

Research Paper

Gender Differences in the Relationship Between Self-Esteem and BMI in the Workplace

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ABSTRACT

In contemporary society, the psychological dimensions of individuals play a pivotal role alongside their personalities. Self-esteem, a prominent psychological attribute, holds significance in understanding an individual's actions, thoughts, and behavior. Our society often attaches stigmas to diverse body types, creating disparities in societal acceptance. The consequential criticisms, particularly related to body weight, exert a substantial influence on both mental and physical well-being. This study, titled "An Examination of Gender Disparities in the Relationship between Self-Esteem and BMI in the Workplace," focuses on exploring and establishing insights into this dynamic. To assess self-esteem, we employed the Self-esteem Scale developed by Dr. Santosh Dhar and Dr. Upinder Dhar. Concurrently, body mass index (BMI) was calculated based on standardized measurements of weight and height recorded for each participant. Comparative analysis among different groups utilized statistical measures such as frequency, percentage, mean, and standard deviation. The study involved 100 male subjects and 100 female subjects. The findings revealed that male subjects exhibited a higher level of self-esteem in comparison to their female counterparts. Additionally, individuals categorized as obese, according to BMI charts, demonstrated the highest levels of self-esteem. This trend was followed by overweight subjects, normal-weight individuals, and those classified as underweight, who exhibited the lowest self-esteem within the entire cohort. Furthermore, the study indicated that married individuals tended to have higher self-esteem compared to unmarried counterparts.

Keywords: *Gender Differences, Self-esteem, Body Mass Index, Body weight, Body Height, Workplace Environment*

This study aims to understand whether the body weight of an individual has any impact on their self-esteem. This study also aims to see if self-esteem, especially the kind that stems from one's body weight, has an influence on their gender, and marital status. Self-esteem refers to the set of beliefs which individuals hold for themselves that includes the overall self-concept. Individuals' weight or the body mass index has the particular power to make them feel, and believe, that they are beautiful and an accepted part of the society.

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As important as the **personality** and **behaviour** of the individual is for the development of the person, **self-esteem** is also an important factor which plays a huge role in shaping the personality. Body image of the individual is one of the main aspects which can affect one's self-esteem, well-being, self-confidence, self-worth and many other attributes.

Physical appearance is one of the most prominent attributes that is noticed by the others in social settings. Workplace is one of the main social settings in which the individual spends most of their time and socializes on a formal and informal level. Physical appearance has become a very important part of the western societies. Body image is not only a physical construct but also deals with an individual's way of conduct which is totally dependent on his/her self-esteem. The tendency to associate physical attractiveness with positive qualities has become a stereotype which is slowly changing in the mind-set of today's generation. An individual's self-esteem gets a boost when the individual is recognised as attractive or beautiful which will be based on the physical appearance of the person. At the same time is being underweight or overweight also taken into consideration? This research is a genuine effort to understand that practically.

The motive of the research is to find if one's weight promotes a positive or negative perception of oneself. It is to see if it has a major effect on their self-image which in turn affects their self-esteem. Does the society believe in the stereotypes which equate a person's body weight to their physical beauty and treat them as facts?

Self-esteem basically talks about the '**self**', but the perception which is created is also somehow based on how they are treated and accepted in the various social settings by the other people around them and how they treat others at the same time.

The physical traits were not as important in earlier times as they are now. In today's world, it acts like a bridge for people to have a socially distinct place for themselves, which is influenced by a number of factors such as media, social settings etc.

Studies show that there is correlation between self-esteem and the BMI. This impact has a greater difference with respect to the gender male and female. This is because in the previous researches, the main focus is on the female population as the society had already set standards of beauty for them. Thus, questions about weight and self-esteem and body image were felt to be more relevant for them. The male counterparts don't get the required attention while for females' physical appearance is supposed to be all important.

1.1 Why the Workplace Environment?

This research shows the correlation between **Body Mass Index (BMI)** and **Self-Esteem of Individuals in a Workplace Environment**.

Famous author **Annie Dillard** said, "How we spend our day is, how we spend our lives." For many of us, a considerable amount of our day is spent at work; factually an average person spends 90,000 hours at work in their whole lifetime which shows that an individual's job and workplace can have a huge impact on the person himself/herself.

Certain situations can be observed in the workplace at several levels which affect the employees of the particular company. The hiring process of a company may include the preference of body type as their beliefs about a person's effectiveness may be entrenched in preconceived notions; the tall person is favoured over someone who is short or fat as fat

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people are stereotyped to have a lazy personality. People assume their body image as negative or positive. If they have a positive perception regarding their body, it might result in negative behaviour towards a person who doesn't fit into the so called 'normal body' type.

An employee may face several kinds of discriminations regarding their body weight in their workplace. A person might be perceived as too fat or too thin for a particular job and disqualified for that position. This type of discrimination is experienced more by the women in the workforce as they are associated with the concept of being thin is to be beautiful. The employees face various biases due to their weight. This might encourage a negative self image and because of the discrimination or the criticism they start doubting their abilities and skills.

There have been several theories based on the personality in relation with the body type. These theories are criticized for being very general, but the association of certain traits with body type is very common between people. Mentioning one of the most profound theories based on the personalities associating it with body type and temperaments.

This theory focused on the body weight and self-esteem of the workplace population. There are different theories related to personalities and personality of an individual plays a very important role in the development of self-esteem. One of the most profound theories of personality was given by **William Herbert Sheldon** and called **Sheldon's Personality Theory**. This particular theory talked about personalities based on the body types and their relation to human temperaments. These traits and types can be seen as an influence at the workplace setting as well. He called these three categories **somatotypes**.

Endomorph Personality

This type is also known as viscerotonic. Their characteristics traits include being relaxed, tolerant, fun loving and humorous, even tempered, affectionate, socially comfortable and possessing great love for food. Physically they are round in shape, have narrow shoulders and a wide lower body shaped like a pear. They have extra fat on their bodies - specifically on their arms and legs. They are very competitive in nature and love to take risks in different areas of life.

Ectomorph Personality

This category is totally opposite of Endomorphs. These people have narrow shoulders, thin limbs, less fat in the body, narrow faces and chests. They eat as much as an endomorph but are very less likely to gain weight. The psychological traits which are associated with this personality type are self- conscious, socially anxious, sensitive, artistic, thoughtful, quiet, fragile, restrained, non- assertive and private.

Monomorphic Personality

These people fall in between the endomorphs and the ectomorphs. They are likely to have a body which is regarded as a desirable body. They have a strong muscular build with broad shoulders and narrow waists. Their arms and legs have little excess fat just like the rest of the body. Psychologically they are adventurous, assertive, vigorous, combative and courageous.

The above theory has been criticised by many psychologists and specialists in the field but these observations turned out to be true. These body features are noticed by society and are associated with the psychological traits of an individual. These traits are also often observed in the work place and related to the employee's ability to do work and this might affect the employee's self-esteem thereby affecting the individual's overall personality.

1.2 Self-esteem and Definitions

Self-esteem is one of the most widely used terms in psychology. It is the part of an umbrella word 'self-concept'. The term 'self-esteem' has evolved on the basis of the correlation of self-image and self-conscience.

It was pioneered by a renowned philosopher and psychologist **William James (1892)**. He identified two dimensions of self, which he put in the hierarchy as is mentioned here: the process of knowing something is called '**I-self**' and the knowledge about self is called '**Me-Self**'. I-self is observation and storage of information which is then categorised into three branches of knowledge which constitutes Me-self. Those three are material self, social self, and spiritual self (Laureate Higher Edu. Group). Self-esteem needs are focused on related aspects of self-esteem such as respect, status, recognition, sense of accomplishment, and prestige (McLeod, 2017).

Sedikides & Spencer (2007) gave 'self' an important part in motivation, cognition, and social identity.

Adler & Stewart (2004) refer to self-esteem, "To a person's overall sense of his or her value or worth. It can be considered a sort of measure of how much a person values, approves of, appreciates, prizes, or likes him or herself." (HELP Uni, 2004)

Self-esteem is regarded as the soul component of self-concept, which **Rosenberg** defines as "totality of the individual's thoughts and feelings with reference to himself as an object."

Blascovich & Tomaka (1991) refer to Self Esteem as an individual's sense of his or her value or worth, or the extent to which a person values, approves of, appreciates, prizes, or likes him or herself. (library, 2020)

Smith and Mackie (2007) defined it by saying, "The self-concept is what we think about the self; self-esteem is the positive or negative evaluations of the self, as in how we feel about it." (Rizvi Edu, 2020)

Self-esteem is what a person thinks and feels of him/her. Perhaps the most basic definition of self-esteem from Webster's dictionary is – "**self-esteem is satisfaction with oneself**" or "**one's good opinion of one's dignity or worth**"

Near synonyms of self-esteem are self-worth, self-integrity, self-respect, and self-regard. In the past 20 years, psychologists have constantly regarded self-esteem as an important psychological factor for quality of life. The social self plays a very important role in self-esteem. Self-esteem is the overall concept about oneself. Self-esteem includes varieties of beliefs, faiths, opinions, perceptions, emotions, behaviours and values. Feeling of worth for oneself is called self-worth. It is truly very important to develop 'self-importance' from the very beginning because it influences the overall personality of an individual's whole life. Self-esteem is not fixed; it is malleable and measurable and can be tested and improved.

1.3 Self-Esteem and Related Theories

Abraham Maslow and Self Esteem:

Abraham Maslow was an American Psychologist who created the **Maslow's Hierarchy of Needs**. This is a psychological theory which talks about various innate human needs in priority, culminating into **Self Actualization**.

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Abraham Maslow's theory states that the lower needs in the pyramid first must be satisfied before the higher needs are paid attention to. Once, the lower needs are satisfied, the individual can attain the higher needs as, after every need from the lower order are met, there is another set of needs that arises until the final need for Self-Actualization is achieved and in turn influences behavior and personality of the individual.

Low self-esteem negatively impacts the person. There is a constant need that they get accepted and recognition in the society. However, until they accept and respect themselves, their self-esteem will not improve. Psychological implications such as anxiety or depression might become a distraction for the person from obtaining high self-esteem.

