain an erection which can be caused by a medical problem due to obesity or a psychological effect.
- **Urinary Incontinence** is the inability to control ones urine and is frequently associated with obesity, weak bladder and pelvic floor muscles.
- **Chronic Renal Failure** meaning the kidneys fail to work is a much greater risk to those that are overweight or obese.
- **Lymph oedema** is a condition that occurs from a damaged or dysfunctional lymphatic system sometimes caused by people suffering from obesity actually crushing the lymphatic.
- **Cellulite** is clinically a spreading infection involving both the dermis and subcutaneous tissues due poor lymph flow caused by obesity.

- **Stroke** is a lack of blood supply as the body has to work harder when one is obese.
- **Pickwickian Syndrome** is mainly characterized by sleep apnoea due to obesity placing an excessive load on the pulmonary system.
- **Depression** is a condition where a person feels extremely sad all the time. Even to the point of being suicidal. This can be greatly enhanced for someone that has a weight problem.
- **Osteoarthritis** is a clinical syndrome in which low-grade inflammation results in pain in the joints, caused by abnormal wearing of the cartilage oftentimes due to obesity.
- **Gout** occurs when uric acid accumulates in the blood. Nerve endings then become irritated causing extreme pain made worse by carrying extra weight.
- **Gallbladder Disease** commonly affects overweight people as a result of high blood cholesterol levels and causes gall stones.

## **Management of Overweight**

Overweight treatment strategies vary from person to person. There are several methods for treating overweight and obesity, such as behaviour modification, physical activity, non clinical weight management programs, medically managed weight-loss and surgical treatment (Stunkard, 2002).

### **Behaviour Modification**

Behaviour plays a significant role in obesity. Modifying behaviours that have contributed to developing obesity is one way to treat the disease either alone or in conjunction with other treatments. A few suggested behaviour modifiers include: changing eating habits, increasing physical activity, becoming educated about the body and how to nourish it appropriately, engaging in a support group or extracurricular activity and setting realistic weight management goals.

### **Physical Activity**

Increasing or initiating a physical activity program is an important aspect in managing obesity. Today's society has developed a very sedentary lifestyle and routine physical activity can greatly impact health. Realistic goals should be set and there should be consultation with the physician before initiating any exercise program.

## **Medically Managed Weight-Loss**

Medically managed weight-loss programs provide treatment in a clinical setting with a licensed healthcare professional, such as a medical doctor, registered dietician and/or psychologist. These programs typically offer services such as prescription of weight-loss medications, nutrition education, physical activity instruction and behavioural therapy.

## **Surgical Treatment**

Surgical treatment of obesity is an option for those who are classified as morbidly obese. Morbid obesity is defined as a patient having a BMI of 40 or greater, or weighing more than 40 kilograms over their ideal body weight. In addition, a patient with a BMI of 35 or greater with one or more obesity-related diseases is also classified as morbidly obese. There are a few different types of bariatric surgery or weight-loss surgery treatment options, such as Roux-En-Y Gastric Bypass, Gastric Sleeve resection and Adjustable Gastric Banding (Wadden, 2002).

## **Autosuggestions**

**"Live as if it were already manifest and you shall find it manifest** (Brown, 1901).

Autosuggestion is based on the basic notions of psychology that emphasise on the mind, unconscious/subconscious and conscious. Though it is not a recently found concept, the importance of it has only been completely comprehended in the past few decades. The subconscious is the part of consciousness that is not currently in focal awareness. The word "subconscious" represents an anglicized version of the French *subconscient* as coined by the psychologist Pierre Janet (1859-1947) (Kehoe, 1999).

The idea of the subconscious as a powerful or potent agency has allowed the term to become prominent in the motivational and self-help literature, in which investigating or controlling its supposed knowledge or power is seen as advantageous. In the growing psychological world, techniques such as autosuggestion and affirmations are believed to harness the power of the subconscious to influence a person's life and real-world outcomes, even curing sickness (Kehoe, 1999).

The most prominently used therapeutic technique that involves the control or alteration of the subconscious mind is the autosuggestion. Autosuggestions are positive words and sentences which, when repeated over and over, change an

individual's inner world, create new beliefs and vibrations which eventually change his/her reality (Brooks, 2011).

Professor M. U. Ahmed, the pioneer of Applied Psychology in Bangladesh, first applied autosuggestions on himself. In 1934 he became infected with paratyphoid. After months of failed effort the doctors gave up hope and suggested he spend his last days at home. He started saying 'I want to live, I will live' again and again. In 1973, he was declared clinically dead and yet came back to life in the same process. Prof. Ahmed did not apply autosuggestions only on himself. For three decades he used autosuggestions successfully for curing psychosomatic diseases. Thousands of patients have had astonishing recoveries using autosuggestions in his Medistic Psychotherapy process. In Bangladesh, between 1993 and 2012, tens of thousands of people have used autosuggestions successfully (Jordon, 2007).

Clinical psychologists have discovered that the human nervous system cannot differentiate between reality and imagination. If one can imagine an event, this generates the same brain waves as would have been created if the incident was real. So when we believe or imagine a positive happening in our life, it would become believing. This is the secret behind the effectiveness of mantras, autosuggestions and affirmations. If one repeats the same positive statements about oneself over and over again, first new brain waves are created, then the working structure of the brain begins to change permanently. After years of research neuroscientists have found that when we send new information to the brain, new dendrites, i.e. new communication paths between the neurons are created. The brain then creates a new reality (Sasson, 2000).

### **Procedure for Autosuggestion**

Autosuggestions are the powerful tool that can be used to alter the contents in the subconscious, we can condition our subconscious mind to hold certain beliefs that enhance our living experience; thus, through repetition, they become the reality we experience on a regular basis (Coue, 2011).

The best way to practice autosuggestions is in the meditative level. When our body is relaxed, our mind is more open, more ready to embrace change. Until one learns how to meditate, they simply have to sit in a quiet place. Close their eyes. Relax their mind and body by taking a few deep long breaths. The individuals mind's entire attention should be focused to the autosuggestions on the autosuggestions in the list (Sasson, 2000).

The most common autosuggestions taken up by the people are:

- I am 100% able to achieve my goal
- I will do whatever it takes
- I love healthy food
- I love working out
- I make the time for my goal
- I can do it
- I am happy and joyful
- I like myself

Rules while forming autosuggestions:

- These autosuggestions are intended for the individual's personal needs. So use the first person, e.g. 'I am bold and courageous.'
- The statements must be completely positive. They should write down what they desire - not what they want to avoid.
- The person should avoid negative words. Avoid phrases such as 'cannot', 'will not', 'do not want' etc. Instead of saying 'I do not have any fear', the statements should say 'I am courageous'.
- There should not be any comparative statements about oneself with others or with the past. Do not add any statements that say, eg: 'I am as courageous as John'.
- Time limits can be stressful. There should be abundant time for the changes to happen. Restrictions and limits can jeopardise the results (Brooks, 2007).

### **General Well-being**

Shin and Johnson (1978) have defined well-being form of happiness as “a global assessment of a person’s quality of life according to his own chosen criteria”. The clinical perspective defines well-being as the absence of negative conditions and the psychological perspective defines well-being as the prevalence of positive attributes. Positive psychological definitions of wellbeing generally include some of six general characteristics. The six characteristics of well-being most prevalent in definitions of well-being are:

- the active pursuit of well-being
- a balance of attributes

- positive affect or life satisfaction
- prosocial behaviour
- multiple dimensions and
- personal optimisation (Barwais, 2011)

Apart from impacting on morbidity and mortality, overweight and obesity have been shown to be associated with psychological and social problems. In the present study well-being is being assessed to understand the impact of the weight management on the participants at a psychological level.

### **Need for Study**

Obesity and overweight have now become a global epidemic. According to the World Health Organization (WHO, 2013), there will be about 2.3 billion overweight people aged 15 years and above and over 700 million obese people worldwide in 2015. Overweight and obesity are the fifth leading risk of deaths, resulting in around 2.8 million deaths of adults globally every year. In addition, 44% of the diabetes burden, 23% of the ischemic heart disease, and between 7% and 41% of certain cancer burdens are attributable to overweight or obesity (WHO, 2013). The young adults who are overweight are the population at risk to develop obesity. Especially in the case of women's health, the evidence for the adverse effects of obesity is overwhelming and indisputable. Though most of them are aware and are educated about the health risks in respect to obesity, their busy schedule and sheer negligence lead to severe health problems. Women are more vulnerable due to their biological make-up. The risks for them are high when compared to that of men and so necessary precautions and preventions should be advocated to manage their weight and reduce future health risks. The present study focuses on comparing the effect of two combinations of intervention on body weight reduction of the selected female college students in which one involves autosuggestion. It has been found that a combined diet-plus-exercise programme provides greater long-term weight loss than a diet-only programme. Studies also show more beneficial effects when combined with psychological interventions. The proposed action research is intended to provide such beneficial effects to the participants in reducing and maintaining their body weight.

