



ROLE OF SELF-EFFICACY AS A MODERATING FACTOR FOR DEPRESSION IN OVERWEIGHT ADOLESCENCE

Ayurveda

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ABSTRACT

Objectives: Adolescence is an unsettling period in which many physical and psychological changes occur. Overweight/obesity and depression in adolescence are the problems of increasing concern in the developed/developing countries where populations are experiencing cultural transition. It was hypothesized that overweight/obese individuals with low self-efficacy would score high on depressive symptoms and vice versa.

Material and Methods: A cross-sectional study was conducted on 1520 adolescents studying in schools/colleges of Jaipur, Rajasthan to assess the prevalence of overweight/obesity. Then a correlational study was designed in which screening of overweight adolescents was done by BMI cut off. Beck's Depression Inventory II, Sherer Self-Efficacy scale these two questionnaire were administered to 355 overweight adolescent students. Fischer exact test, spearman correlation and linear regression analyses were used to determine relationships between BMI, Self-Efficacy and Depression.

Result: The study shows Prevalence of overweight and obesity in adolescents of Jaipur is 18.55% and 4.80% respectively. Study reveals a) negative correlation between BMI and Self-Efficacy with coefficient of correlation (r) -0.1769 and confidence interval (C.I.) = -0.2760 to -0.0742, b) positive correlation between BMI and Depression with (r) = 0.2105 and C.I. 0.1087 to 0.3078; c) Strong negative correlation between Self-efficacy and Depression with (r) = -0.4841 and C.I. = -0.5600 to -0.4002.

Conclusion: Study concluded that as the BMI increases self-efficacy of the adolescent decreases and Beck's Depression Inventory II Score increases. Thus, it can be said that low Self-Efficacy plays very important role in developing depression in overweight adolescents.

KEYWORDS

Adolescence, overweight/Obesity, BMI, Self-Efficacy, Depression.

INTRODUCTION:

Adolescence is a stormy period of rapid growth between ages 10 and 19 years. It is characterized by remarkable physical, reproductive, intellectual and psychosocial growth of an individual. Like every other age group of life cycle, this group also has its own peculiar set of physical, mental and psychosocial problems. Currently 1.2 billion adolescents stand at the challenging crossroads between childhood and adult life and around 243 million lives in India.^[1] Overweight/obesity in adolescents is an increasing health problem of developed as well as developing countries.^[2] India, also facing the epidemic of obesity and its associated diseases, especially in adolescents^[3]. Over a past few years, adolescent obesity is increasingly being observed with the changing lifestyle of families with increased purchasing power, increasing hours of inactivity as television, video games, computers and mobile internet have replaced outdoor games and other social activities. Just as obesity is the disease of concern now-a-days depression is also one of the most hazardous disorder which makes the adolescence sufferer. Obesity and depression are in the top bracket of human sufferings these days. So, WHO has declared depression to be the fifth leading disease-burden with worldwide prevalence rate around 7% and they chose theme for world health day 2017 as Depression.^[4] This study was taken to throw some light on the inter relationship between the two problems of great magnitude in purview of self-efficacy. It was hypothesized that overweight/obese individuals with low self-efficacy would score high on depressive symptoms and vice versa. Since very limited data is available from India regarding this malady, the present study was undertaken to study the prevalence of overweight/obesity and its correlation with depression among adolescents in Jaipur area.

Obesity is a reason for social incompetence through teasing by others as well as low physical activity to do any work at its best. This turn into low self-efficacy. How a person views and values himself casts a great influence on his personality, motivation, sociability, academic success and on many other areas of life. Self-beliefs determine how people

feel, think, motivate themselves and behave. Hence depression in obese individuals is more likely to have low self-efficacy as its mediator factor. These are major psycho-social problems and therefore need further appraisal.