The 4th stage of the Pyramid is the Self Esteem need. It is achieved after the primary needs are achieved first. After a person has achieved those needs, people develop a need of getting recognition, importance and respect for themselves from others which leads to the need of having self-respect and self-esteem. Esteem satisfies the typical human desire of being accepted and valued by others. Sometimes people engage in a profession or hobby to gain recognition from their close associates such as a child doing his homework to get recognition and acceptance from the parents. Doing these various activities gives that person a sense of value for themselves. People who are unable to get the recognition often have an inferiority complex. They have a dire need of getting respect from others and also feel the need to seek fame or glory. Anxiety and Depression could also distract the person from achieving a higher level of Self-esteem.

Maslow, in his book, has given a mention of two versions of esteem needs viz. "lower" and "higher" versions. The Lower version of self-esteem needs is described as the need for respect, recognition, status, fame, prestige, etc which an individual needs from others. While the Higher version talks about the need for self-respect, strength, competence, competence, independence for themselves (Wikimili, 2020). The higher version is based on guidelines while the lower version has no guidelines. The "hierarchies are interrelated rather than sharply separated", i.e. both of these levels are not separate but closely related.

Stanley Coopersmith's Self-Esteem Theory

Stanley Coopersmith was an American Psychologist who worked on Personality psychology. He was known for his research in the fields of adult and child personality. He also gave a Theory on Self Esteem and also made a Coopersmith Self Esteem Scale for children. His scale was based on the belief that self-esteem is seen very early in children based on the foundations of trust, love, and security. These evolve through negative and positive evaluations as life progresses.

Stanley Coopersmith's self-evaluation scale measures self-esteem in children and then goes on to assess the Parent's child rearing practices for those children with high self-esteem (Antecedents of Self Esteem, 1967)

1.4 Theories on the function of Self Esteem

Self-Determination Theory

Self-Determination Theory says that a man is born with an intrinsic motivation to explore and master his surroundings. True high self-esteem is reported when the basic psychological needs of life are in balance (Ryan and Deci, 2004). When the environment or social conditions provide nurture, support and opportunity to fulfil these primary needs, personal well-being is enhanced.

Terror Management Theory

In Terror Management Theory self-esteem is seen as a culturally based construction derived from integrating specific contingencies valued by society into one's own worldview. The internalization of cultural values is a key factor in this Theory (Positive Psychology,2020). This theory says that high self-esteem promotes positive affect and personal growth and coping against different psychological problems becomes much easier, while low self-esteem could buffer against anxiety and other problems, it reduces defence mechanisms.

Attachment Theory

Attachment Theory states that chances of survival in any condition are improved by the way of child's strong attachment to their caregiver. Securely attached children look to maintain contact with their caregiver and even if they are apart, they become happy when they are reunited, these kind of relationship indicate a supportive and affective relationship.

Now there is integration between Attachment Theory and Terror Management Theory which hypothesizes that self-esteem develops in children when they realize that anxiety reducing as their needs are being met by the caregiver, leading to the evolution of their worldview. While when the self-esteem is weak, the same anxiety can instigate defensive behaviour in their environment.

Self-Determination Theory

Self-Determination Theory states that intrinsic motivation which is the key for self-esteem appears in childhood before any awareness of topics like death, before language is taught, in evolution of life, before self-consciousness has developed in the child (Ryan and Deci, 2004).

Sociometer Theory

Sociometer Theory says that a minimum level of social belonging is important for humans to survive with self-esteem functioning as a sociometer. The ability to effectively determine other reaction affecting an individual personally, emotionally and their status aids the maintenance of meaningful relationships (Abo Rokba , Mohammed Zaki, 2013). If an individual is excluded from any relationships, it affects the individual self-esteem negatively. An individual's sociometer can also indicate complexity of being concerned about their status with groups that's considered not worthwhile, harming the self-esteem.

1.5 Role of self-esteem

As the section above mentioned what self-esteem is, it's related to individual self, and how an individual appreciates oneself in different aspects like –qualities, silks, achievements, confidence, and other traits which make the person as a whole.

It is right now a very important quality to maintain and also the thing that is not given its due importance. **High** self-esteem can help counter a number of life situations and problems. These kinds of people are more positive about their own self and are confident about their personal values, growth and strengths. It also affects your mental health. People who have **low** self-esteem lack confidence in a group as well as at personal level. They are sceptical about their looks, work, and talent and feel inferior to others. Esteem of the people around us is also found to be very important more than the self-esteem to achieve- **self-actualization**, it works as an aid for inner respect.

Individuals with a higher self-esteem are more positive in nature, well-grounded in their thinking, actions. They have better understanding of their principles and values. Hence, they

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can defend themselves and feel more confident in themselves. Their positive way of approaching every work leads them to trust their own instincts.

Characteristics of people with high self-esteem

People with high self-esteem have certain characteristics which are generally observed to be as: open to criticism, acknowledge their own mistakes, they are comfortable in receiving and giving compliments.

They are not afraid to show their curiosity, ideas, different experiences and opportunities. They also enjoy the fun and humorous part of their lives and are comfortable with social and positive assertiveness (Branden 1992).

- Commitment shown to worker, life partner, and children are positively linked to self-esteem (**Reitzes and Mutran, 1994**)
- Worker identity is positively related to self-esteem (**Reitzes and Mutran, 2006**)
- Higher education and high income are related to high self-esteem (**Reitzes and Mutran, 2006**)
- Emotional stability and mature personality are related to high self-esteem (**Van Soest et al, 2018**)
- Self- efficacy and fulfilment has a positive relation with self-esteem. (**Chang and Suttikun, 2017**).

Characteristics of people with low self-esteem

Low self-esteem has got more attention in positive psychology than high self-esteem. People with low self-esteem are quiet, socially awkward, scared of social situations, and not very comfortable in public interactions because of feelings of shame or fear of bullying. They are sensitive to criticism and feel jealous and envious of others. Physically, they feel tired and face difficulty in sleeping.

- Being married or being old is linked to low self-esteem (**Reitzes and Mutran, 2006**)
- Low economic status and low self-esteem are related (**Von Soest, Wagner, Hansen, and Gerstorf, 2008**).
- Being alone or not married is linked to low self-esteem (**Van Soest et al, 2018**).

Factors believed to influence self-esteem

Childhood: During childhood, an individual's personality starts forming for becoming a dominant part of his/her life. The social environment and the family play a major role in developing self-esteem. Negative influence and surroundings may have a bad impact on one's self-esteem.

Society: Society is the world around us and we are greatly influenced by the people and interactions we have socially. The societal expectations and the fulfilment of these expectations play a contributing factor in developing self-esteem. These expectations may be regarding the jobs, marriage, political opinions, gender roles etc.

Media: The constant source of connection media is believed to have a great impact on the life of an individual. Public is exposed to a variety of expectations and ideas that influence one's mind and the person sometimes is forced to fulfil the unnecessary self-expectations. The media has also developed so called beauty standards which sometimes overburden the female population. People often forget the fact that the media is influenced by the models and the high class actors.

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Friends and Family: The major part of anyone's life is their family and friends. Their good influence and support tends to result in high self-esteem in the individuals. At the same time when the family and friends are discouraging and negative, that takes a toll on the individual's self-esteem.

Work Environment: An individual spends majority of their time at work, hence, the working environment can influence every aspect of our life from personality to self-esteem. If a person has a stressful or very demanding working position, it could help contribute to a low self-esteem. While working in a more positive and encouraging productive environment can boost your self-esteem and can help you grow stronger.

Self-Beliefs: Human beings are social being hence, they talk, share everything to each other which also include likes, dislikes and other opinions about other individuals. If a person has a low self-esteem, the person might take all the opinions and might focus only on the negative aspect and feel that he not worthy. While a person with positive self-esteem, might take both opinion and way which of them are actually true and might work on it with a positive approach.

Academic Achievements: Stanley Coopersmith stated that self-esteem develops during early childhood. The stage from Childhood to Adulthood is filled with various academic challenges and it can bring about a great affect in the small children and even go on to change their whole personality and what they become as adults.

A person with low self-esteem might get greatly affected with scoring low in their examinations and become introvert and feel the sense of unworthiness. On the other hand, a high self-esteem might choose to work even harder to improve their grades and work on different aspects which they might be weak without having unreasonable thoughts.

Accomplishments: Accomplishments are one of the very important factor which influences Self-esteem. Any big or small accomplishments if shared and promoted by family or friends can help to increase self-esteem while if these are ignored, it can create a deep conflict in the minds of the individuals and create thoughts of low self-worth etc.

1.6 Body Mass Index

(National Heart, Lungs and Blood Institute)

Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. Body Mass Index (or BMI) is calculated as your weight (in kilograms) divided by the square of your height (in metre) or **BMI = Kg/M²**.

Classification on the basis of weight:

BMI Categories:

Underweight = <18.5

Normal weight = 18.5–24.9

Overweight = 25–29.9

Obesity =30.0 and above

The following tables show us the total ratio of overweight and underweight men and women in India with the states with the highest and the lowest rates. The data below also includes the ratio in Gujarat state in specific. The data is part of the National Health Survey 2007.

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Table 1.1 India's total percentage of underweight male population

States	Percentage	Rank of City
Tripura	36.3%	1
Punjab	2.2%	28
Gujarat	26.2%	11
India's total percentage of underweight male population is 26.1%		

Table 1.2 India's total percentage of underweight female population

States	Percentage	Rank of City
Bihar	41%	1
Punjab	2.0%	28
Gujarat	30.3%	12
India's total percentage of underweight female population is 31%		

Table 1.3 India's total percentage of overweight male population

States	Percentage	Rank of City
Delhi	45.5%	1
Tripura	5.1%	30
Gujarat	15.4%	10
India's total percentage of overweight male population is 12%		

Table 1.4 India's total percentage of overweight female population

States	Percentage	Rank of City
Delhi	49.8%	1
Tripura	5.2%	29
Gujarat	17.7%	10
India's total percentage of overweight female population is 16%		

1.7 Role of Body Mass Index

The perception about one's own body is based on the thoughts and the feelings how we feel about the way we look. Fear of judgement can negatively affect our view about ourselves. Poor perception may rise from the negative thoughts an individual holds, same ways healthy thoughts are related to healthy perception. Body image is a major factor in self-esteem; it is the way you think and feel about yourself as a person. Psychological issues are associated with individual's height, weight loss, and weight gain and it's very difficult to elaborate this fact in Western Culture.