## **Review of Literature**

The research related to the study on, “Autosuggestion as a Mediator in Weight Management in Female College Students” was reviewed and are presented under the following headings:

- Studies on Autosuggestion
- Studies on Weight Management
- Studies on Obesity
- Studies on Well-being and Weight Management

### **Studies on Autosuggestion**

A systematic review study was conducted by Wadden, Butryn, Hong, and Tsai (2014) on behavioural treatment of obesity in patients encountered in primary care settings. Interventions that prescribed both reduced energy intake (eg,  $\geq 500$  kcal/d) and increased physical activity (eg,  $\geq 150$  minutes a week of walking), with traditional behavioral therapy, generally produced larger weight loss than interventions without all 3 specific components.

A study was conducted by Gibson (2012) on ‘The Role of Positive Thinking in Health and Healing: A Literature Review’. Positive thinking appears to particularly influence cardiovascular and immune system health, short and long term surgery recovery, and coping with cancer. The research points to positive thinking as a significant factor both in a person’s state of health and wellbeing as well as their ability to recover and heal.

A study was conducted by Mommaerts and Devroey (2012) on ‘The placebo effect: how the subconscious fits in’. Quite a few hypothetical explanations for the placebo effect have been suggested, including faith, belief, hope, classical conditioning, conscious/subconscious expectation, endorphins, and the meaning response. An important implication of this is that the placebo effect can in principle be used effectively without the placebo itself, through a direct use of autosuggestion. The benefits of such a strategy are that there are fewer side effects from medications, huge cost savings, no deception of patients, relief of burden on the physician's time, and healing in domains where medication or other therapies are problematic.

A review study was conducted by Burke, Wang and Sevick (2011) on 'Self-Monitoring in Weight Loss: A Systematic Review of the Literature'. The article presented a systematic review of the literature on three components of self-monitoring in behavioural weight loss studies: diet, exercise, and self-weighing. This review included articles that were published between 1993 and 2009 that reported on the relationship between weight loss and these self-monitoring strategies. Of the 22 studies identified, 15 focused on dietary self-monitoring, one on self-monitoring exercise, and six on self-weighing. A wide array of methods was used to perform self-monitoring; the paper diary was used most often. A significant association between self-monitoring and weight loss was consistently found.

A study was conducted by Liao (2000) on 'Cognitive-behavioural approaches and weight management: an overview'. Recent therapeutic techniques is derived from behavioural psychology, such as self-monitoring, stimulus control and goal setting, to help obese people make positive changes to their eating and activity habits. In more recent decades, behaviour modification approaches have also incorporated strategies from cognitive therapy, which have involved the identification and modification of 'dysfunctional' thinking patterns and consequent negative mood states; hence the term 'cognitive behaviour therapy (CBT).

### **Studies on Weight Management**

The study was conducted by Klien and Hiatt (2014) on 'Detox diets for toxin elimination and weight management: a critical review of the evidence'. Detox diets are popular dieting strategies for toxin elimination and weight loss. The review examined detox diets, what they involve, whether they are effective and whether they present any dangers. A handful of clinical studies have shown that commercial detox diets enhance liver detoxification and eliminate persistent organic pollutants from the body, although these studies are hampered by flawed methodologies and small sample sizes.

The study was conducted by Martinez, Navas-carretero, Saris and Astrup (2014) on 'Personalized weight loss strategies-the role of macronutrient distribution'. Restriction of energy intake is the primary method of producing a negative energy balance leading to weight loss. The review discussed all available systematic reviews and meta-analyses, and summarized the results of relevant randomized controlled

intervention trials assessing the influence of macronutrient composition on weight management. The initial findings of research into personalized nutrition, based on the interactions of macronutrient intake and genetic background and its potential influence on dietary intervention strategies, are also discussed.

A study was conducted by Swift, et al (2014) on the role of exercise and physical activity in weight loss and maintenance. The review explored the role of physical activity (PA) and exercise training (ET) in the prevention of weight gain, initial weight loss, weight maintenance, and the obesity paradox. In particular, the focus was on the discussion on the expected initial weight loss from different ET programs, and explored intensity/volume relationships. Based on the literature, unless the overall volume of aerobic ET is very high, clinically significant weight loss is unlikely to occur.

A study was conducted by Kushner (2014) on 'Weight loss strategies for treatment of obesity.' Considering obesity as a chronic medical disease state helps to frame the concept of using a three-stepped intensification of care approach to weight management. As a foundation, all patients were counselled on evidence-based lifestyle approaches that include diet, physical activity and behaviour change therapies. At the second tier, two new pharmacological agents, phentermine-topiramate and lorcaserin, were approved in 2012 as adjuncts to lifestyle modification. The third step, bariatric surgery, had been demonstrated to be the most effective and long-term treatment for individuals with severe obesity or moderate obesity complicated by comorbid conditions that is not responsive to non-surgical approaches.

A study was conducted by Hall (2013) on diet versus exercise in "the biggest loser" weight loss competition. During the first phase of the competition the contestants were isolated in a boot camp environment, the average rate of weight loss was  $0.4 \pm 0.1$  kg/d and decreased to  $0.19 \pm 0.1$  kg/d after returning home. The intense diet and exercise intervention during The Biggest Loser competition were not sustainable. However, a relatively modest permanent lifestyle intervention of 20% caloric restriction and 20 min/d of vigorous exercise could maintain the massive weight loss.

The study was conducted by Wu, Gao, Chen, and Dam (2009) on long-term effectiveness of diet-plus-exercise interventions vs. diet-only interventions for weight loss: a meta-analysis. The objective of this study was to systemically review the effect of diet-plus-exercise interventions vs. diet-only interventions on both long-term and short-term weight loss. Even in studies lasting 2 years or longer, diet-plus-exercise interventions provided significantly greater weight loss than diet-only interventions. A trail study was conducted by Wing, et al (2013) on Weight gain prevention in young adults: design of the study of novel approaches to weight gain prevention (SNAP) randomized controlled trial. SNAP targets the enrolment of 600 participants, who are randomly assigned with equal probability to 1 of 3 treatment groups, stratified by clinical center: Self-guided behavior changes (Control). Self-Regulation Plus Small Behavior Changes. Self-Regulation Plus Large Behavior Changes Assessments are completed at baseline, 4, 12, 24, 36 and 48 months.

A review study was conducted by Fitzgibbon, et al (2011) on Weight loss and African-American women: a systematic review of the behavioural weight loss intervention literature. The purpose of this article was to conduct a systematic review of all behavioural weight loss intervention trials published between 1990 and 2010 that included and reported results separately for African-American women. The criteria for inclusion included participants age  $\geq 18$  years; a behavioural weight loss intervention; weight as an outcome variable; inclusion of African-American women; and weight loss results reported separately by ethnicity and gender. The literature search identified 25 studies that met inclusion criteria. The findings suggest that more intensive randomized behavioural weight loss trials with medically at-risk populations yield better results.

A study was conducted by Struble et al (2010) on 'Overweight and Obesity in Lesbian and Bisexual College Women. Methods: A secondary analysis' of the Spring 2006 National College Health Assessment was conducted with 31,500 female college students (aged 18 to 25 years) to compare body mass index (calculated from self-reported height and weight) among lesbian, bisexual and heterosexual college women. Results showed that compared to heterosexuals female college students, lesbians and bisexual women were both significantly more likely to be overweight or obese. Lesbians were also less likely to be underweight compared to heterosexual college

women. Conclusions indicated that self-identified lesbian and bisexual college women were more likely to be overweight or obese than their heterosexual counterparts.

### **Studies on Obesity**

A study was conducted by Mattes and Foster (2014) on food environment and obesity. The study used seven article reviews that addressed important questions regarding the contribution of the food environment to obesity. Independent of physiological/genetic determinants, factors such as ED, cost, food form, palatability, variety, portion size, eating frequency, and access to healthy food are each evaluated for their role in the aetiology of obesity and metabolic health.

