

Research Article

# Social Support and Mental Health among Obese and Non-obese

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## I N F O

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## A B S T R A C T

**Context:** Due to modernization, overeating becomes as trending topic due to its disturbance on our energy balance system and body weight. Behavioural issues such as overeating and sedentary lifestyle have impact on health through an increase in body mass index due to excessive deposition of body fat. Thus, it impacts on our body weight through positive energy balance in which there is an increase energy intake and decrease energy expenditure. On the other hand, it can be controlled through appropriate social support and optimum mental health.

**Aims:** The objective of this study was to reveal predictor role of social support on mental health among obese and non-obese using regression analysis, to know mean difference in social support and mental health using Mann-Whitney test, and to identify the level of social support and mental health among obese and non-obese individuals.

**Methods and Material:** The study design was non-experimental, quantitative study with descriptive in nature. The participants were 250 obese and 250 non-obese people and were collected from in Cuddalore district of Tamil Nadu, India. Both obese and non-obese participants were asked them to fill questionnaires with psychological tools namely the mental health inventory-38 (MHI-38) and multidimensional perceived social support scale (MDPSS).

**Results:** The data distribution were in non-normal pattern and the statistical test used were non-parametric test. The results stated that the predictor variable social support has shown significant positive impact on mental health. The effect of social support over mental health was high among non-obese ( $R = .406$ ,  $R^2 = .168$ , adjusted  $R^2 = .164$ , co-efficient  $B = .667$  and  $p = .000$ ) than obese ( $R = .522$ ,  $R^2 = .272$ , adjusted  $R^2 = .270$ , co-efficient  $B = .729$  and  $p = .000$ ). Social support and mental health have significant mean BMI difference among obese and non-obese in which obese people have higher social support and low mental health than non-obese people.

**Keywords:** Mental Health, Non-obese, Social Support, Regression Analysis, Mann-Whitney Test, Body Mass Index

## Introduction

Behavioural issue like overeating won't be a problem until it impacts on our body weight, but nowadays it becomes as emerging issue in world population. Body weight have described in body mass index (BMI) calculation. Obese and non-obese are two different groups of body mass index (BMI) calculation in which obese can be defined as BMI above 30 kg/m<sup>2</sup> and it has three different classes as class I(30 - 34.9), class II(35 - 39.9) and class III(above 40) based on body mass index, while non-obese as BMI below 29.9 kg/m<sup>2</sup> and has three categories such as overweight (25 - 29.9), normal weight (18.5 - 24.9) and underweight (below 18.4). World Health Organisation (WHO) Datafacts sheet stated approximately two billion adults were in overweight and one third of them were obese people, and in most of countries many people die due to excessive body weight than underweight or malnutrition. The research which have carried in obese and non-obese spectrum will help researchers and policy makers for as new orientation towards nutrition, physical activity and body fat in association with social support and mental health. Body mass index has two anthropomorphic measurements as weight and height of an individual. In which, the height of an individual is predicated based on biological and hereditary nature of an individual, while weight of an individual depends on his or her energy balance equilibrium beyond biological or hereditary factors. In biology, energy balance is defined as the state in which the energy intake equals with energy expenditure, and is affected by various factor such as body size, physical activity, amount of bodyfat, muscle mass, and genetics.<sup>1</sup> Energy balance can shift to positive side as positive energy balance with an increase in energy (food) intake and decrease in energy expenditure. Similarly, it can shift to negative side as negative energy balance with decrease in food intake and increase in energy expenditure. Thus, the nature of energy balance and its control over our body can maintained through appropriate behavioural intervention under appropriate social support and optimum mental health within normal weight range. Aims and objectives of this study is to understand predictor role of social support over mental health, to identify mean difference in social support and mental health, and to find out the level of social support and mental health among obese and non-obese people.