Self-esteem can emerge as a prominent mediator when associated with height. Tallness and shortness of a person is often related to their physical strength and ability to perform physical task. Being very short or very tall is often tagged along by the stereotypes related to height perception.

It is a great recommendation to watch what you eat and exercise for a healthy weight and body. Majority of adults between the ages of 20-50 years are likely to gain 1-2 pounds each year. Stopping and preventing the increase in weight is very necessary. There is great importance of healthy weight for the welfare of the physical and psychological aspect of one's life. It lowers the risk of many diseases and illnesses. The waist size and the gained weight since the mid 20's have a great and serious health implication in future. They can result into a number of diseases and psychological illnesses like cardiovascular diseases, heart attack, stroke, diabetes, cancer, arthritis, gallstones, asthma, infertility, malnutrition, decrease in

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immunity, irregular menstrual cycle; the person might suffer from anxiety and depression due to being overweight or underweight. In women, weight gain after menopause can result in high chances of postmenopausal breast cancer.

Normal weight: Normal or healthy weight is when the BMI (Body Mass Index) of a person's height and weight is 18.5–24.9.

Underweight: A person is considered underweight when the BMI of a person is equal to or less than 18.5.

Risk of being Underweight:

As much as diseases and health problems are primarily supposed to be concerned with overweight and obese people, even Underweight people have their share of problems which they might have to face. Some of the diseases and health problems which can cause serious problems to underweight people are as follows:

- 1) **Osteoporosis:** Osteoporosis is a disease seen in females where the bones are brittle and prone to breaking. According to a 2016 study, being underweight can increase the risk of this disease.
- 2) **Skin and hair problems:** Underweight people often display physical symptoms of thinning skin and dry skin as they are not getting enough nutrients in their daily diet.
- 3) **Getting sick frequently:** It is seen that an individual who is underweight and is not able to get the important nutrients, they may become sick frequently and many common illnesses such as cold could last longer in them.
- 4) **Anaemia:** It is seen that underweight people are more prone to have low blood level counts, known as Anaemia which is a serious problem as it causes headaches, fatigue and headaches.
- 5) **Irregular periods:** Underweight women may experience irregular periods. First period or the onset of the menstruation cycle is delayed or absent and that can further cause infertility.
- 6) **Premature births:** A research published in An International Journal of Obstetrics & Gynaecology, stated that a pregnant woman who is underweight is at a much higher risk for Preterm labour, i.e. having a baby before 37 weeks.

Overweight: A person's weight is considered overweight when the BMI (Body Mass Index) is 25-29.9

Obesity: The person is considered obese when their BMI is 30.0 and above.

Risk of being overweight and obese:

We all know that obesity can cause major health problems and the individual is at higher risk of diseases.

- 1) **Type 2 Diabetes:** Type 2 diabetes is a type of health problem that occurs when an individual's blood sugar rate is higher than normal. It could lead to other major health problems such as heart diseases, nerve damage, stroke etc. An overweight person is more prone to Type 2 Diabetes.
- 2) **Heart disease:** Heart related diseases are more frequently seen in people with obesity as with time, fatty deposits may accumulate in the arteries that supply blood to the heart. People with obesity have higher levels of fatty acids and other low-density lipoprotein (LDL) cholesterol, and blood sugar level which could all contribute to

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heart disease (Healthline,2020). It becomes a very risky situation for individuals who have obesity.

- 3) **Sleep apnea:** Sleep apnea is a type of disorder where a person may momentarily stop breathing during sleep. Obese people are more at risk as they tend to have more fat stored around their neck, which makes the airway to shrink and could cause snoring and difficulty in breathing at night.
- 4) **High blood pressure:** This is one of the most common health problems that most of the obese people go through. It occurs because extra fat tissues require more oxygen and nutrients and more blood vessels that will circulate blood to these extra tissues. Hence, your heart pumps more blood to reach those tissues and that put extra pressure on the walls of arteries and causes High Blood Pressure.
- 5) **Depression:** Many people are affected by depression worldwide and there have been studies that show a major correlation between obesity and depression. Obese people often experience discrimination and have low self-esteem which leads to lack of self-worth and anger.
- 6) **Cancer:** Obese people tend to have an increased risk for certain types of cancer including breast, colon, gallbladder, and kidney as well as cancer of uterus, prostate, cervix and ovaries etc.

The Lancet estimated that about 28,000 new cases of cancer in men and 72,000 in women in 2012 were associated with being overweight or having obesity in the United States.

Factors influencing Body Mass Index

Diet: It plays an important role as what an individual eats has an undeniably great influence on the weight of the individual. Balanced diet accompanied with exercise helps in maintaining healthy weight. Lack of availability of food of certain important food groups might cause bad health and decrease in weight whereas when an individual is involved in unhealthy eating habits and consumes junk food and high sugar content, they have a high chance of being overweight or obese.

Genes: Genetic material as a factor has a prominent role in an individual's weight. People are predisposed to gain or lose weight due to the genes of the parents which tend to favour either gaining or losing weight. When an individual is predisposed to the gain fat genetically, there is a high chance to be exposed to many serious illnesses, which is why it is necessary to check the complications and adapt accordingly. Though the genes don't wholly decide the weight of an individual; balanced diet, exercising, avoidance of unhealthy habits can prevent the activation genetic tendencies.

Physical activities: When we talk about the importance of a balanced diet, it is necessary that we also include the importance of physical activities like yoga, aerobic exercises, dancing, swimming etc. They help in maintaining or achieving the healthy weight.

Sleep: Many studies have suggested that the amount of sleep one gets has an effect on the weight. Adults and children who get less sleep tend to weigh more compared to those who get proper and sound sleep.

These are the brief topics which play roles in influencing BMI; many other factors also have a role like family, age, gender, environment and overall health.

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1.8 Relation between self-esteem and Body Mass Index

Self-esteem is a central concept: it changes how people feel and judge themselves. Positive self-esteem is important in order to have a healthy personality.

Physical appearance is looked at or observed by any person initially to form the first impression of the person they meet. Negative stereotypes about the body size have an impact on these first thoughts while forming the impression.

The correct weight plays a great role in feeling happy, content, and having a good perspective about oneself. Hormones produced by the body help in reducing stress and stimulating good feelings thereby looking after one's emotional health. The inflammatory chemicals produced from the extra body fat negatively impacts feel-good substances and increases the stress level. Obesity or being underweight makes one susceptible to depression and anxiety problems.

Individual's ability to build confidence and to carry themselves is natural and it is altered with respect to the situations they are facing. Positive hold on the perception about oneself is directly related to high self-esteem. Nonetheless many studies show that there are a lot of people who have comparatively low self-esteem and self-worth (Branden, 2010).

The negative aspect starts developing in an individual's mind because of various factors including social, economic and mental aspects; but the other prominent factor is the influence of other people and the criticisms.

Physical features and the overall perception of one's own self are focused on the most since decades for there have been particular notions in existence which are about being 'good and beautiful'. The weights of the individuals play an important role in determining if they consider themselves beautiful and acceptable or not.

In the present times, an individual's physical and mental health is of great importance. An average person spends his or her maximum time in their work environment. Hence it can be said that an adult person's mental health is shaped and influenced by the workplace situations. Self-perception that the individual holds for himself or herself has a great role in influencing his/her behaviour in multiple circumstances. Self-perception includes a person's qualifications, educational background, confidence, self-belief, and self-image which shape the overall appearance of the individual. The appearance is mostly influenced by the features, weight, height and the figure of the body which gives a sense of satisfaction to the person himself/herself. Positive self-perception leads to high self-esteem hence favourable results regarding working or any task.

Weight discrimination has a very negative impact on the individuals who are targeted. The weight-shaming not only includes fat-shaming but also skinny-shaming. Several kinds of discriminations are faced due to the body size one has. The discrimination which is based on the size of the body is called Sizeism (size discrimination) which can be based on the height and the weight of the individual. Sizeism is the notion that people hold and judge others on the basis of their body size. Body-shaming has a negative impact on the targeted person's mental as well as physical health. As the discrimination against fat people prevails it equally prevails for the people who are skinny or thin. Society has created a 'normal body' image which is the prejudice against the people who don't fit in this notion.

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Surprisingly, there are no laws regarding the size discrimination which is included in highly prevailed discriminations in the society. The positive outcome is there are several campaigns which are very popular and are seen to have favourable influence among the people regarding the body image and normalizing every body type and acceptance of all irrespective of their sizes.

Body weight of every individual directly or indirectly affects the person's self-esteem. There is a coexistence of underweight malnourished world and overweight and obese world. It is one of those things which is not seen in a positive way but rather can go on to harm the person emotionally as well as mentally. Underweight, Overweight and Obese are normal body images of the individual but it sometimes cause the individual to feel inferiority complex and can make them conscious of their environment. These body images are now proving to be a major threat to the growing population. The prevalence of obesity and undernourishment exists because of the factors like age, gender, social-economic status, environment etc. These come with a number of diseases irrespective of the body type of the body type such as Hyperthyroidism, Polycystic Ovarian Disease (PCOD) which is only seen in females, Diabetes etc.

There is existence of perceived discrimination regarding the body weight and it has reported the negative side effects on the psychology of an individual. Studies have shown when a person is mocked or discriminated on the basis of the body weight there are high chances of the person to indulge in binge eating (Phul, Moss-Racusin, and Schwartz, 2007) and refrain from doing physical activities like exercise because of the bias (Vartanian & Shaprow, 2008). Therefore weight can be associated with odd behavior and psychological problems such as anxiety, depression, and eating disorders. The individual who is already obese at the baseline level has 3 times higher risk of remaining obese (Sutin and Terracciono, 2013).

People are often observed to mock fat and lean people with the intention of giving them motivation regarding their weight to lead them to achieve a healthy weight. But this psychologically affects the individual who has been mocked.

With the low self-esteem due to the weight of oneself, a person might start feeling detached from the surroundings and feel he/she doesn't fit in anywhere, which can lead to depression in the long run.

When the self-esteem is harmed of an individual due to their weight might seek comfort in food and they end up adding more and more calories in their diet they get over indulging food. There are high chances that an individual can be severely affected by the comments on their weight they might develop an eating disorder like Anorexia nervosa, Binge eating etc. Anorexia Nervosa has high mortality rates if compared to any psychological disorders between 5%- 20% and people die because of this eventually.