A study was conducted by Ryan and Braverman-Panza (2014) on obesity in women. Obesity is a common disorder affecting approximately 1 in 3 women. Assessment consisted of measuring BMI and waist circumference, a thorough history regarding nutrition, physical activity, and prior attempts at weight loss, and identification of obesity-related co-morbidities. As a chronic disease, obesity requires management using a chronic care model employing multimodal therapy. Behavioural therapy was used to bring about changes in nutrition and physical activity can be supplemented with long-term use of medications (lorcaserin, orlistat, phentermine/topiramate) to help patients both achieve and maintain meaningful weight loss.

A review study was conducted by Wadden, Butryn, Hong and Tsai (2014) on 'Behavioral treatment of obesity in patients encountered in primary care settings: a systematic review'. Review of 3304 abstracts yielded 12 trials, involving 3893 participants that met inclusion-exclusion criteria and prespecified quality ratings. Weight loss in both groups generally declined with longer follow-up (12-24 months). Interventions that prescribed both reduced energy intake and increased physical activity with traditional behavioural therapy generally produced larger weight loss than interventions without all 3 specific components.

A study was conducted by Graham and Edward (2013) on 'The psychological burden of obesity: the potential harmful impact of health promotion and education programmes targeting obese individuals'. The study explored the psychological burden being experienced by overweight and obese people while also examining their perceived ability to engage in exercise. Depression, anxiety and stress levels were all

found to be unacceptably high for the current sample, while exercise self-efficacy or perceived ability to engage in exercise was low.

A review study was conducted by Teresa, et al (2010) on 'Obesity and Women's Health: An Evidence-Based Review'. Obesity negatively impacts the health of women in many ways. Being overweight or obese increases the relative risk of diabetes and coronary artery disease in women. Women who are obese have a higher risk of low back pain and knee osteoarthritis. Obesity negatively affects both contraception and fertility as well. Maternal obesity is linked with higher rates of caesarean section as well as higher rates of high-risk obstetrical conditions such as diabetes and hypertension. Obese women are at higher risk for multiple cancers, including endometrial cancer, cervical cancer, breast cancer, and perhaps ovarian cancer.

A study was conducted by Merwe (2009) on 'Obesity in women—a life cycle of medical risk'. The study collected data from the Renfrew-Paisley study, which recruited 15 406 individuals in Scotland between 1972 and 1976, serve to emphasise the importance of obesity as a CardioVascular Disease (CVD) risk factor in women. In the analysis, mortality and other outcomes after 20 years were calculated according to baseline BMI. In terms of absolute rates of CVD, the Renfrew-Paisley study showed that after adjusting for age, forced expiratory volume in 1 second, smoking and social class, compared to women of normal weight, for every 100 obese women followed for 20 years there were seven additional cases of fatal cardiovascular hospitalisations attributable to obesity.

A study was conducted by Mills and Cullen (1994) on 'Locus of Control Orientation among Obese Adults in Outpatient Treatment for Obesity'. The study focused on locus of control (LOC) in samples of obese and nonobese subjects. Rotter's (1966) was administered, I-E Scale to 106 obese adults in outpatient treatment for obesity and to 99 nonobese controls. The obese subjects were significantly more internally oriented than the control group. The findings challenge currently held assumptions on the directionality of LOC in obese groups. The results contradicted the consensus among researchers that obese individuals have an external LOC orientation. The finding that internal LOC is associated with the obese condition may be a useful predictor variable influencing obesity treatment, approaches, and outcome.

## **Studies on Well-being and Weight Management**

A study was done by Braet, Tanghe, Decaluwe, Moens and Rosseel (2004) on Inpatient Treatment for Children With Obesity: Weight Loss, Psychological Well-being, and Eating Behavior. In the study they evaluated the effects of a 10-month inpatient treatment program and implemented as a nondiet healthy lifestyle approach. A within-subjects design was employed to evaluate treatment outcome, including a 14-month follow-up. The children lost 49.0% of their weight during the course of treatment. Comparing baseline with the 14-month follow-up, a weight loss of 31.7% was maintained. The children continued to show healthy eating behavior at follow-up, and their psychological well-being had improved.

A study was conducted by Karlsson, Hallgren, Kral, Lindroos, Sjostrom and Sullivan (2002) on Predictors and Effects of Long-term Dieting on Mental Well-being and Weight Loss in Obese Women. Sixty moderately obese women (mean BMI = 33, mean age = 43), randomized to a lactovegetarian or regular 1300-kcal weight-reducing diet were followed at 3, 8 and 24 months. Short-term improvements in mental well-being measured by the Mood Adjective Check List deteriorated after 2 years to lower levels than at entry. Psychological characteristics at baseline did not predict compliance or overall weight loss. The magnitude of weight loss after 24 months was related to amount and duration of maximum weight loss.

A review study was conducted by Blaine, Rodman and Newman (2013) on Weight Loss Treatment and Psychological Well-being : A Review and Meta-analysis. Research suggests that weight loss treatment generally benefits psychological well-being but these effects have never been quantitatively reviewed. A meta-analysis of 117 weight loss treatment tests showed that weight loss treatment was associated with lowered depression and increased self-esteem. Treatment type moderated treatment effects on depression and self-esteem. Actual weight loss moderated treatment effects on self-esteem but not depression; only treatments that produced actual weight loss predicted increased self-esteem whereas improvements in depression were independent of weight loss.

Fine et al. (1999) did a study on A Prospective Study of Weight Change and Health-Related Quality of Life in Women. A cohort of 40,098 women (from 46-71 years old in 1992) grouped according to 3 patterns of weight change over the 4-year

period: women whose weight remained within 2.25 kg (5 lb) of their baseline weight, women who lost 2.25 kg (5 lb) or more, and women who gained 2.25 kg (5 lb) or more. A total of 15,602 women (39%) maintained their weight, 15,160 (38%) gained between 2.25 and 9.0 kg (5-20 lb), and 6667 (17%) lost between 2.25 and 9.0 kg (5-20 lb). Weight gain was associated with decreased physical function and vitality, and increased bodily pain regardless of baseline weight.

To summarize , review of literature indicates that a combined diet-plus-exercise programme provided greater long-term weight loss than a diet-only programme. Studies also show more beneficial effects when combined with psychological interventions. Studies also indicate positive effects of weight management on well-being of women.

## **Method**

The study on, “Autosuggestion as a Mediator in Weight Management in Female College Students.” was carried out involving the following steps:

- Objectives
- Null Hypotheses
- Area
- Sample
- Tools
- Procedure
- Analysis of data

### **Objectives**

- To understand the effect of intervention involving exercise, diet and autosuggestion in weight management in the sample, who are the selected female college students.
- To help the sample reduce and maintain healthy body weight.
- To find an effective weight management technique.
- To evaluate the well-being before and after intervention.

### **Null Hypotheses**

- Autosuggestion does not moderate in weight management in the sample.
- There is no effect of exercise and diet on weight management in the sample.
- There is no relationship between weight management and well-being in the sample.
- There is no effect of the intervention on the well-being of the sample.
- There is no relationship between age, diet, body type, level of activity and body weight of the sample.
- There is no relationship between age, diet, body type, level of activity and well-being of the sample.

## **Area**

From Avinashilingam Institute for Home Science and Higher Education for Women (Faculty of Engineering), Coimbatore, PSGR Krishnammal College, Peelamedu, Coimbatore, Kongunadu Arts and Science College, G.N Mills, Coimbatore, Priya Ladies Hostel, Coimbatore, Shri Shivani Ladies Hostel, Coimbatore female college students were selected.

## **Sample**

From the above mentioned colleges and hostels in Coimbatore, 82 female students between the age group of 20-27 years were selected for the study. Convenient sampling method was used for this research.

## **Tools**

- Adult Consent Form (Annexure 1) : It was used to get consent from the selected college students to participate in the study.
- Case Study Schedule (Annexure 2): To obtain personal and anthropometric data.
- WHO (Five) Well-Being Index (1998 version) (Annexure 3): It has five sentences regarding how individuals felt over two weeks period which are to be rated on a five-point scale.

## **Procedure**

The Project Proposal submitted by the researcher to the Institutional Human Ethics Committee was subjected to perusal and approval was obtained (Approval No: AUW/IHEC-14-15/XMT-77) (Annexure 4). From Avinashilingam Institute for Home Science and Higher Education for Women (Faculty of Engineering), Coimbatore, PSGR Krishnammal College, Peelamedu, Coimbatore, Kongunadu Arts and Science College, G.N Mills, Coimbatore, Priya Ladies Hostel, Coimbatore, Shri Shivani Ladies Hostel, Coimbatore, 82 female college students were selected for the study. The selection of the 82 participants were based on

a) the Inclusion and Exclusion Criteria and

b) the willingness expressed by each college student on signing the Adult Consent Form.