## Social Support

The perception of care and support from family members, friends, and others are termed as social support. It have positive influence over physical health, social health and mental health of an individual. Structural and functional elements are two important dimensions of social support. The structural dimension is defined as frequency of interaction and size of social system, whereas the functional dimension is denoted as emotional and instrumental natures.<sup>2</sup> Durkheim

in his book "suicide" had revealed about relation between social support and behavioural issues.<sup>3</sup> Psychological status of an individual can be put as safe, respectable, competent and valued in doing behavioural activities for optimum wellbeing through perceived social support.<sup>4</sup> Social support plays as mediating role to improve physical activity,<sup>5</sup> to perform health-promoting behaviour,<sup>6</sup> to prevent peer victimization<sup>7</sup> and to stabilize emotional adjustment.<sup>8</sup>

## Mental Health

What we think, feel and behave predict our temperament. If we think or feel positive, temperament be in positive mood. Similarly negative thinking or feeling creates negative mood. Our thinking, feeling and behaving are not in static state and these represent status of our mood. Mental health means status of mood with respect to emotional, psychological and social well-being.<sup>9</sup> Mental health of an individual is multifactorial and can be predicted by many variables and factors. Mental health have U-shaped relation with body mass index which stated as an increase in body mass index will increase mental health till a point where further increase in body mass index will decrease mental health. Usually it is a point where body mass index have line of demarcation between obese and non-obese, which means among non-obese an increase in body mass index will increase mental health while in obese an increase in body mass index will decrease mental health.<sup>10, 11</sup> Perceived social support have association with mental health and body mass index.<sup>12</sup> Among women population, body mass index have positive correlation with emotional disorder.<sup>13</sup>

## Objectives of this Study

- To examine the influence of social support on mental health among obese and non-obese people
- To find mean difference in social support among obese and non-obese people
- To find mean difference in mental health among obese and non-obese people
- To identify the level of social support and mental health among obese and non-obese people

## Methodology

This study is non-experimental, quantitative, survey type with comparative in nature.

## Variable

The researcher have selected variables such as social support and mental health as psychological variables in which social support is predictor variable and mental health is criterion variable.

## Sampling

Since this study were carried as non-experimental and survey type and the sampling was community based one, so

sampling technique used was purposive sampling technique with sample size 500 (250 obese and 250 non-obese) participants in age groups above 15 years old from rural and urban areas of Cuddalore district in Tamil Nadu, India.

### Measuring Tools

In this study, the researchers used the following measuring scales.

**Demographic Sheet:** It has semi-structured questionnaires in relevant to respondent's demographic details.

**Body Mass Index:** It is a measurement with respect to level of fat deposition can be calculated from weight and height of respondents. WHO have categorized it into underweight, normal weight, overweight and obese.

1. Multi-Dimensional Perceived Social Support scale (MDPSS); This tool was developed by Zimet et al (1988)<sup>14</sup> in seven points Likert scale with 12 items in it, four items each for family support, friend support and significant person support with responses from very strongly disagree to very strongly agree as 1 to 7 respectively. This scale were used by many Indian researchers.<sup>15,16,17</sup> It has high reliability 0.92 to 0.93 Cronbach's alpha value and validity score even in recent study.<sup>18</sup>
2. The Mental Health Inventory (MHI-38): This tool consists of 38 items in six points Likert scale, was developed by Veit & Ware (1983).<sup>19</sup> This scale has two global psychological well-being and psychological

distress and with six subscales from anxiety, depression, behavioural control, positive affect, emotional ties and till life satisfaction. This scale was designed for the RAND Health Insurance to measure general psychological distress and well-being and also used in study in India.<sup>20</sup>

### Results and Discussions

The objectives of this study are defined through appropriate statistical techniques to find the impact of social support on mental health, to know mean difference of social support and mental health, and to investigate the level of social support and mental health among obese and non-obese. The findings of these objectives are shown in the following tables.

Table 1, represented 73% of obese people have scored high social support than 49% of non-obese people. 21% of obese in moderate social support and 6% of them in low social support, while 39% of non-obese in moderate and 12% of them in low social support. This finding goes in line side by side with previous studies as obese people have high social support due to their high social status as wealthy,<sup>21</sup> social support structure have positive relationship with overweight and obesity,<sup>22</sup> high social supports creates room for obesity due to supportive accessibility towards social vulnerable atmosphere as over parental support and comfortable food access,<sup>23</sup> and social ties prone to obesity especially in obesity causing environment.<sup>24</sup> Thus, emerging obesity risks are due to high social support especially from family, friend, social structure or social relations.