Some most intriguing researches show the cruel reality of the society that because of the prevalence of the discrimination due to the body type individuals are less likely to get admissions in the prestigious colleges. They create an edge to their thinner peers for job opportunities. These people are less likely to accept themselves because these discriminations drain their self-esteem. Their chances to date or marry someone are less likely.

When a person feels low on esteem he/she becomes excessively self-indulgent. Good food makes us feel great and helps to get back to the happy mood, but actually the brain uses it as

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a defence mechanism due to the failure of dealing with one's own self. Slight effect on the weight can overall change the perspective of an individual.

There is factor of higher acceptability of thinness in most part of the societies, but skinny bodies are criticised and mocked upon as much as a fat body, these discrimination and mocking have detrimental effect on individual's self-esteem and confidence.

METHODOLOGY

3.1 Objectives

- 1) The objective of the study is to understand the relationship between Body Mass Index (BMI) and self-esteem of the working class population.
- 2) To compare and measure the impact of Body Mass Index (BMI) on self-esteem on the basis of the gender difference.

3.2 Hypotheses

- 1) There is no significant difference between the Underweight and Normal weight of the subject with regards to their self-esteem.
- 2) There is no significant difference between the Normal weight and Overweight of the subject with regards to their self-esteem.
- 3) There is no significant difference between the Overweight and Obesity of the subject with regards to their self-esteem.
- 4) There is no significant difference between the Obesity and Underweight of the subject with regards to their self-esteem.
- 5) There is no significant difference between the Underweight and Overweight of the subject with regards to their self-esteem.
- 6) There is no significant difference between the Normal weight and Obesity of the subject with regards to their self-esteem.
- 7) There is no significant difference between Male and Female subjects with regards to their self-esteem.
- 8) There is no significant difference between the four factors of BMI (Body Mass Index) of the subjects with regards to their self-esteem.
- 9) There is no interaction effect between the Gender of the subjects and their BMI with regards to their self-esteem.
- 10) There is no significant difference between the four factors of BMI (Body Mass Index) of the subjects with regards to their self-esteem.

3.3 Variables

- **Independent Variable**

1. Gender
 - Male
 - Female
2. Body Mass Index (BMI)
 - Underweight
 - Normal weight
 - Overweight
 - Obesity

- **Dependent Variable**

1. Self-esteem

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- **Controlled Variable**

1. All the subjects were full time employed.
2. The subjects were between the age of 20 to 60
3. The subjects were English literate.
4. The subjects were of only two genders, male and female.
5. Samples for the experiments were only from Ahmedabad and Gandhinagar.
6. Only Urban region were included for the collection of samples.
7. The test used was culturally free.
8. The subjects were not given more than 20 minutes to complete the test.

3.4 Research Design

4x2 factorial design was applied keeping the two independent variables into consideration viz. Gender and Body Mass Index (BMI) and its four sub divisions.

Figure 3.1: Sample Bifurcation on the basis of Gender

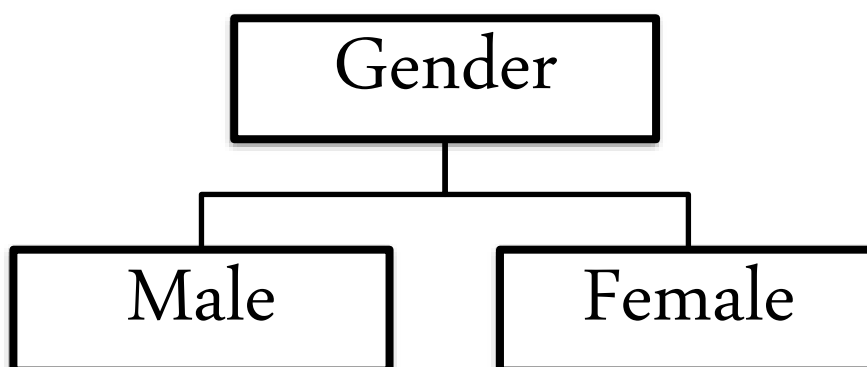


Figure 3.2: Sample Bifurcation on the basis of BMI (Body Mass Index)

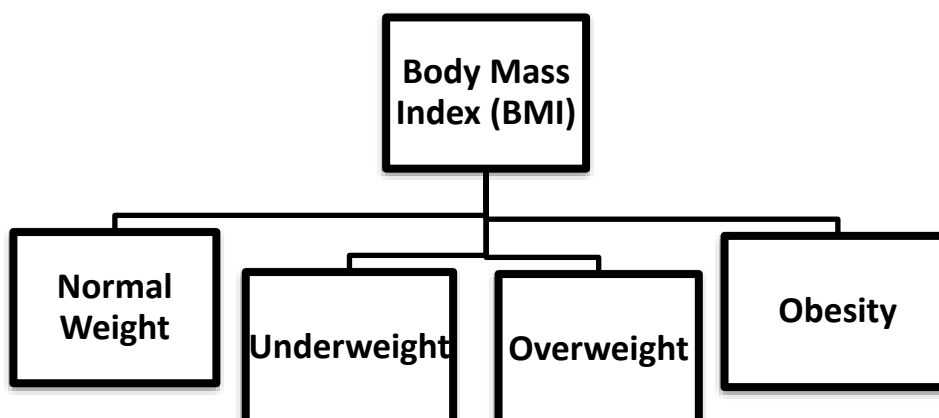


Table 3.1: 4x2 Factorial Design Representing BMI and Gender

Body Mass Index (A)	Gender (B)		
		Male (B ₁)	Female (B ₂)
Underweight (A ₁)		A ₁ B ₁	A ₁ B ₂
Normal weight (A ₂)		A ₂ B ₁	A ₂ B ₂
Overweight (A ₃)		A ₃ B ₁	A ₃ B ₂
Obesity (A ₄)		A ₄ B ₁	A ₄ B ₂

A= Body Mass Index (BMI)

A₁= Underweight

A₂= Normal Weight

A₃= Overweight

A₄= Obese

B= Gender

B₁= Male

B₂= Female

A₁B₁= Underweight Male

A₂B₁= Normal weight Male

A₃B₁= Overweight Male

A₄B₁ = Obese Male

A₁B₂=Underweight Female

A₂B₂= Normal weight Female

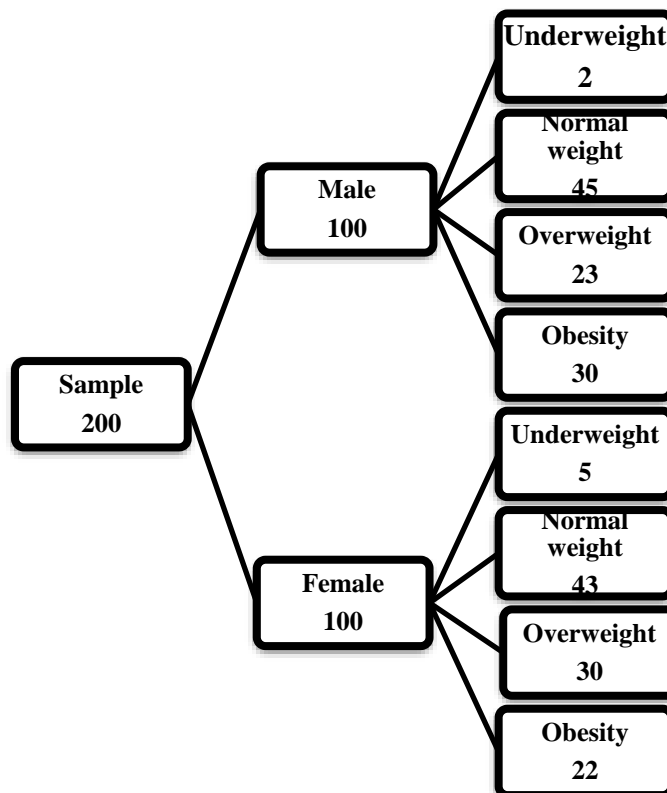
A₃B₂= Overweight Female

A₄B₂= Obese Female

3.5 Sampling

Non-probable 200 subjects were selected for our research that included both the genders; male and female who were full time employed in the urban regions. These samples were divided equally into groups of 100 each subject based on their ‘gender’. And there was unequal sampling based on the basis of marital status of the subjects. The subjects were from Ahmedabad and Gandhinagar. All the subjects were selected with the purposive, simple random sampling method.

Figure 3.5: Sample Selection and Bifurcation on the basis of Gender.



Inclusion Criteria

- The adults between the ages of 20-60 years were considered.
- Adults who were full time employed were considered.
- Male and female were considered.
- The data collection was done only in urban regions.

Exclusion Criteria

- Adults below 20 and above 60 were not included.
- Part-time job population was not considered.
- Rural areas were not included.

3.6 Research Tools

In order to measure self-esteem, Self-esteem Scale was used; this test was chosen because of easy availability and simple language. Anthropometric measurements were taken using the weighing machine and inch tape.

1. Self-Esteem Scale by Santosh and Upinder Dhar (SES-DSDU)

In order to measure self-esteem of the subjects Self-Esteem Scale by Dr. Santosh Dhar and Dr. Upinder Dhar (SES-DSDU) was used.

Description: This is a non-verbal test in English language which contains 23 statements to be answered on basis of likert five-point scales i.e. strongly agree, agree, not sure, disagree or strongly disagree. Each item is a positive statement that is to be marked according to the above mentioned scale. The scale is designed to measure self-esteem of the individual.

Reliability: The reliability of the scale was determined by the split-half method corrected for full length by applying Spearman Brown Prophecy formula on the data collected from the sample of 277 subjects. The reliability coefficient was found to be 0.87.

Validity: Besides face validity, as all items of the scale are related to self-esteem, the scale had high content validity. In order to determine validity from the coefficient of reliability (Garrett, 1981) the reliability index was computed. The index of reliability measures the dependability of the test scores by showing how well obtained scores agree with their theoretical values. The index of reliability has maximum correlation which the given test is capable of yielding in its present form. This is true, because the highest correlation which can be obtained between tests and second measured is between the test scores and their corresponding true scores. The later has indicated high validity on account of being 0.93.

Norms: Norms of the scale are available on the sample of 277 subjects constituted of school teachers, faculty of all professional institutions, students, executives, lab assistants and service providers. These norms could be regarded as the reference points for interpreting the level of self-esteem.