**Inclusion Criteria:**

- Being over-weight, but not being obese (based on BMI chart)
- Age between 20-28
- College student

**Exclusion Criteria:**

- Crossing the over-weight range and being obese
- Presence of health complications like diabetes, hypertension, polycystic ovarian syndrome etc or any other serious health issues.

The participants so selected were assessed for their anthropometric data and they also completed WHO (Five) Well-Being Index. Following that they were randomly assigned to Group A and Group B with 41 in each.

**Intervention**

The participants of Group A were given intervention involving Exercise+Diet+Autosuggestion and the participants of Group B followed intervention involving Exercise+Diet. Participants of Group B were not aware of or informed about the autosuggestions assigned for the participants in Group A. The intervention was for duration of thirty days. The Exercise routine was a forty-five minute workout with walking, jogging, planks and sit-ups.

The diet included option of healthy foods, distributed into five meals/day. The participants were strictly prohibited from consuming fast-foods (both vegetarian and non-vegetarian diet).

Autosuggestions were individualized, catering to the unique motivational levels of the participants.

## **Procedure for Autosuggestion**

Once the autosuggestions were designed, the participants were asked to repeat them to oneself following a brief breathing exercise. The participants were instructed to repeat the autosuggestions in the morning when they are still on the bed soon after waking up and at night just before going to sleep. The participants are advised to repeat each autosuggestion between 20 and 100 times for best results. It is also beneficial to repeat the autosuggestion whenever the participants got a few moments in the midst of their day-to-day work or schedule. Practicing twice every day was mandatory.

## **Follow up**

After fifteen days of starting the intervention, a follow up assessment of body weight and well-being in Group A and Group B was done. At the end of the thirtieth day, another similar follow up was done.

## **Analysis of Data**

The data were analysed by standard statistical tools such as Mean, Standard Deviation, ANOVA and Karl Pearson Coefficient of Correlation using SPSS+PC package on the basis of the following:

- Anthropometric Data
- Body Weight
- Well-being

## Results and Discussion

The study on “Autosuggestion as a mediator in weight management in female college students” was conducted at few colleges and ladies hostels in and around coimbatore. The participants were selected using the purposive sampling method. 82 females were selected and equally divided into two groups. The Group A had 41 participants and they underwent the intervention of Exercise+Diet+Autosuggestions. The Group B has 41 participants and they underwent the intervention of Exercise+Diet. They were given the WHO-5 Well-being Index (1998 version) before and after the intervention.

The results of the study are analysed, tabulated and discussed below:

Table 1 : Showing the Anthropometric Profile of the Sample

N=82

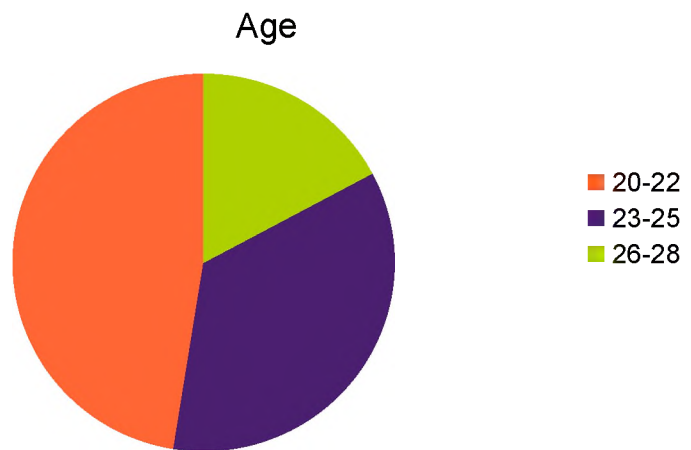
<b>Age</b>	<b>n</b>	<b>Percentage</b>
20-22	39	47
23-25	29	35
26-28	14	17
<b>Course</b>	<b>n</b>	<b>Percentage</b>
B.Tech.	16	20
B.E.	6	7
B.A.	10	12
B.Sc.	6	7
M.E.	18	22
M.A.	12	15
M.Sc.	14	17
<b>Diet</b>	<b>n</b>	<b>Percentage</b>

Vegetarian	41	50
Non-Vegetarian	41	50
<b>Body Type</b>	<b>n</b>	<b>Percentage</b>
Endomorph	35	43
Mesomorph	26	32
Ectomorph	21	26
<b>Level of Activity</b>	<b>n</b>	<b>Percentage</b>
None	38	46
Low	31	38
Moderate	13	16

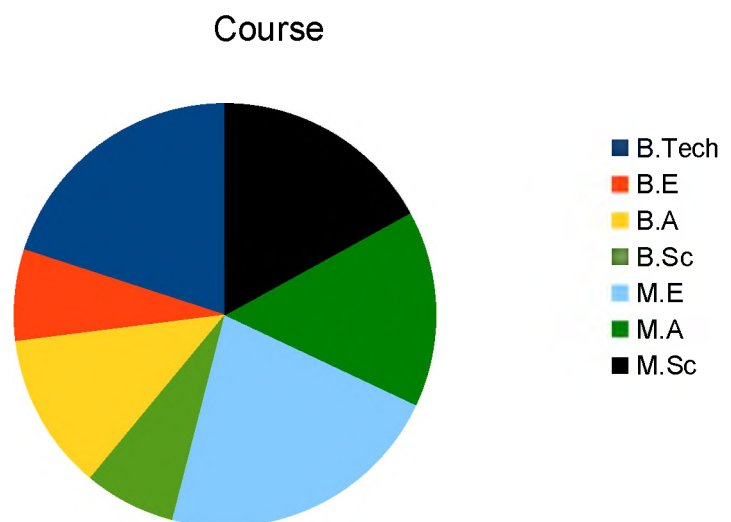
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Table 1 shows the demographic profile of the sample. It can be noted that the maximum number (47%) of participants are from the age group of 20-22 . Almost one fourth (22%) of the participants were from the M.E course category. The participants are equally distributed (50%) in their diet pattern of vegetarian and non-vegetarian. It can be noted that majority (43%) of participants are from the endomorph body type . Nearly half (46%) of the of participants had very low level of activity.