Aim:

1. To study the role of self-efficacy as a moderating factor between being overweight and depression.

Objectives:

- 1) To assess the prevalence of overweight and obesity in adolescents of Jaipur, Rajasthan.
- 2) To conduct an observational study to determine the relationship between being overweight and depression among adolescents in Jaipur, Rajasthan, India.

Hypothesis:

There is relation between overweight and depression and self-efficacy plays an important role as a moderating factor in it.

Null Hypothesis:

Self-Efficacy doesn't play any role in developing depression in overweight adolescents.

MATERIALS AND METHODS:

Study Design: Cross-sectional epidemiological study, correlation study.

Research work was divided into following steps:-

Step 1: Anthropometric survey

Study was performed on 1520 adolescents studying in 6 different schools of rural and urban areas of Jaipur, Rajasthan to assess the prevalence of overweight/obesity after Institutional Ethical Clearance (IEC/ACA/2015/08) and registered in Clinical trial registry of India

CTRI/2017/07/009122. After recording anthropometric parameters participants were assessed with the incidence of their sex, socioeconomic status, religion, habitat, dietary habit, family history, physical activity and other relevant information were gathered to find out their relation with overweight/obesity. Fischer exact test, correlation and logistic regression analyses these statistical test were used to determine relationships between BMI, Self-Efficacy and Depression.

Step 2 - A survey proforma was designed. A correlational study was done to fulfill the objectives of the study. First of all, screening of Overweight/obese and overweight adolescents was done on the basis of >85 percentile off BMI. All questionnaire related to study such as Sherer Self-Efficacy scale^[5], Beck's Depression Inventory II^[6] were administered to 355 overweight adolescent students.

INCLUSION AND EXCLUSION CRITERIA:

Inclusion criteria:

1. Adolescents of either sex fulfilling subjective and objective criteria for overweight/obesity
2. Those who gave informed consent for participation in the study.

Exclusion criteria:

1. Adolescents already diagnosed with any chronic endocrinal disorders and severe mental disorders

Observations and results

Table No.1: Statistical description of study.

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	SEM
BMI	1520	14.12	35.26	20.88	3.491	0.09
SE	355	36	69	51.99	7.268	0.39
BDI-II	355	2	30	12.33	5.538	0.294

Study shows that overall 1520 adolescents were subjected to the anthropometric analysis in which as per Body Mass index is considered as a criteria to define overweight. Minimum BMI was observed 14.12 and maximum 35.26 with mean of 20.88 and SD 3.491. Out of 1520 adolescents 355 adolescents were found to be overweight.

Beck's Depression Inventory II were administered to find the relation of overweight and depression and data shows that minimum BDI II score was 2 an maximum was 30 out of maximum BDI-II score which is 63 with mean 12.33 and SD 5.538.

Another scale was administered i.e. Sherer Self-Efficacy scale in 355 overweight adolescents to find the role of low Self-Efficacy in overweight as a causative factor for depression. Data was collected which shows that minimum SSE score was 36 and maximum was 69 out of total maximum SSE score 85. With mean 51.99 and SD 7.268.

Table no.2: Body Mass Index percentage prevalence of Adolescents (N=1520)

S.N.	BMI	Category	No. of Adolescents	%
1.	< 5 th percentile	Underweight	372	24.47
2.	5 th to 85 th percentile	Normal range	793	52.18
3.	85 th to 95 th percentile	Overweight	282	18.55
6.	>95 th percentile	Overweight/obese class III	73	4.80

Present study shows that maximum adolescents i.e. 793 (52.18%) had BMI between 5th to 85th percentile, 372 (24.47%) had < 5th percentile, 282 (18.55%) had 85th to 95th percentile and only 73 (4.80%) adolescents had BMI >95th percentile.