Limitations and cautions: In all instruments of this nature, the subjects do manage to get some insight into what its purpose is. As such, there is always the factor of social desirability and faking. The scale purports to know the self-esteem of the subjects. It should not be expected to tap unconscious or such characteristics of which the respondent has no knowledge. Since the respondent is likely to get some insight as to what the scale assesses, it

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should be used with great caution, especially where any great advantage occurs to the individual for getting high or low scores i.e., getting rewarded.

Scoring: Scoring of the Self-esteem Scale

Each item was checked as strongly disagree, disagree, neutral, agree, or strongly agree should be awarded the score of 1, 2, 3, 4, and 5 respectively.

Table 3.3 Scoring based on the response

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

All the scores were added according to the sub-factors with respect to their item numbers:

- Factor 1 Positivity: It constituted of item5- capable to cope with difficult situations; item8- enjoying to overcome challenging situations; item9- taking social responsibility; item 13- view mistakes as learning opportunity item17- managing stress effectively; and item 18 enjoying life.
- Factor 2 Openness: It constituted of item14- taking constructive feedback; item15- believing in self-awareness; item16- adding value to team item 20- credit to other peoples thoughts and item 21- openness of thoughts.
- Factor 3 Competence: It is constituted of item1- positive thinking; item2- believes in one's own strengths and item3- ability to perform task.
- Factor4 Humility: It is constituted of item4- knowing job well; item6- value others; item7- feeling good about oneself and item10- admitting failures.
- Factor 5 Self-Worth: It is constituted of item19- awareness about negative thoughts; item22- good listener and item23- believe in having more strength than weaknesses.
- Factors 6 Learning Orientation: It constituted of item11- perfection in work and item 12 developing new skills.

Higher the score of a Factor of the self-esteem, higher is that factor. Total scores is the reflection of the overall self-esteem. Higher the total score, higher the self-esteem.

2. Self-structured Questionnaire

Self-structured bio-data sheet was used which included 22 items regarding the basic information like- weight, height, qualification, type of job etc. It also included questions related to individual's health, diseases and exercise routine, for knowing impact of above mention factors on their body weight and height.

3. Body Mass Index and Calculation

BMI categorisations were done on the basis of standardised BMI chart provided by World Health Organisation (WHO). BMI is calculated using height and weight of an individual and further is classified into underweight, normal weight/healthy, overweight and obese.

Formula- $BMI = \frac{kg}{m^2}$.

Kg in the above formula stands for person's weight in kilograms, m^2 is the person's height squared.

Table 3.4: BMI Classification (WHO)

BMI	Classification
< 18.5	Underweight
18.5–24.9	Normal weight
25.0–29.9	Overweight
30.0–34.9	Obesity

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4. Weighing Machine

For measuring body weight, 'weighing machine' was used. A weighing machine is a scale that is used to record the weight when the force is exerted on it without motion; it works without power supply; a figure is shown when the mass is put on the device that is considered as the weight.

5. Inch Tape

To evaluate height, Inch Tape was used. A tape is a flexible scale which is used to measure distance of size in particular units.

Scoring

Individual's weight (in kilograms) and height (in inches) was recorded using the weighing machine and inch tape respectively. These measurements were used to calculate BMI with the formula

$$\text{BMI} = \frac{\text{kg}}{\text{m}^2}$$

Kg in the above formula stands for person's weight in kilograms, m² is the person's height squared.

Further classification was done on basis of the table (mention the number of the table).

3.7 Test Administration

The test was administered individually as well as in groups. The instructions were printed on the sheets which were provided to the subjects yet oral and detailed instructions were given. The language of the test was kept for English literates only. The test was given to those who were full time employees. The subjects were given 10-15 minutes to complete the test as there were only 23 items to answer; time was extended in case of confusion. Individual's height and weight were also recorded using weighing machine and inch tape for accuracy.

Before the test was given following oral instructions were emphasised upon:

- You are requested to fill up a form and attached test.
- You are requested to fill the personal bio-data sheet and please do not skip anything specifically your height and weight.
- The test includes 23 statements you are supposed to read each statement and for the answer you have to mark the box which is applicable to you.
- Try to finish it within 15-20 minutes. And, please don't leave any statement unattended.
- The statements are not to rank you as good or bad, right or wrong, desirable or undesirable.
- Your responses stay under confidentiality.
- There are no right or wrong answers, the statements are just to be answered in terms of strongly agree, agree, not sure, disagree or strongly disagree.

After the instructions were clear to the subjects the form with the attached test was given. They were again reminded not leave anything blank or unattended. The subjects were helped in case of difficulty by the researchers. After the subject completed, the sheets were taken back.

3.8 Research Procedure

The research topic was scrutinised from list of probable topics with carefully understanding the logical and analytical reasoning. The research guide provided with the valuable points to work on this research and the steps that are to be followed while the whole process. The data

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was collected from full time employed subjects, related to various fields like- teaching, office staff etc. The data was collected from individuals and from groups as well. The instructions were clearly explained before giving the attached sheets which included the Self-structured questionnaire and the Self-esteem Scale. All the participants were assured about the confidentiality of their identity. The participants were given 10-20 minutes to fill in both the sheets, with assistance as and when required in case of doubts or confusion. The sheets were collected after the successful completion of the test. The scoring was done manually by both the researchers according to the norms of interpretation provided in the test manual. The incomplete responses were discarded and not included. SPSS was used for the data interpretation.

3.9 Statistical method

1. SPSS (IMB SPSS Statistics) was used for statistical analysis.
2. Frequency, Percentage, Mean and Standard Deviation was used to show the tabular and graphical data.
3. T-test and F-test were used for the statistical interpretation.

RESULTS AND DISCUSSION

The study population comprised of 200 total samples, 100 males and 100 females of urban regions. All the participants were full time employees.

4.1 Frequency and Percentage

The percentage value of the data was applied due to the unequal distribution on basis of marital status and the categorisation according to the four factors of body mass index.

Table 4.1- Frequency and Percentage of the Independent Variables

Gender	Marital Status	Body Mass Index								
		Underweight		Normal weight		Overweight		Obese		Total
		N	%	N	%	N	%	N	%	
Male	Married	1	1.75%	24	42.10%	25	43.85%	7	12.2	57
	Unmarried	1	2.32%	22	51.16%	6	13.95%	14	32.55%	43
Female	Married	1	1.42%	29	41.42%	22	31.42%	18	25.71%	70
	Unmarried	4	13.33%	15	50%	8	26.66%	3	10%	30

Table 4.1 represents the frequency and percentage of the Independent variables-Gender, Marital Status, and Body Mass Index. The total number of samples was 200 and was equally divided on the basis of the gender, 100 each. There were total 57 and 43 married and unmarried men, 70 and 30 married and unmarried women respectively. According to the data presented there is high frequency in Normal weight and Overweight in both male and female. This could indicate the prevalence of these two kinds of the BMI in the population. The occurrence of the BMIs Underweight and Obese is comparatively very less. In total 3.5% were underweight; 45% were normal weight; 30.5% were overweight; and 21% were obese.

4.2 Self-esteem and Body Mass Index

Hypothesis 1:

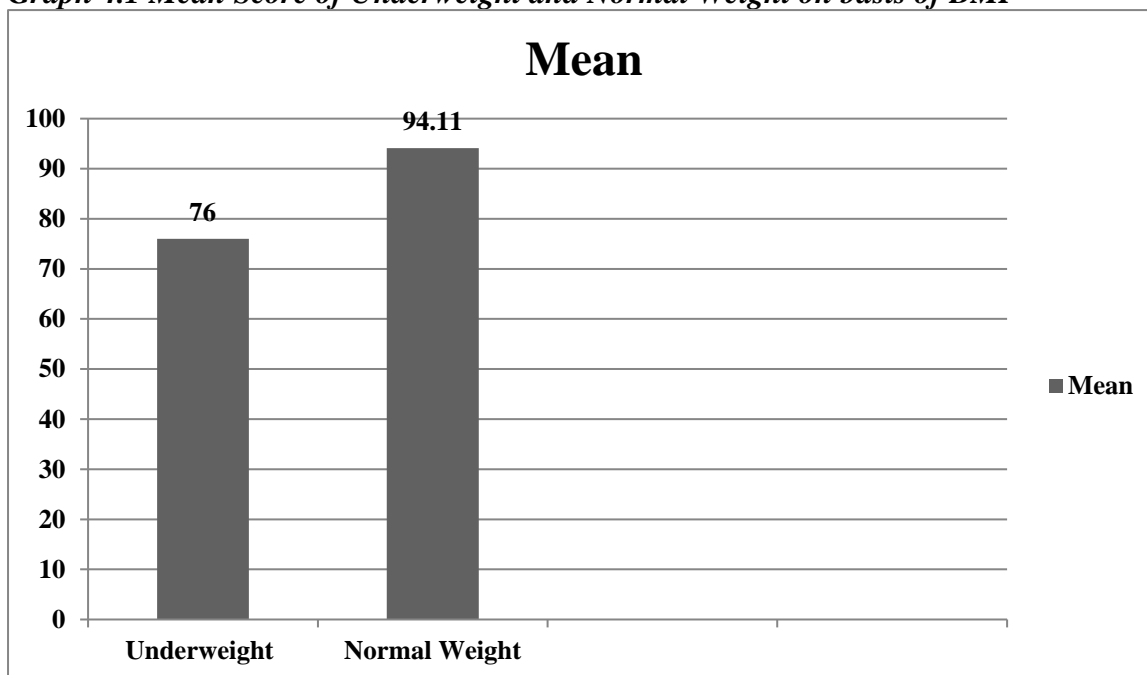
Table 4.2 T-test results comprising of BMI of Underweight subjects and Normal weight subjects with their respective self-esteem scores.

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Underweight	7	76.00	15.449	4.500	S
	Normal Weight	88	94.11	9.791		

Table 4.2.1 Mean results comprising of BMI of Underweight subjects and Normal subjects with their self-esteem

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Underweight	7	76.00	15.449
	Normal Weight	88	94.11	9.791

Graph 4.1 Mean Score of Underweight and Normal Weight on basis of BMI



- Table 4.2 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Underweight and Normal weight of the subject with regards to their self-esteem.”
- The mean for Underweight subjects are recorded at 76.00 whereas the mean for the Normal subjects are recorded at 94.11. The standard deviation for Underweight and Normal weight subjects is 15.449 and 9.791 respectively.
- Thus, the T-score is 4.500. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected**.
- Table 4.2.2 shows the mean and standard deviation of the two groups. The mean score of the Normal weight subjects is 94.11 and it is higher than the mean score of underweight subjects which is 76.00.