**Figure 1 : Age of the Sample**



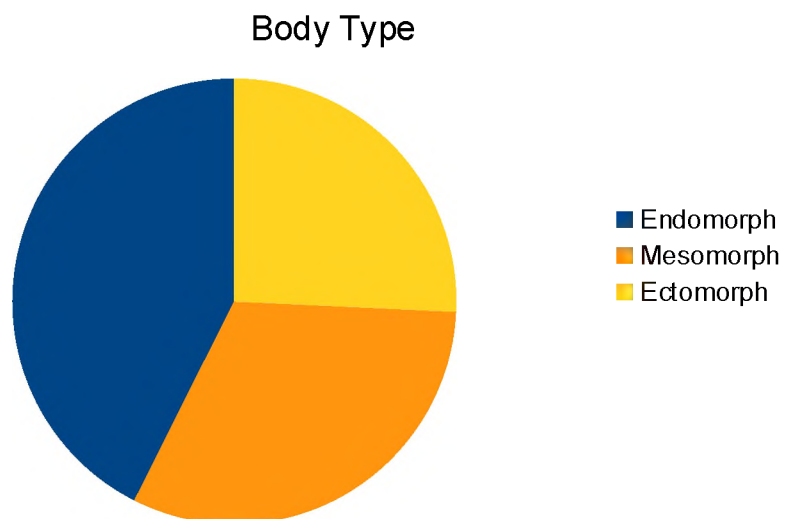
**Figure 2 : Course of the Sample**



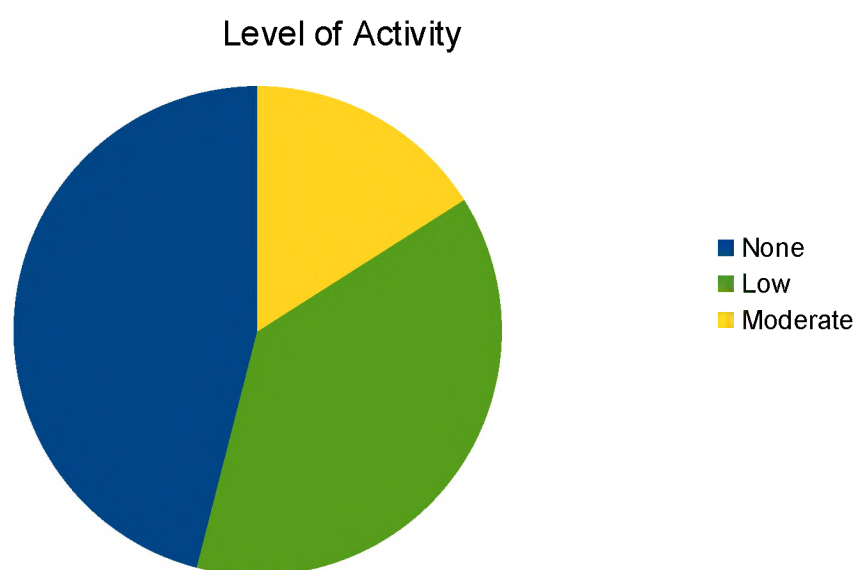
**Figure 3 : Diet of the Sample**



**Figure 4 : Body Type of the Sample**



**Figure 5 : Level of Activity of the Sample**



**Table 2 : Showing the Body Weight of the Sample before Intervention**

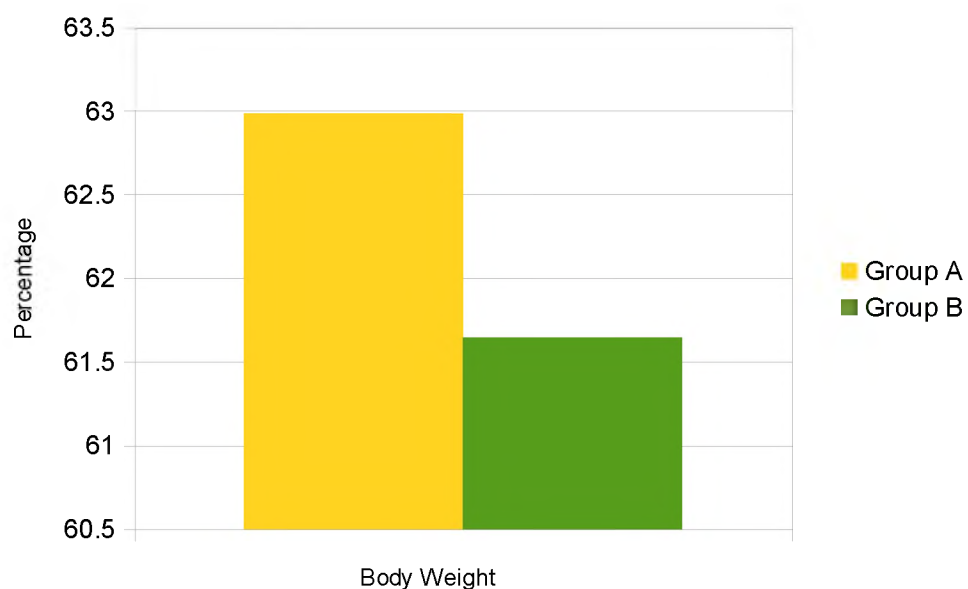
Group A			Group B		
Weight I	n	Percentage	Weight I	n	Percentage
55-59	17	41	55-59	19	46
60-64	11	27	60-64	9	22
65-69	6	15	65-69	8	20
70-74	5	12	70-74	4	10
75-79	2	5	75-79	0	0

Table 2 shows that almost half (41% and 46%) of the participants are from the weight group of 55-59 in group A and in group B. The least number (2%) of participants are from the age group of 75-79 in group A and (0%) in group B.

**Table 3 : Mean Body Weight and Standard Deviation of Group A and Group B in Assessment I**

	<b>Group A</b>	<b>Group B</b>
<b>Mean</b>	62.98	61.64
<b>SD</b>	6.09	5.42

**Figure 6 : Mean Body Weight of Group A and B**



**Table 4 : Significant Difference between the Mean Body Weight of Group A and Group B in Assessment I (before intervention)**

Source of Variance	Sum of Squares	df	Mean Square	F	P
<b>Between:</b>	36.887	1	36.887	1.108	0.296
<b>Within:</b>	2,663.030	80	33.288		
<b>Total:</b>	2,699.917	81			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Body Weight of Group A and Group B in Assessment I. It is observed that there is no significant difference between the groups with regard to Body Weight, as observed from the value of P 0.296, which is not statistically significant. As a pre-requisite, the baseline condition of both the groups have to be similar to bring about homogeneity before intervention and make the groups comparable. The mean value of both groups have only a slight difference.

**Table 5 : Showing the Well-being of the Sample before Intervention**

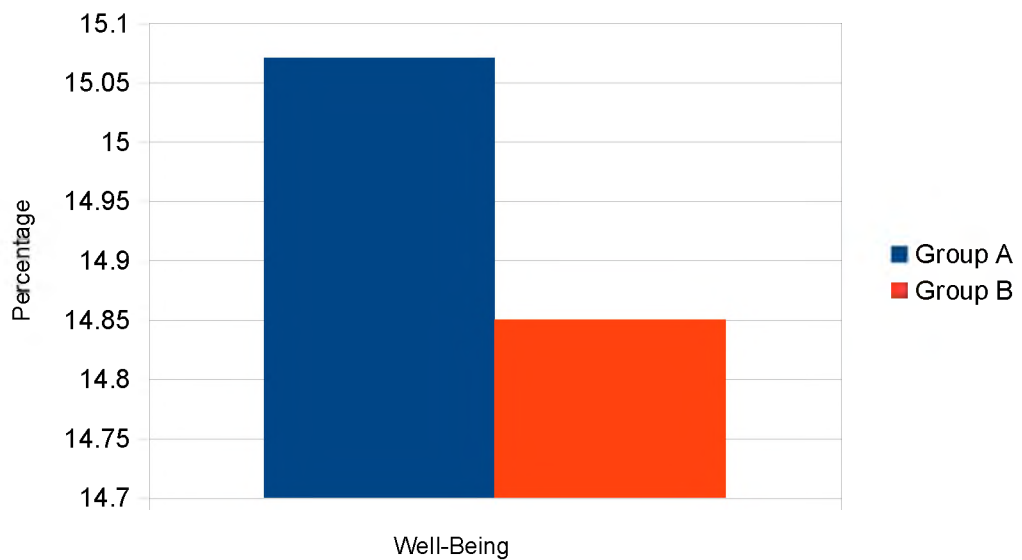
Group A			Group B		
Well-being I	n	Percentage	Well-being I	n	Percentage
Very Low (0-5)	0	0	Very Low	0	0
Low (6-10)	2	5	Low	0	0
Moderate (11-15)	21	51	Moderate	24	59
High (16-20)	16	39	High	16	39
Very High (21-25)	2	5	Very High	0	0

Table 5 shows that the well-being of the participants before intervention range from moderate to high in both group A and group B. The maximum number (51% and 59%) in group A and B, the participants had moderate well-being.

**Table 6 : Mean Well-being and Standard Deviation of Group A and Group B in Assessment I**

	<b>Group A</b>	<b>Group B</b>
<b>Mean</b>	15.07	14.85
<b>SD</b>	2.91	2.27

**Figure 7 : Mean Well-Being of Group A and B in Assessment I**



**Table 7 : Significant Difference between the Mean Well-being of Group A and Group B in Assessment I (before Intervention)**

Source of Variance	Sum of Squares	df	Mean Square	F	P
<b>Between:</b>	0.988	1	0.988	0.144	0.705
<b>Within:</b>	547.902	80	6.849		
<b>Total:</b>	548.890	81			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Well-being of Group A and Group B in Assessment I. It is observed that there is no significant difference between the groups with regard to well-being , as observed from the value of  $P = 0.705$ , which is not statistically significant. As a pre-requisite, the baseline condition of both the groups have to be similar to bring about homogeneity before intervention and make the groups comparable. The mean value of both groups have only a slight difference.