**Table 1. Descriptive details in Level of Social Support among non-obese (250) and Obese (250)**

| Social Support | Range   | Obese     |     | Non-obese |     |
|----------------|---------|-----------|-----|-----------|-----|
|                |         | Frequency | %   | Frequency | %   |
| Low            | 12 - 33 | 16        | 6   | 29        | 12  |
| Moderate       | 34 - 60 | 51        | 21  | 97        | 39  |
| High           | 61 - 84 | 183       | 73  | 124       | 49  |
| Total          |         | 250       | 100 | 250       | 100 |

**Table 2. Descriptive details in Level of Mental Health among non-obese (250) and Obese (250)**

| Mental Health | Raw-Score Range | Z-Score Range  | Obese     |     | Non-obese |     |
|---------------|-----------------|----------------|-----------|-----|-----------|-----|
|               |                 |                | Frequency | %   | Frequency | %   |
| Extr.Low      | 38 - 106        | -2.01 & below  | 14        | 6   | 19        | 8   |
| Low           | 107 - 119       | -2.00 to -1.26 | 18        | 7   | 17        | 7   |
| Average       | 120 - 160       | -1.25 to 1.25  | 208       | 83  | 151       | 60  |
| High          | 161 - 173       | 1.26 to 2.00   | 10        | 4   | 31        | 12  |
| Extr.High     | 174 & 228       | 2.00 & above   | 0         | 0   | 32        | 13  |
| Total         |                 |                | 250       | 100 | 250       | 100 |

Table 2, represented descriptive statistical details of mental health based on z-score calculation among 250 obese and 250 non-obese people. It stated around 25% of non-obese people were scored high and extremely high mental health, while only 4% of obese have high mental health. 83% of obese and 60% of non-obese have scored average level of mental health. These findings have supported in line with previous studies as an increase in BMI acted as risk factor for mental disorder such as anxiety, depression, and stress,<sup>25</sup> Patient with high body mass index have high chances for depression.<sup>26</sup> Perceived physical health acted as the good indicator of high mental health among high body mass index people.<sup>11</sup> Mental issues like depressive disorder have positive association with high BMI especially with women.<sup>27</sup>

Table 3, stated regression analysis to find influence of social support on mental health among 250 obese and 250 non-obese population. It revealed that social support among obese have statistically significant positive influence over mental health,  $p = .000$ ,  $R = .406$ ,  $R^2 = .168$ , adjusted  $R^2 = .164$ . The regression co-efficient (B) for predictor variable social support is .437, mentioned that an increase in one part of social support will increase mental health with .437 points. The  $R^2$  value .168 denoted social support have 16.8% of determination over mental health. The influence and determination of social support over mental health is higher in non-obese than obese. Social support among non-obese have statistically significant positive influence over mental health,  $p = .000$ ,  $R = .522$ ,  $R^2 = .272$ , adjusted  $R^2 = .270$ . The regression co-efficient (B) for predictor variable social support is .729, mentioned that an increase in one part of social support will increase mental health with .729 points. The  $R^2$  value .272 denoted social support have 27.2% of determination over mental health. These

findings goes side by side with previous studies as the level of social support with acculturation revealed higher obesity rate among people with low or no social support,<sup>28</sup> there was significant positive associations between social network support and weight reduction activity,<sup>29</sup> social support played as mediating agent on mental health and body weight,<sup>30</sup> and people with mental health issues or body weight victims were associated with perceived social support.<sup>31</sup>