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- Mean score of Underweight subjects and Normal subjects with respect to their self-esteem scores show that the subjects who have Normal weight according to the BMI chart (Table 3.4) had high self-esteem scores than the Underweight subjects.
- On the basis of to the BMI chart, the individuals whose BMI is less than 18.5 are considered as Underweight. According to SES-DSDU manual individual with 80 and below raw score indicates low level of self-esteem.
- On the basis of BMI chart, the individual whose BMI is between 18.5 -25 are considered as Normal weight. According to SES-DSDU manual individual with 81-97 raw score indicates normal level of self-esteem.
- The self-esteem mean score of underweight subjects is comparatively low than the normal body weight subjects. The reason behind this could be the working environment as normal body weight individuals don't face and criticism, discrimination and mocking of other people regarding their weight; whereas underweight people experience sarcastic comments, not asked advices and discrimination with respect to their body weight. Underweight people are regarded as fragile, not strong, and sensitive.

Hypothesis 2:

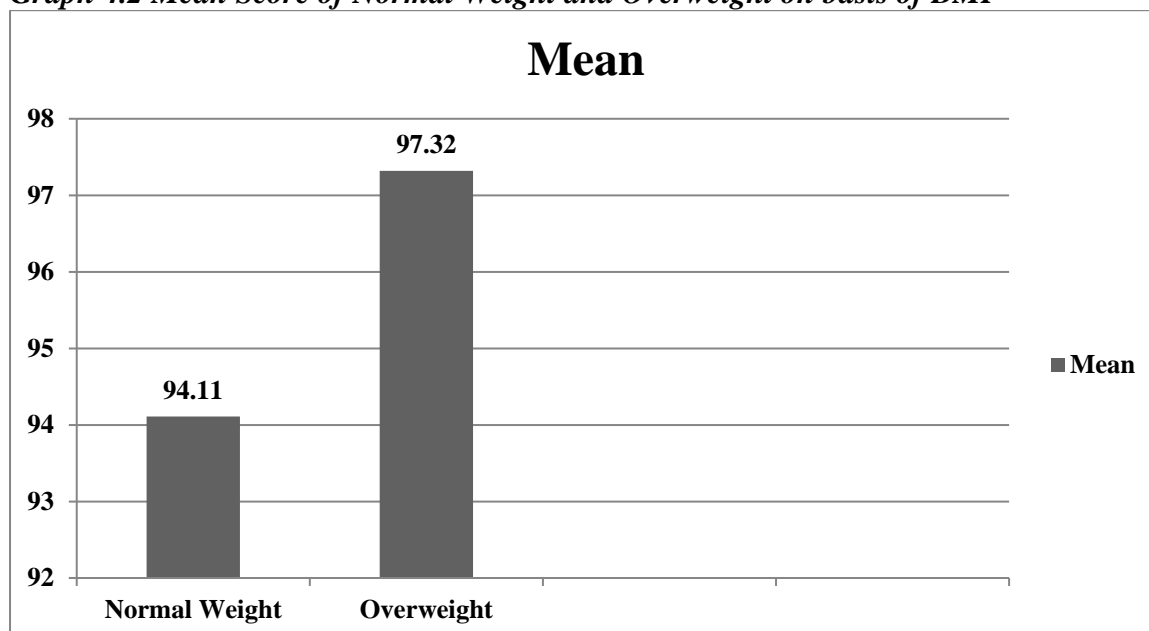
Table: 4.3 T-test results comprising of BMI of Normal weight subjects and Overweight subjects with their respective self-esteem scores.

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Normal Weight	88	94.11	9.791	1.900	S
	Overweight	53	97.32	8.318		

Table 4.3.1 Mean results comprising of BMI of Normal subjects and Overweight subjects with their self-esteem

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Normal Weight	88	94.11	9.791
	Overweight	53	97.32	8.318

Graph 4.2 Mean Score of Normal Weight and Overweight on basis of BMI



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- Table 4.3 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Normal weight and Overweight of the subject with regards to their self-esteem.”
- The mean for Normal subjects are recorded at 94.11 whereas the mean for the Overweight subjects are recorded at 97.32. The standard deviation for Normal weight subjects and Overweight subjects is 9.791 and 8.318 respectively.
- Thus, the T-score is 1.900. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected**.
- Table 4.3.1 shows the mean and standard deviation of the two groups. The mean score of the Overweight subjects is 97.32 and it is higher than the mean score of Normal subjects which is 94.11.
- Mean score of Normal subjects and Overweight subjects with respect their self-esteem scores show that the subjects who have Overweight according to the BMI chart had high self-esteem scores than the Normal weight subjects.
- On the basis of BMI chart, the individual whose BMI is 18.5 -25 are considered as Normal weight. According to SES-DSDU manual individual with 81-97 raw score indicates normal level of self-esteem.
- On the basis of BMI chart, the individual whose BMI is 25- 29.9 are considered as Overweight. According to SES-DSDU manual individual with 81-97 raw score indicates normal level of self-esteem.
- The self-esteem mean score of overweight subjects is comparatively high than the normal body weight subjects. The reason behind this could be the change in the perception of an individual who have positively accepted their body.

Hypothesis 3:

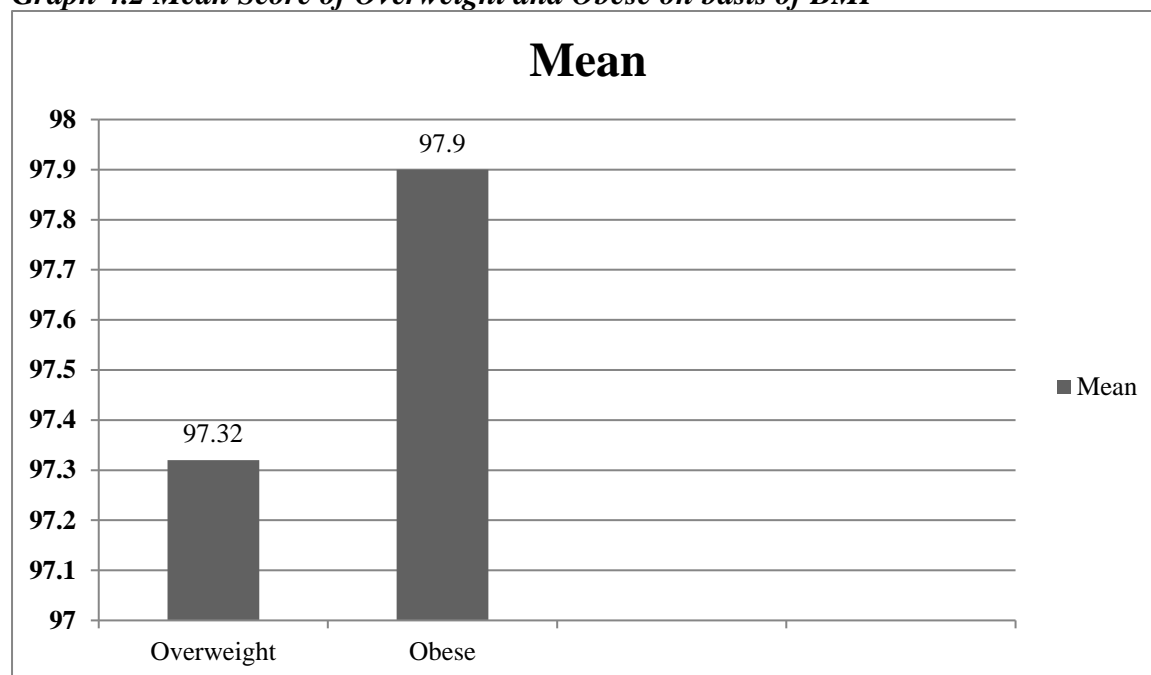
Table 4.4 T-test results comprising of BMI of Overweight subjects and Obese Subjects with their respective self-esteem scores

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Overweight	53	97.32	8.318	0.641	S
	Obese	53	97.90	7.802		

Table 4.4.1 Mean results comprising of BMI of Overweight subjects and Obese subjects with their self-esteem.

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Overweight	53	97.32	8.318
	Obese	53	97.90	7.802

Graph 4.2 Mean Score of Overweight and Obese on basis of BMI



- Table 4.4 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Overweight and Obese of the subject with regards to their self-esteem.”
- The mean for Overweight subjects are recorded at 97.32 whereas the mean for the Obese subjects are recorded at 97.90. The standard deviation for Overweight subjects and Obese subjects is 8.318 and 7.802 respectively.
- Thus, the T-score is 0.641. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected**.
- Table 4.4.1 shows the mean and standard deviation of the two groups. The mean score of the Obese subjects is 97.90 and it is higher than the mean score of Overweight subjects is 97.32.
- Mean score of Overweight subjects and obese subjects with respect to their self-esteem scores show that the subjects who had Obese according to BMI chart had high self-esteem scores than the Overweight subjects.
- On the basis of BMI chart, the individual whose BMI is 25-29.9 are considered as Overweight individuals. According to SES-DSDU manual individual with 81-97 raw score indicates normal level of self-esteem.
- On the basis of BMI chart, the individual whose BMI is over 30 are considered as Obese According to SES-DSDU manual individual with 98 and above raw score indicates high level of self-esteem.
- In review of literature we cited, an International study conducted by **Ashraf Sadat Ahadzadeh, Shameem Rafik-Galea, Masoumeh Alavi, and Mansour Amini** who stated that subjects whose BMI was on a higher level, had to face more negative evaluation and they scored low on their self-esteem scores. This study is contradicting these findings as, our results showed the opposite of the above finding i.e. subjects who showed higher BMI showed high self-esteem.
- The self-esteem mean score of obese subjects is comparatively high than the normal body weight subjects. The mean score self-esteem of overweight and obesity doesn’t show a

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great difference. The reason behind this could be acceptance and support by the society for all the body types.