**Table 8 : Body Weight of Group A and B in Assessments I,II and III**

n= 41

Group A	Assessment I		Assessment II		Assessment III	
	n	%	n	%	n	%
53-57	6	15	12	29	17	41
58-62	17	41	15	37	10	24
63-67	6	15	5	12	5	12
68-72	7	17	6	15	6	15
73-77	5	12	3	7	3	7

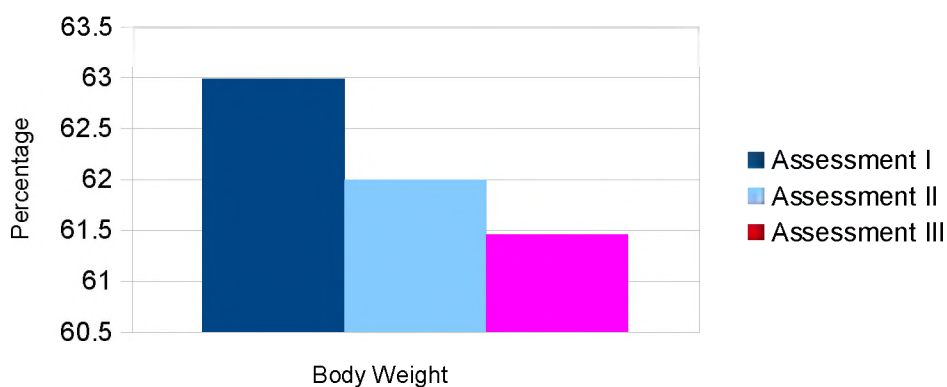
Group B	Assessment I		Assessment II		Assessment III	
	n	%	n	%	n	%
53-57	11	27	17	41	18	44
58-62	13	32	9	22	8	20
63-67	11	27	11	27	10	24
68-72	4	10	2	5	4	10
73-77	2	5	2	5	1	2

Table 6 shows that there is an increase (15% to 41%) of participants in the weight group 53-57 over the period of intervention . There is also a decrease (12% to 7%) in the participants in the weight group 73-77 over the period of intervention. In Group B there is an increase (27% to 44%) of participants in the weight group 53-57 over the period of intervention. There is also a decrease (5% to 2%) in the participants in the weight group 73-77 over the period of intervention . The study Primary and secondary suggestibility: an experimental and statistical study was done by Eysenck and Furneaux. Sixty neurotic male army patients of average intelligence were given 12 tests of suggestibility.

**Table 9 : Mean Body weight and Standard Deviation of Group A in Assessments I,II and III.**

Group A	Assessment I	Assessment II	Assessment III
<b>Mean</b>	62.98	61.99	61.45
<b>SD</b>	6.09	6.07	6.01

**Figure 8 : Mean Body weight of Group A in Assessments I,II and III**



**Table 10 : Significant Difference in Body weight of Group A in Assessments I,II and III**

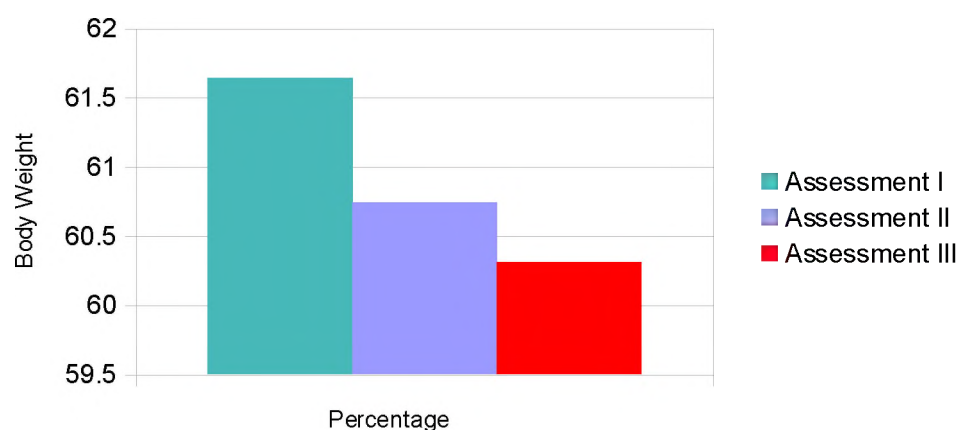
Source of Variance	Sum of Squares	df	Mean Square	F	P
<b>Between:</b>	49.372	2	24.686	0.673	0.512
<b>Within:</b>	4,402.124	120	36.684		
<b>Total:</b>	4,451.496	122			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Body Weight of Group A in Assessment I,II and III. Observing from the P value,  $0.512 < 0.05^*$  it can be noted that it is not statistically significant at any levels, hence the null hypothesis, “Autosuggestion does not moderate in weight reduction in the sample ” is accepted.

**Table 11 : Mean Body weight and Standard Deviation of Group B in Assessments I,II and III**

<b>Group B</b>	<b>Assessment I</b>	<b>Assessment II</b>	<b>Assessment III</b>
<b>Mean</b>	61.64	60.74	60.31
<b>SD</b>	5.42	5.33	5.32

**Figure 9 : Mean Body weight of Group B in Assessments I,II and III**



**Table 12: Significant Difference in Body weight of Group B in Assessments I,II and III**

<b>Source of Variance</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>P</b>
<b>Between:</b>	37.772	2	18.886	0.658	0.520
<b>Within:</b>	3,443.508	120	28.696		
<b>Total:</b>	3,481.280	122			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Body Weight of Group B in Assessment I, II and III. Observing from the P value,  $0.520 < 0.05^*$  it can be noted that it is not statistically significant at any levels, hence the null hypothesis, “There is no effect of exercise and diet on weight reduction in the sample ” is accepted.

**Table 13 : Well-being of the Participants of Group A before and after Intervention**

Group A	Assessment I		Assessment II		Assessment III	
	n	%	n	%	n	%
Very Low	0	0	0	0	0	0
Low	2	5	0	0	0	0
Moderate	21	51	27	66	16	39
High	16	39	14	34	20	49
Very High	2	5	0	0	5	12

Group B	Assessment I		Assessment II		Assessment III	
	n	%	n	%	n	%
Very Low	0	0	0	0	0	0
Low	0	0	0	0	0	0
Moderate	24	59	22	54	18	44
High	16	39	19	46	23	56
Very High	0	0	0	0	0	0

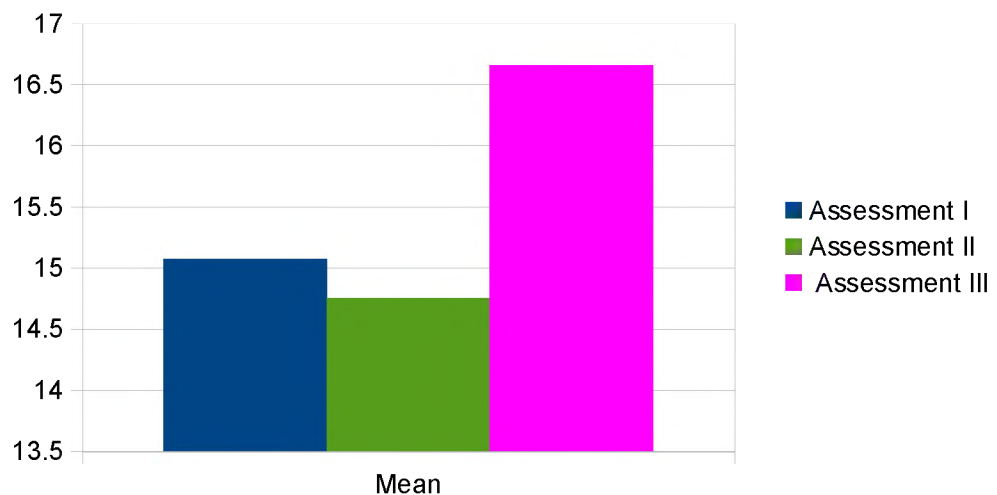
Table 13 shows that the well-being of the participants in group-A have increased over the period of intervention. In the assessment I, maximum number of participants are in the moderate category (51%). In the assessment II, maximum number of participants are in the moderate category (66%) and in the assessment III,

maximum number of participants are in the high category (49%). The participants have reduced in the low category (2% to 0%) and have increased in the very high category (5% to 12%). Group B shows that the well-being of the participants have increased over the period of intervention. In the assessment I, maximum number of participants are in the moderate category (59%). In the assessment II, maximum number of participants are in the moderate category (54%) and in the assessment III, maximum number of participants are in the high category (56%). There are no participants in the very low, low and very high category (0%).