Table 4, stated mean difference in social support among 250 obese and 250 non-obese using Mann-Whitney test. It stated that the perceived social support was significantly higher in obese with mean rank 278.75 than non-obese with mean rank 222.25,  $U = 24186.50$ , Wilcoxon  $W = 55561.50$ ,  $Z = -4.390$   $p = .000$ . This finding goes in line with previous studies as there was positive relationship between high social status and obesity,<sup>21</sup> high parental support increases social vulnerabilities towards easy food access which leads to obesity,<sup>23</sup> and there was positive association between support network and body mad index.<sup>22</sup>

Table 5, represented mean difference in mental health among 250 obese and 250 non-obese using Mann-Whitney test. It showed that the mental health was significantly higher in non-obese with mean rank 276.92 than obese with mean rank 224.08,  $U = 24644.000$ , Wilcoxon  $W = 56019.000$ ,  $Z = -4.090$   $p = .000$ . This finding goes in line with previous studies as female Obese affected much with mental health problems such as depression, anxiety, and emotional issues than male, obese women with lower body appearance have significantly associated with more depressive symptoms than non-obese,<sup>32</sup> and obesity have strongly association with increased risk for mental health disorder,<sup>27</sup> and abdominal obesity have significantly positive relationship with anxiety.<sup>10</sup>

**Table 3. Regression Analysis shows the Influence of social support on Mental Health among Obese (250) and non-obese (250) people**

| BMI type  | R     | R <sup>2</sup> | Adjusted R <sup>2</sup> | Std Error of Estimate | B     | Std. Error | $\beta$ | t-value | p-value |
|-----------|-------|----------------|-------------------------|-----------------------|-------|------------|---------|---------|---------|
| Obese     | 0.409 | 0.168          | 0.164                   | 14.713                | 0.437 | 0.062      | 0.409   | 7.065   | 0.000   |
| Non-obese | 0.522 | 0.272          | 0.270                   | 20.984                | 0.729 | 0.076      | 0.522   | 9.638   | 0.000   |

Predictor Variable: Social Support; Criterion Variable: Mental Health

**Table 4. Mean difference in social support with respect to obese and non-obese by using Mann-Whitney Test**

|           | N   | Mean Rank | Sum of Ranks | Test           | Social Support | Asymp. Sig. (2-tailed) |
|-----------|-----|-----------|--------------|----------------|----------------|------------------------|
| Obese     | 250 | 278.75    | 69688.50     | Mann-Whitney U | 24186.500      | 0.000                  |
| Non-obese | 250 | 222.25    | 55561.50     | Wilcoxon W     | 55561.500      |                        |
| Total     | 500 |           |              | Z              | -4.390         |                        |

**Table 5. Mean difference in Mental Health with respect to obese and non-obese by using Mann-Whitney Test**

|           | N   | Mean Rank | Sum of Ranks | Test           | Mental Health | Asymp. Sig. (2-tailed) |
|-----------|-----|-----------|--------------|----------------|---------------|------------------------|
| Obese     | 250 | 224.08    | 56019.00     | Mann-Whitney U | 24644.000     | 0.000                  |
| Non-obese | 250 | 276.92    | 69231.00     | Wilcoxon W     | 56019.000     |                        |
| Total     | 250 |           |              | Z              | -4.090        |                        |

## Conclusion

In summary, high social support and low mental health are key findings found among obese people in compare with non-obese people. Even though obese people have high perceived social support than non-obese, significant predictor and determination role of social support over mental health was very low among obese than non-obese. Some studies revealed that low social support as causation for increase in body weight especially among socioeconomically disadvantage people.<sup>33,34</sup> In general, social support acted as mediating role for mental health and body mass index.<sup>35,36,37,38</sup> But, this study revealed social support have role in enhancing body mass index and mental health. This contrasting nature of social support on body mass index with respect to obesity are due to lack of knowledge and awareness about obesity. Thus, utilization of social support to control behaviour such as overeating in preventing obesity and enhancing mental health need further researches and the policy maker should consider social support before implementing behavioural intervention in controlling obesity and enhancing mental health.

## Key Message

High social support and low mental health are key findings found among obese people than non-obese people, these findings suggested the utilization of social support to control overeating behaviour in preventing obesity and enhancing mental health.

**Conflict of Interest:** None

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