Hypothesis 4:

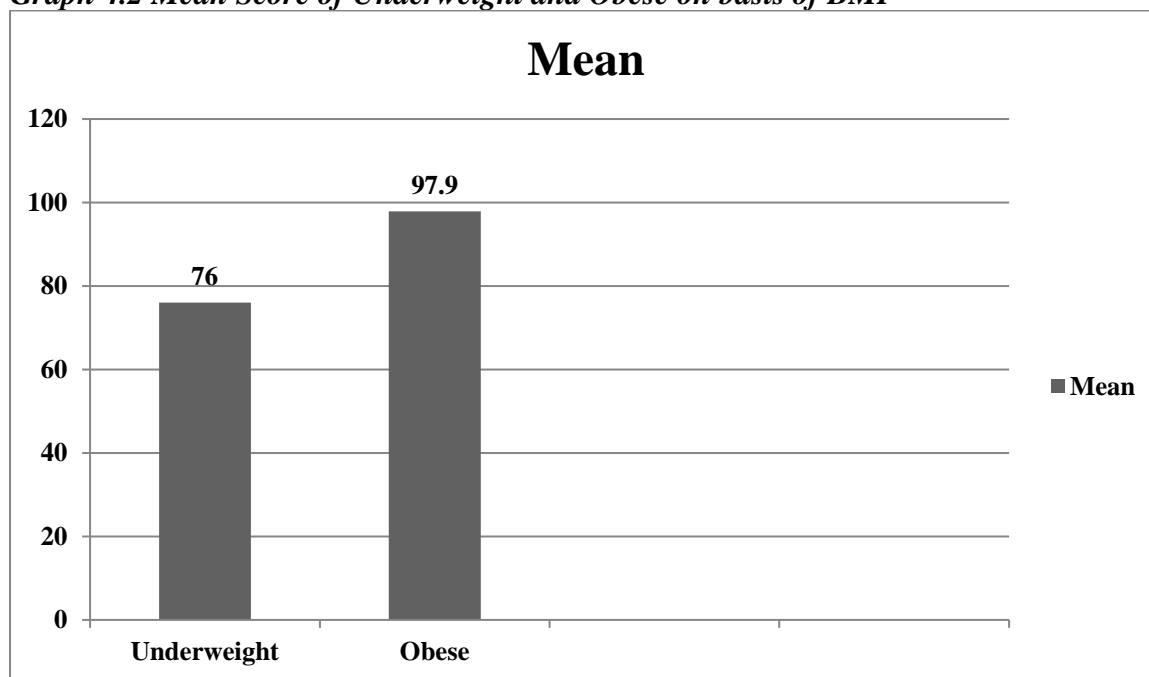
Table 4.5 T-test results comprising of BMI of Underweight subjects and Obese subjects with their respective self-esteem.

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Underweight	7	76.00	15.449	6.098	S
	Obese	52	97.90	7.802		

Table 4.5.1 Mean results comprising of BMI of Underweight subjects and Obese subjects with their self-esteem

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Underweight	7	76.00	15.449
	Obese	52	97.90	7.802

Graph 4.2 Mean Score of Underweight and Obese on basis of BMI



- Table 4.5 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Underweight and Obesity of the subject with regards to their self-esteem.”
- The mean for Underweight subjects are recorded at 76.00 whereas the mean for the Obese subjects are recorded at 97.60. The standard deviation for Underweight and obese subjects is 15.449 and 7.802 respectively.
- Thus, the T-score is 6.098. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected.**

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- Table 4.5.1 shows the mean and standard deviation of the two groups. The mean score of the obese weight subjects is 97.90 and it is higher than the mean score of underweight subjects which is 76.00.
- Mean score of Underweight subjects and obese subjects with respect to their self-esteem shows that the subjects who showed Obese according to BMI chart had higher self-esteem scores than the Underweight subjects.
- On the basis of BMI chart, the individuals whose BMI is less than 18.5 are considered as Underweight. According to SES-DSDU manual individual with 80 and below raw score indicates low level of self-esteem.
- On the basis of BMI chart, the individual whose BMI is over 30 are considered at Obese. According to SES-DSDU manual individual with 98 and above raw score indicates high level of self-esteem.
- The self-esteem mean score of underweight subjects is comparatively low than the obese subjects. The reason behind this could be, in past few year the society have change the perception regarding acceptance different body types due to this obese individuals are respected. The big body types have receive the limelight and somewhere underweight individuals and their experience regarding skinny shaming is still not considered in body shaming.

Hypothesis 5:

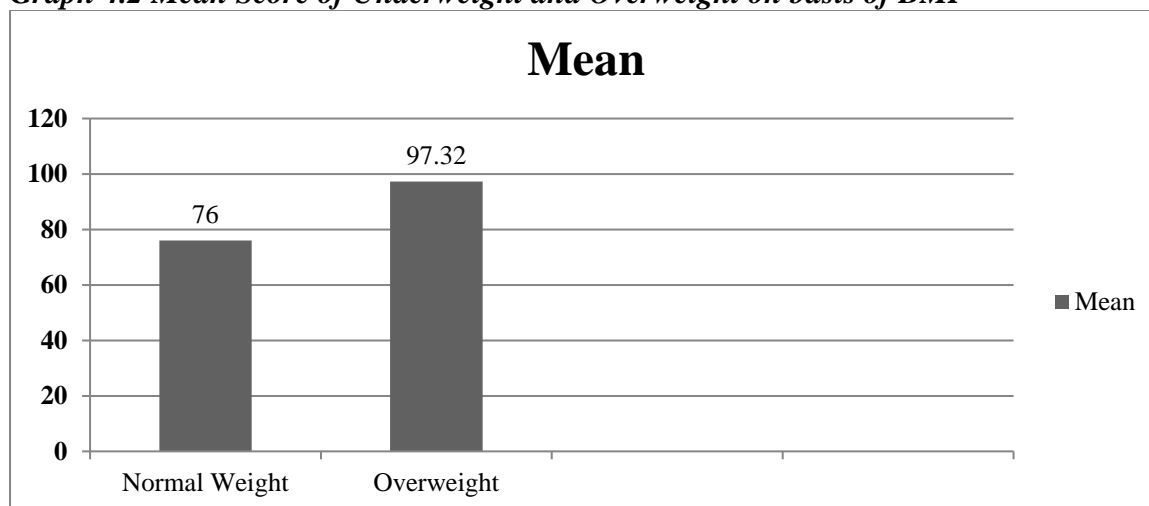
Table 4.6 T-test results comprising of BMI of Underweight subjects and Overweight subjects with their respective self-esteem scores.

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Underweight	7	76.00	15.449	5.693	S
	Overweight	53	97.32	8.318		

Table 4.6.1 Mean results comprising of BMI of Underweight subjects and Overweight subjects with their self-esteem

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Underweight	7	76.00	15.449
	Overweight	53	97.32	8.318

Graph 4.2 Mean Score of Underweight and Overweight on basis of BMI



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- Table 4.6 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Underweight and Overweight of the subject with regards to their self-esteem.”
- The mean for Underweight subjects are recorded at 76.00 whereas the mean for the Overweight subjects are recorded at 97.32. The standard deviation for Underweight and Overweight subjects is 15.449 and 8.318 respectively.
- Thus, the T-score is 5.693. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected**.
- Table 4.6.1 shows the mean and standard deviation of the two groups. The mean score of the overweight subjects is 97.32 and it is higher than the mean score of underweight subjects which is 76.00.
- Mean score of Underweight subjects and Overweight subjects with respect to their self-esteem score show that the subject who has Overweight according to BMI chart had high self-esteem scores than the Underweight subjects.
- On the basis of BMI chart, the individuals whose BMI is less than 18.5 are considered as Underweight. According to SES-DSDU manual individual with 80 and below raw score indicates low level of self-esteem.
- On the basis of BMI chart, the individual whose BMI is 25 -29.9 are considered an Overweight. According to SES-DSDU manual individual with 81-97 raw score indicates normal level of self-esteem.
- The self-esteem mean score of underweight subjects is comparatively low than the overweight subjects. The above mentioned body types deserve equal attention but the acceptance and positive support is seen regarding the overweight people and somewhere the underweight people are neglected which could be the reason of their low self-esteem.

Hypothesis 6:

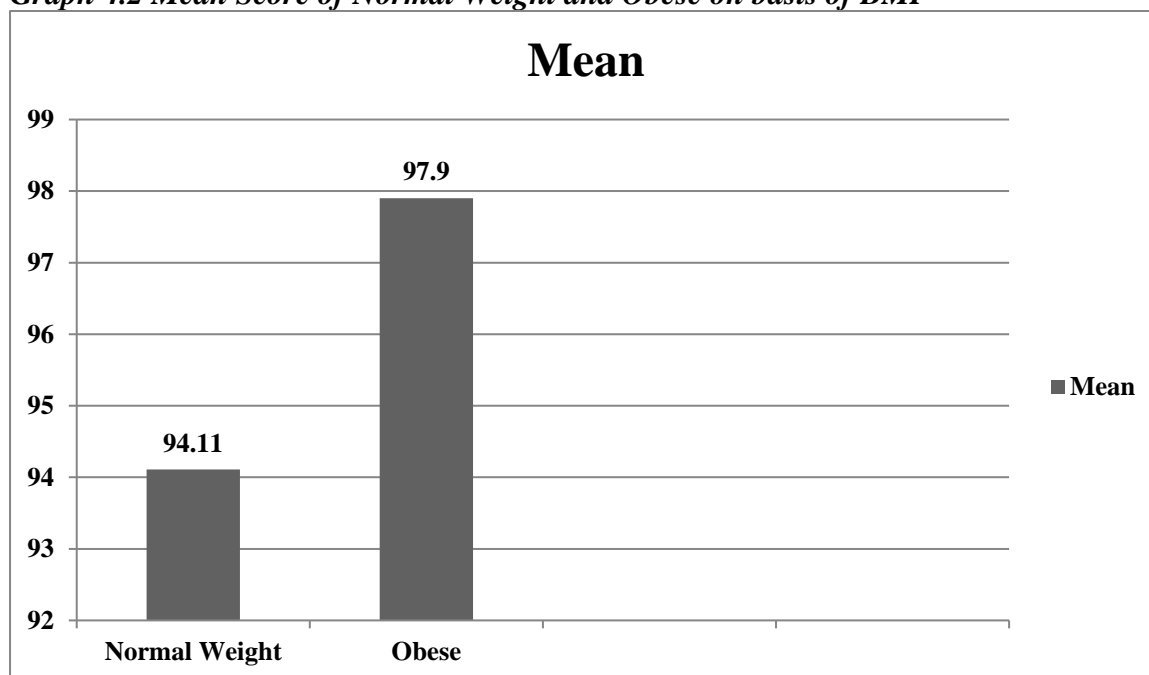
Table 4.7 T-test results comprising of BMI of Normal weight subjects and Obese subjects with their respective self-esteem scores.