**Table 14 : Mean Well-being and SD of Group A in Assessment I, II and III**

<b>Group A</b>	<b>Assessment I</b>	<b>Assessment II</b>	<b>Assessment III</b>
<b>Mean</b>	15.07	14.75	16.65
<b>SD</b>	2.91	1.99	2.83

**Figure 10 : Mean Well-being of Group A in Assessments I, II and III**



**Table 15 : Significant Difference in Well-being of Group A in Assessments I, II and III**

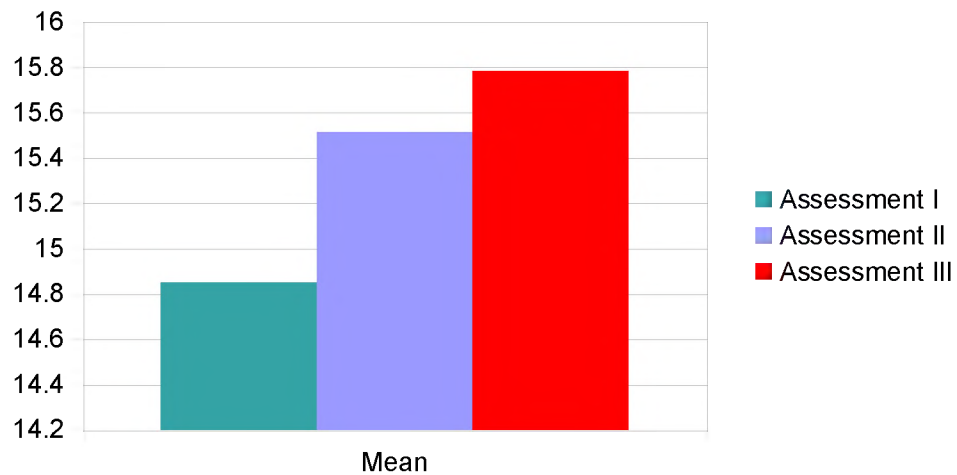
Source of Variance	Sum of Squares	df	Mean Square	F	P
<b>Between:</b>	84.854	2	42.427	6.228	0.003
<b>Within:</b>	817.484	120	6.812		
<b>Total:</b>	902.338	122			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Well-being of Group A in Assessment I,II and III. Observing from the P value,  $0.003 < 0.01^*$  it can be noted that it is statistically significant , hence the null hypothesis, “There is no effect of the intervention on the well-being of the sample” is rejected.

**Table 16: Mean Well-being and SD of Group B in Assessment I, II and III**

Group A	Assessment I	Assessment II	Assessment III
Mean	14.85	15.51	15.78
SD	2.27	1.58	1.49

**Figure 11 : Mean Well-being of Group B in Assessments I, II and III**



**Table 17: Significant Difference in Well-being of Group B in Assessments I, II and III**

Source of Variance	Sum of Squares	df	Mean Square	F	P
<b>Between:</b>	18.770	2	9.385	2.853	0.062
<b>Within:</b>	394.776	120	3.290		
<b>Total:</b>	413.546	122			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Well-being of Group B in Assessment I, II and III. Observing from the P value,  $0.062 < 0.05^*$  it can be noted that it is not statistically significant at any levels, hence the null hypothesis, “ There is no relationship between weight reduction and well-being in the sample ” is accepted. A study on Associations of Weight-Based Teasing and Emotional Well-being Among Adolescents by Eisenberg and Neumark-Sztaine. Of the eligible students, 81.5% participated; 30.0% of adolescent girls and 24.7% of adolescent boys were teased by peers, and 28.7% of adolescent girls and 16.1% of adolescent boys were teased by family members.

Approximately 14.6% of adolescent girls and 9.6% of adolescent boys reported teasing from both of these sources. Teasing about body weight was consistently associated with low body satisfaction, low self-esteem, high depressive symptoms, and thinking about and attempting suicide, even after controlling for actual body weight. These associations held for adolescent boys and girls, across racial, ethnic, and weight groups. Furthermore, teasing from 2 sources was associated with a higher prevalence of emotional health problems than either teasing from a single source or no teasing.

**Table 18 : Body Weight of the Participants of Group A and B in Assessment III**

	Group A		Group B	
	Assessment III		Assessment III	
<b>Weight</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
53-57	17	41	18	44
58-62	10	24	8	20
63-67	5	12	10	24
68-72	6	15	4	10
73-77	3	7	1	2

Table 17 shows that in both group A and group B the maximum number of participants are from the weight group 53-57 (41% and 44%) respectively. The least number of participants are from the weight group 73-77 (7% and 2%). A study was conducted by Williams, Geoffrey, Virginia, Freedman, Zachary, Ryan, Richard, Deci and Edward on Motivational predictors of weight loss and weight-loss maintenance. The study tested the theory of motivation with 128 patients in a 6-month, very-low-calorie weight-loss program with a 23-month follow-up. Analyses confirmed the predictions that (a) participants whose motivation for weight loss was more

autonomous would attend the program more regularly, lose more weight during the program, and evidence greater maintained weight loss at follow-up.

**Table 19 : Significant Difference between the Body Weight of Group A and Group B in Assessment III**

<b>Source of Variance</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>P</b>
<b>Between:</b>	26.642	1	26.642	0.827	0.366
<b>Within:</b>	2,576.900	80	32.211		
<b>Total:</b>	2,603.542	81			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Body Weight of Group A and Group B in Assessment III. Observing from the P value,  $0.366 < 0.05$  it can be noted that it is not statistically significant at any levels, hence the null hypothesis, “ There is no effect of exercise and diet on weight reduction in the sample ” is accepted.

**Table 20 : Well-being of the Participants of Group A and B in Assessment III**

	<b>Group A</b>		<b>Group B</b>	
	Assessment III		Assessment III	
<b>Well-being</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Very Low	0	0	0	0
Low	0	0	0	0
Moderate	16	39	18	44
High	20	49	23	56
Very High	5	12	0	0

Table 19 shows the difference in well-being between the two groups. The group A (49%) and group B (56%) had the maximum participants in the high category. The group B had no participants in very low, low and very high category (0%) , group A had no participants in very low, low category and a few participants in the very high category (12%). A study was conducted by James , Rippe, Janet, Stacey, Kline, Kimberly,Damitz, Kreidieh and Freedson on Improved Psychological Well-Being, Quality of Life, and Health Practices in Moderately Overweight Women Participating in a 12-Week Structured Weight Loss Program. The study revealed that practical weight loss practices such as increased activity, self-selected hypo caloric diet, and group support are effective for weight loss and yield significant health and psychological benefits in moderately obese females.

**Table 21 : Significant Difference in Well-being of Group A and Group B in Assessment III**

<b>Source of Variance</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>P</b>
<b>Between:</b>	15.516	1	15.516	3.034	0.085
<b>Within:</b>	409.160	80	5.12		
<b>Total:</b>	424.676	81			

The one way analysis of variance was carried out on the sample to find the difference in the Mean Well-being of Group A and Group B in Assessment III. Observing from the P value,  $0.085 < 0.001^*$  it can be noted that it is statistically significant , hence the null hypothesis, “ There is no effect of the intervention on the well-being of the sample ” is rejected.

**Table 22 : Correlation between Body Weight and Well-being of the Participants**

		<b>Body Weight</b>	<b>Well-being</b>
<b>Body Weight</b>	Pearson Correlation	1	-.278*
	Sig. (2-tailed)		.011
	N	82	82
<b>Well-being</b>	Pearson Correlation	-.278*	1
	Sig. (2-tailed)	.011	
	N	82	82

**\*Correlation is significant at the 0.05 level (2-tailed)**

Table 21 shows the correlation between Body Weight and Well-being. The correlation values reveal that the body weight and well-being are negatively correlated. This shows that when the body weight is more, there is lower well-being and vice versa in an individual. The study on Improved Psychological Well-Being, Quality of Life, and Health Practices in Moderately Overweight Women Participating in a 12-Week Structured Weight Loss Program was done by Price, Stacey, Hess and Kline. The intervention group lost significant body weight (kg) and body fat (%) compared to controls. Intervention subjects vs. controls achieved significant improvements in body cathexis and estimation of ability to achieve physical fitness. Various quality of life indices also improved in the intervention group compared to controls. Similarly, physical activity levels also improved significantly in the intervention group. The study given relates to the current study by showing similar results of improvement in the psychological well-being and quality of life.