Table no. 3: Beck's Depression Inventory II score wise distribution of overweight Adolescents

BDI-II Score	Grading	No. Of Adolescents	%
0-13	Minimal depression	218	61.41
14-19	Mild depression	102	28.73
20-28	Moderate depression	32	9.01
29-63	Severe depression	3	0.85

In overweight Adolescents majority of i.e. 218 (61.41%) were found being suffering from minimal depression, followed by 102 (28.73%) with mild depression 32 (9.01%) were suffering from moderate depression and only 3 (0.85%) were suffering from severe depression.

Table No.4: Beck' Depression Inventory II Score per parameter

S.N.	Symptoms	Total no. of subjects	%
1	Sadness	204	57.46
2	Pessimism	165	46.48
3	Past failure	179	50.42
4	Loss of pleasure	223	62.82
5	Guilt feelings	138	38.87
6	Punishment feelings	103	29.01
7	Self-dislike	149	41.97
8	Self-criticalness	204	57.46
9	Suicidal thoughts or wishes	26	7.32
10	Crying	102	28.73
11	Agitation	226	63.66
12	Loss of interest	248	69.86
13	Indecisiveness	259	72.96
14	Worthlessness	241	67.89
15	Loss of energy	269	75.78
16	Changes in sleep pattern	224	63.10
17	Irritability	290	81.69
18	Changes in appetite	173	48.73
19	Concentration difficulty	279	78.59
20	Tiredness or Fatigue	266	74.93
21	Loss of interest in sex	00	0.00

Most of the Overweight adolescents who participated in Survey study were experiencing irritability (81.69%), concentration difficulty (78.59%), loss of energy (75.78%), tiredness or fatigue (74.93%), indecisiveness (72.96%), loss of interest (69.86%), worthlessness (67.89%), agitation (63.66%), changes in sleep pattern (63.10%), loss of pleasure (62.82%), self-criticalness, sadness (57.46%), past failure (50.42%), changes in appetite (48.73%), pessimism (46.48%), self-dislike (41.97%), guilt feeling (38.87%), punishment feelings (29.01%), crying (28.73%) and suicidal thoughts or wishes (7.32%), and no one has answer for loss of interest in sex.

Correlation of BMI and SSE (N=355)

Test shows Spearman r = -0.1769 with 95% confidence interval: -0.2760 to -0.0742 and two-tailed P value is 0.0008, considered extremely significant.

Linear Regression of BMI and SSE

Study shows Correlation coefficient (r) = -0.1769 with 95% confidence interval: -0.8286 to -0.2201, Standard deviation 7.164 and P value is 0.0008 considered extremely significant means there is negative correlation between BMI and Self-Efficacy. So, as the BMI increases self-efficacy of the adolescent decreases.

Correlation of BMI and BDI

Test shows Spearman r = 0.2105 with 95% confidence interval: 0.1087 to 0.3078 and two-tailed P value is < 0.0001, considered extremely significant.

Linear Regression of BMI and BDI

Study shows Correlation coefficient (r) = 0.2105 with 95% confidence interval: 0.2450 to 0.7056, Standard deviation 5.422 and P value is <0.0001 considered extremely significant means there is positive correlation between BMI and Self-Efficacy. So, as the BMI increases Beck's Depression Inventory II Score of the adolescent also increases.

Correlation of SSE to BDI II

Study shows Spearman r = -0.4841 with 95% confidence interval: -0.5600 to -0.4002 and two-tailed P value is < 0.0001, considered extremely significant.

Regression of SSE and BDI

Correlation coefficient (r) = -0.4841 with 95% confidence interval: -0.4385 to -0.2993, Standard deviation 4.853 and P value is <0.0001 considered extremely significant means there is strong negative correlation between Self-efficacy and Depression. So, as the Self-Efficacy decreases depression of the adolescent increases.

Relation overweight and obesity with depression

Table No.5: 2x2 contingency Table of overweight and obese with depression

	Non-depressed	Depressed	Total
Overweight	195 (55%)	87 (24%)	282 (79%)
Obese	23 (6%)	50 (14%)	73 (21%)
Total	218 (61%)	137 (39%)	355 (100%)

Fisher's Exact Test shows two-sided P value is <0.0001, considered extremely significant with Odds ratio= 4.873 and 95% Confidence Interval: 2.798 to 8.486. It shows there is strong association obesity with depression means obese person are more prone to become depressed than overweight adolescent.