Group Statistics						
	BMI	N	Mean	Std. Deviation	T Score	Sig. Level
Self Esteem	Normal Weight	88	94.11	9.791	2.379	S
	Obese	52	97.90	7.802		

Table 4.7.1 Mean results comprising of BMI of Normal weight subjects and Obese subjects with their self-esteem.

Group Statistics				
	BMI	N	Mean	Std. Deviation
Self Esteem	Normal Weight	88	94.11	9.791
	Obese	52	97.90	7.802

Graph 4.2 Mean Score of Normal Weight and Obese on basis of BMI



- Table 4.7 represents the results of T-test applied to the formulated hypothesis “There is no significant difference between the Normal weight and Obese of the subject with regards to their self-esteem.”
- The mean for Normal weight subjects are recorded at 94.11 whereas the mean for the Obese subjects are recorded at 97.90. The standard deviation for Normal weight subjects and Obese subjects is 9.791 and 7.802 respectively.
- Thus the T-score is 2.379. This t-score is significant at 0.05 significant levels. This shows that our **null hypothesis is rejected**.
- Table 4.7.1 shows the mean and standard deviation of the two groups. The mean score of the Obese subjects is 97.90 and it is higher than the mean score of Normal weight subjects is 94.11.
- Mean score of Normal weight subjects and Obese subjects with respect to their self-esteem score shows that the subjects who had Obese according to BMI chart had high self-esteem scores than the Normal weight subjects.
- On the basis of BMI chart, the individual whose BMI is 18.5-25 are considered as Normal weight. According to SES-DSDU manual individual with 81-97 raw score indicates normal self-esteem.
- On the basis of BMI chart, the individual whose BMI is over 30 are considered as Obese. According to SES-DSDU manual individual with 98 and above raw score indicates high self-esteem.
- In the review of Literature, we cited, The National Study done by **Uri Mukherjee, Bidita Bhattacharya, Shikha Mukopadhyay, Shuvabrata Poddar**_who found out that Obese subjects have lesser well-being, insomnia, and higher chances for other mental health disorders._This study is contradicting these findings as stated above as we found out that they have better self-esteem and better mental health and stability than the normal (Non-obese) subjects.
- The self-esteem mean score of normal weight subjects is comparatively low than the obese subjects. The reason behind this could be that the current generation doesn’t limit

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their perception on the looks and the body types of the people around them but the traits, behaviour and personality of the individuals are also focused.

4.3 Self-esteem, Gender and Body Mass Index

Hypothesis 7

Hypothesis 8

Hypothesis 9

Table 4.8: F-value of Gender and BMI

Tests of Between-Subjects Effects					
Dependent Variable: Self Esteem					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Gender	419.433	1	419.433	5.138	.025
BMI	1947.059	3	649.020	7.951	.000
Gender * BMI	801.691	3	267.230	3.274	.022

Table 4.8.1 Mean scores of Gender and BMI

Descriptive Statistics				
Dependent Variable: Self Esteem				
Gender	BMI	Mean	Std. Deviation	N
male	Underweight	90.00	12.728	2
	Normal Weight	92.64	9.984	45
	Overweight	97.96	8.731	23
	Obese	98.63	6.955	30
	Total	95.61	9.259	100
female	Underweight	70.40	13.428	5
	Normal Weight	95.65	9.456	43
	Overweight	96.83	8.103	30
	Obese	96.91	8.901	22
	Total	95.02	10.669	100

Table 4.9 Mean Score on the basis of gender

Gender	Mean
Male	95.71
Female	95.08

- Table 4.8 represents the F-test value applied to the formulated hypothesis “There is no significant difference between the Male and Female subject with regards to their self-esteem”, “There is no significant difference between the four factors of BMI (Body Mass Index) of the subjects with regards to their self-esteem”, “There is no interaction effect between the Gender of the subjects and their BMI with regards to their self-esteem.”
- The mean for Male subjects are recorded at 95.71 whereas the mean for the Female subjects is recorded at 95.08. While the mean for Underweight subjects are recorded at 76.00, Normal weight subjects at 94.11, Overweight subjects at 97.32, Obese subjects at 97.90
- The overall BMI of both the Genders (Male and Female) is recorded at 95.32.
- The value of F for Gender is 5.138, for BMI is 7.951, while their interaction F value scores are 3.274. All the F values are higher than the tabulated values. There is a

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significant at 0.05 significant levels. This shows that all three **null hypotheses are rejected**.

- Table 4.8.1 shows the mean of Male and Female subjects and mean scores of the four factors of BMI.
- The mean score of the Male subjects is 95.71 and it is higher than the mean score of Female weight subjects is 95.08.
- The mean of the Four factors of BMI of the subjects confirms that the mean score of the Obese subjects which is 97.90 is the highest, followed by Overweight subjects which are 97.32, and then Normal weight subjects who are at 94.11, while Underweight subjects have the lowest mean scores which are 76.00.
- The mean scores of Male underweight subjects are recorded at 90.00, normal-weight subjects are 92.64, overweight subjects are 97.96, and obese subjects recorded at 99.63. The total scores of Male mean subjects to the BMI are 95.61
- The mean scores of Female subjects with underweight were recorded at 70.40, normal-weight subjects are 95.65, an overweight subject is 96.83, and obese subjects recorded at 96.91. The total mean scores of Female subjects to the BMI is 95.02.
- Mean score of Male subjects and Female subjects with their self-esteem shows that the Male subjects had a higher level of self-esteem scores than the female subjects.
- The mean score of four factors of BMI with their self-esteem shows Obese subjects and overweight subjects had a higher level of self-esteem compared to normal and underweight.
- Their interaction effect suggests that both Male and Female subjects who were obese showed the highest self-esteem scores followed by Overweight subjects and then Normal weight subjects and subjects who were underweight were proved to have the lowest self-esteem.
- The self-esteem mean score of male subjects is comparatively high than the female subjects. The above mentioned gender show slight difference in their self-esteem score the difference here could indicate the individual gender's perception, till now the concept of body positivity and attaining healthy weight is somehow related to women when compared to men.
- The interaction effect suggests that both Male and Female subjects who were obese showed the highest self-esteem scores. The reason could be the positive change in the concept of different body types over the years, which has made it easier for all body sizes to accept them freely without any insecurities or shame.
- In the review of Literature, we cited, The National Study done by **Uri Mukherjee, Bidita Bhattacharya, Shikha Mukopadhyay, Shuvabrata Poddar** who stated that Females have related to poor self-esteem, self-image, lowered self-esteem as well as with greater degree of perceived stress compared to Male. This research states that female have a lower level of self-esteem compared to male hence, verifying the past result.
- This research is also verifying the past results of **Seyed Reza Alvani1, Seyed Mehrshad Parvin Hosseini and Laurel Wynne Kimura** who have stated that Males have a higher level of self-esteem and healthy weight compared to Female subjects.

CONCLUSION

5.1 Conclusion

The purpose of the study was to examine the influence of Body Mass Index on the Self-Esteem of full-time employees. It further examined the difference between the gender and marital status on the basis of their self-esteem with respect to the body mass index. The

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research was a genuine effort to practically understand the above mentioned relation. The inspiration was taken by the number of valued researches mentioned in the literature review section. The study highlighted that the individuals who were obese according to the BMI chart (Table 3.4) showed highest self-esteem scores when compared to overweight, normal weight, and underweight subjects. The obese subjects were followed by the overweight subjects; normal weight individuals didn't show any significant results. Underweight subjects were observed to have the lowest self-esteem scores compare to the other three categories. The difference between genders also suggested that both male and female who were obese showed highest self-esteem followed by the overweight subjects. No prominence was seen in case of normal weight subjects. In both genders underweight subjects showed the lowest scores, male underweight subjects show high self-esteem when compared to the female underweight counterparts. Overall, the male subjects showed high self-esteem in comparison with the female subjects. The research further suggested that who were married and overweight had high self-esteem and who were unmarried and obese had high self-esteem; both unmarried underweight and married underweight both the subjects showed low self-esteem. Altogether married overweight and unmarried obese subjects showed high self-esteem scores and married and unmarried underweight subjects showed low self-esteem. The whole research pointed out the change in the perception of the whole society on the different body types. The study pointed out the generative directions for the future research to understand these variables in Industrial settings.

5.2 Advantages of the Study

1. The study is based on the workplace environment and its effect on self-esteem with its relation to the body mass index of the employees.
2. The whole procedure of the research is clear and transparent, which is understandable by the presented research report.
3. The language used in the research report is not complicated; therefore a layperson can also understand the whole objective behind the research.
4. The review of literature suggests that there have been researches which are particularly based on the umbrella term self-concept or body-image. This research is in-depth study that focused on the relation of self-esteem and body mass index.
5. The research works as an aid for the future researches.
6. The research is based on a hot topic which gives the society insight about the importance of body positivity and body acceptance for mental health of an individual.
7. In current scenarios on the basis of physical and mental health people are engaging in the activities like such as Yoga and Gym which is helping them to their ideal body size and improve their self-esteem and mental health stability,

5.3 Limitations of the Study

1. Time constraint was the main limitation for the research. The steps for the whole procedure were based on the time provided.
2. Sample size was small and restricted to urban area and it didn't represent the whole population.
3. The test was in English language, hence people who were not familiar with Basic English language couldn't be the part of the research.
4. The sample selection was confined to Ahmedabad and Gandhinagar which doesn't represent the entire population.

5.4 Suggestions for Future Research

The evident discrepancies in the study can be worked upon in the future by Suggestions for Future Research,

1. The discrepancies regarding the design and sample selection can be improved in the future researches.
2. In future researches genders other than male and female could be included to understand the same effect on different variables.
3. Detailed study regarding the sub-division of the ages.
4. The effect of self-esteem can be further researched on to find out the reasons behind significant influence of self-esteem on the work and productivity of the employees.
5. The future researches could focus more on the factors of the self-esteem scale.

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Conflict of Interest

The author(s) declared no conflict of interest.

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