**Table 23 : Correlation between Well-being and Body Type of the Participants**

		<b>Well-being</b>	<b>Body Type</b>
<b>Well-being</b>	Pearson Correlation	1	.230*
	Sig. (2-tailed)		.037
	N	82	82
<b>Body Type</b>	Pearson Correlation	.230*	1
	Sig. (2-tailed)	.037	
	N	82	82

**\*Correlation is significant at the 0.05 level (2-tailed)**

Table 22 indicates a significant positive correlation at 0.05 level between well-being and body type. Hence, the Null Hypothesis, “There is no relationship between body type ( one of the anthropometric variables) and well-being of the sample” is rejected. In the present study almost half of the participants had endomorphic body type and before intervention they were moderate in well-being. From this it can be inferred that body type does influence one's satisfaction eventually influencing well-being. The following study substantiates that body type influence body image satisfaction, especially in women. In a study done on, “Relationship Between Body Image Satisfaction and Psychological Well-Being: The Impact of Africentric Values”, findings revealed that significant positive relationship between body image satisfaction and psychological well-being (Dotse, 2015).

**Table 24 : Correlation between Well-being and Level of Activity of the Participants**

		<b>Well-being</b>	<b>Level of Activity</b>
<b>Well-being</b>	Pearson Correlation	1	.091
	Sig. (2-tailed)		.415
	N	82	82
<b>Level of Activity</b>	Pearson Correlation	.091	1
	Sig. (2-tailed)	.415	
	N	82	82

There seem to be no correlation between well-being and level of activity of the participants of the study. Hence, the Null Hypothesis, “There is no relationship between level of activity ( one of the anthropometric variables) and well-being of the sample” is accepted. As the participants were college students, they may not find sufficient time for activities which they enjoy. It could also be observed that a sedentary life style was reported by majority of the participants.

## Summary and Conclusion

The study on “Autosuggestion as a Mediator in Weight Management in Female College Students” was carried out with the following objectives:

- To understand the effect of intervention involving exercise, diet and autosuggestion in weight management in the sample, who are the selected female college students.
- To help the sample reduce and maintain healthy body weight.
- To find an effective weight management technique.
- To evaluate the well-being before and after intervention.

From Avinashilingam Institute for Home Science and Higher Education for Women (Faculty of Engineering), Coimbatore, PSGR Krishnammal College, Peelamedu, Coimbatore, Kongunadu Arts and Science College, G.N Mills, Coimbatore, Priya Ladies Hostel, Coimbatore, Shri Shivani Ladies Hostel, Coimbatore, 82 female college students were selected for the study. Case Study Schedule (Annexure 1) was used to collect the anthropometric data of the participants. WHO (Five) Well-Being Index (Annexure 2) was used to collect the required data of the participants. Adult Consent Forms (Annexure 3) was distributed to the college students to obtain their consent to participate in the action research.

### Conclusion

- Forty seven percentage of the sample were in the age group of 20-22 years.
- Forty four percentage of the participants were in the weight category of 55-59 kgs.
- More than half of the participants were Post Graduates.
- There were equal number of vegetarians and non-vegetarians.
- Nearly half of the participants were endomorphs.
- Almost half of the participants had sedentary life style.
- There was no significant difference in mean body weight of Group A in Assessment I, II and III. Hence the Null Hypothesis, “Autosuggestion does not moderate in weight reduction in the sample” is accepted. Nevertheless, though negligible, there was sustained weight reduction in three assessments.

- There was no significant difference in mean body weight of Group B in Assessment I, II and III. Hence the Null Hypothesis, “There is no effect of exercise and diet on weight reduction in the sample” is accepted. Nevertheless, though negligible, there was sustained weight reduction in three assessments.
- There was a significant difference in mean well-being of Group A in Assessment I, II and III. Hence the Null Hypothesis, “There is no effect of the intervention on the well-being of the sample” is rejected.
- There was a significant difference in mean well-being of Group B in Assessment I, II and III. Hence the Null Hypothesis, “There is no relationship between weight reduction and well-being in the sample” is rejected.
- There was a significant negative correlation between body weight and well-being of the participants. Hence the Null Hypothesis, “There is no relationship between weight management and well-being in the sample” is rejected.
- There was a significant positive correlation between body type and well-being of the participants. Hence, the Null Hypothesis, “There is no relationship between body type ( one of the anthropometric variables) and well-being of the sample” is rejected.
- There was no significant correlation between level of activity and well-being of the participants. Hence, the Null Hypothesis, “There is no relationship between level of activity ( one of the anthropometric variables) and well-being of the sample” is accepted.

### **Limitations**

- A larger sample could not be taken for the study as it was difficult to obtain consent from college students.
- The time available to do the project was limited.

### **Recommendations**

- Proper education on the health risks involved in overweight, healthy physical activity and food habits can be given to school and college students.
- Health psychologists can offer their services to schools and colleges.
- Weight Management Programmes coupled with psychological counselling could be offered in schools and colleges.

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## ANNEXURE 1

### Adult Consent Form

#### Consent to participate in a research study

Conducted by the Department of Psychology, Avinashilingam University for Women,  
Coimbatore.

**Title of project:** “Autosuggestion as a Mediator in Weight Management of Female College Students”

**Researchers:** Ms.S.Sneha Prabha II M.Sc. Counselling Psychology student,  
Avinashilingam University for Women, Coimbatore.

**Research Guide:** Dr. Preetha Menon, Assistant Professor, Dept. of Psychology,  
Avinashilingam University for Women, Coimbatore. I have been asked to participate  
in a research study conducted by Ms.S.Sneha Prabha (8870010551) and Dr. Preetha  
Menon (ph. 9894896882).

#### **Introduction**

In this consent form, I will learn about the proposed research and my rights, if I agree to participate in it. I will read this form carefully and, if I agree to be interviewed, I will sign this form.

#### **Purpose**

I understand that Ms.S.Sneha Prabha, and Dr. Preetha Menon propose to study the  
“Autosuggestion as a Mediator in Weight Management of Female College Students”..

#### **Duration and location of study**

If I agree to undergo the interview, it will take place at my own college or hostel and will take about 20 minutes.

### **Procedure**

I If I agree to be interviewed, it will be along with other participants by answering the questionnaires and following the scheduled program. I understand that my name will not be disclosed in any of the report written about this research.

### **Right to refuse and to withdraw**

I understand that participation in this research is voluntary. I may agree for an interview or I may decline an interview. If I disagree for an interview, I may refuse to answer any question and I may end the interview at any time.

### **Offer to answer any question**

If I have any questions about the study, I may call any of the listed researchers: Ms.S.Snega Prabha (8870010551). If I have any question about my rights as a participant, I may call the research guide Dr. Preetha Menon (Phone Number- 9894896882).

I agree to participate in this research.

Name \_\_\_\_\_ Date \_\_\_\_\_

**Researcher's statement:** I have explained the nature and purpose of this research. I agree to answer any question regarding the rights of the participant.

Name \_\_\_\_\_ Date \_\_\_\_\_

**ANNEXURE 2**  
**CASE STUDY SCHEDULE**

Name :

Age :

Course :

College :

Email Id :

Mobile no : \_\_\_\_\_

Weight :

Height :

Diet pattern :

- Veg / Non.Veg .
- No.of Meals/day -
- Type of meal : Traditional/Fast food
- No.of Snacks/day -

Level of activity/day : \_\_\_\_\_

History of sports / marathon / athletics ( please specify if any ) \_\_\_\_\_

Any health issues ( Specify the condition ) \_\_\_\_\_

**To be filled in by the researcher:**

BMI \_\_\_\_\_

Body type : \_\_\_\_\_ a. Endomorph b. Mesomorph c. Ectomorph

## ANNEXURE 3

### WHO (FIVE) WELL-BEING INDEX (1998 VERSION)

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.

Notice that higher numbers mean better well-being.

**Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3 in the upper right corner.**

	Over the last two weeks	All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1	I have felt cheerful and in good spirits	5	4	3	2	1	0
2	I have felt calm and relaxed	5	4	3	2	1	0
3	I have felt active and vigorous	5	4	3	2	1	0
4	I woke up feeling fresh and rested	5	4	3	2	1	0
5	My daily life has been filled with things that interest me	5	4	3	2	1	0

**Scoring:**

The raw score is calculated by totalling the figures of the five answers. The raw score ranges from 0 to 25, 0 representing worst possible and 25 representing best possible quality of life.

To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. A percentage score of 0 represents worst possible, whereas a score of 100 represents best possible quality of life.

**Interpretation:**

It is recommended to administer the Major Depression (ICD-10) Inventory if the raw score is below 13 or if the patient has answered 0 to 1 to any of the five items. A score below 13 indicates poor wellbeing and is an indication for testing for depression under ICD-10.

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