DISCUSSION:

The study shows Prevalence of overweight and obesity in adolescents of Jaipur is 18.55% and 4.81% respectively. This findings shows similarity to some studies done in other area of India.^[7] Self-efficacy is a people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave.^[8]

This study was intended with hypothesis that there may be a relation between overweight/obesity with depression; and study shows that there is positive correlation between the obesity and depression. Other studies also supports this finding. Obesity might not directly cause depression in adolescents, but other pathways as teasing by others, self-dislike, low self-efficacy and experiences may lead to depression indirectly. Also, stressful life events such as peer victimization and weight-based teasing might biologically predispose youth to depression and may be a factor that leads to depression in obese youth.^[9] Obesity was found to increase the risk of depression^[10] It could be that depressed persons, through the uncontrolled stress or through unhealthy lifestyles, develop more obesity over time, whereas it is also possible that obesity, through its negative effects on self-image, results in the development of depression over time.^{[11][12]} Many community-based cross-sectional studies among adults showed a positive overall association between depression and obesity.^[13]

In managing these both interlinked disorder we found that self-efficacy plays very important role as moderating factor for depression. Survey was based on specially prepared questionnaires which includes Sherer's Self-Efficacy Scale, Beck's Depression Inventory-II and anthropometric measurements Regarding distribution of self-efficacy evaluating points maximum overweight Adolescents were have problem with that they avoid to face difficulty, they do not get down to the work when they should be, as soon as they have faced difficulty they give up easily as overweight /obesity affects their physical strength to do work hard and they got fatigue easily and their self-efficacy decreases.

Study shows strong negative correlation between Self-efficacy and Depression. Another study by Paul K. Maciejewsky, conducted on 2500 subjects with prior depression, showed that self-efficacy plays a 40% mediator role in depression resulting after stressful life events.^[14] A study by Robin Yaronowit, after path analysis, concluded that self-efficacy is a moderating factor between exogenous stress and the care giver depression.^[15]

A sound mind lives in a sound body. If one is in pink of his physical health, he is more likely to look at the life and self positively. It is our day to day experience that physical illness makes our mind sick.

Obesity has a complex relationship with psychosocial adversities. On one hand, psychologically distressed people are more prone to obesity owing to their lack of activities or binge eating and on the other hand, obesity brings with it a social humiliation and psychological distress. Seeking comfort in emotional states through eating pleasing food items is a common incidence. Such foodstuffs like chocolates, sweets and junk food are high on calories and low on nutrition and add to weight of the stressed person further increasing his problems. Thus a vicious cycle is set that is difficult to break. Social pressure to be thin, teasing, bullying, discrimination, social isolation are experienced commonly by obese individuals. This results in body dissatisfaction, poor self-efficacy, feeling of guilt, shyness, anxiety, depression and many other problems. Failure to control weight makes the person frustrated and self-harms and suicides are attempted.

Thus Low self-efficacy leads to depression in overweight/obese adolescence via following:

- 1: Low achievements and unfulfilled aspirations lead to depression.
- 2: Low sense of social self-efficacy results in social isolation which further adds to depression.
- 3: There is less control over ruminative dejecting thoughts that lead to depression.

CONCLUSION:

The study shows Prevalence of overweight and obesity in adolescents of Jaipur is 18.55% and 4.81% respectively. Relation of overweight and obesity with depression implies that obesity is a significant factor for the presence of Depression in the adolescents. Study concluded that as the BMI increases self-efficacy of the adolescent decreases and Beck's Depression Inventory II Score increases. Thus, it can be said that low Self-Efficacy plays very important role in developing depression in overweight adolescents.

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