



A Study on The Occurrence of Depression and its Possible Relationship With Pre Hypertension and BMI Among Paramedical Students: A Scientific Insight

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ABSTRACT

*The increasing academic stress and parental expectations on adolescents is one of the major reasons for students developing depression. **Objective:** To identify the students at risk, to give them the necessary counselling and appropriate guidance, as adolescence is the right time to check the developing depression, although adolescent obesity is one of the prevalent disorders all over the world, there are only a few studies which have examined the prevalence of adolescent overweight and its psychological consequences. **Materials and Methods:** The study was done among 47 paramedical(nursing) students at ACS medical college and hospital, Chennai, India. This was a self report study using a questionnaire. The data was collected and analyzed statistically. **Results:** The study shows that 70% of overweight/Obese students were found to be probably depressed when compared to 16 underweight students out of whom only 3 had the KADS scale of Depression. Similarly, only the pre hypertensives were found to be depressed when compared to the normotensive individuals. **Conclusion:** The issue of depression among this age group whose BMI is found to be high as well as whose BP tend to be higher than the normal poses serious threat on the health of the individuals in future.*

KEYWORDS : Depression, BMI, Blood pressure, KAD scale

Introduction:

Among adolescents, depression is one of the major public health problems. Both obesity and prehypertension are very much associated with various health complications including hypertension, coronary heart disease and increased rate of mortality.¹ As obesity and prehypertension carry a risk for cardiovascular disease², a possible association between depression and obesity/prehypertension has been assumed and studied. Several studies have stated that obese adolescents have an elevated incidence of problems such as depression and anxiety than normal BMI teens but the findings are not clear.³

The risk for depression increases in adolescents, with the prevalence of major depressive disorder (MDD) estimated to be 4% to 8% in adolescents. The cumulative incidence of MDD during adolescence ranges from 15% to 20%. Teenage girls are more likely to develop depression during adolescence than teenage boys. Gender differences appear during early adolescence and persist throughout adulthood.^{14,15,16,17} Some factors that makes adolescents to face an increased risk for depression include peer problems, negative ways of interpreting events, and poor coping skills when stressed.¹⁷

Hence, this study was undertaken to look out for any association between depression, obesity and prehypertension

Study Methodology:

Institutional ethical committee approval was obtained before beginning the study. After obtaining an informed consent, information regarding identity and socio demographic details were collected from 47 subjects. Anthropometric measurements and blood pressure were measured. All the students were included in the study except the ones on anti-depressants. By simple random sampling, validated questionnaire to assess the level of depression were given to the nursing students of A.C.S. Medical College and hospital. Depression is assessed using Kutcher Adolescent Depression Scale which is commonly used as a routine part of a comprehensive adolescent assessment. One point is assigned to each answer

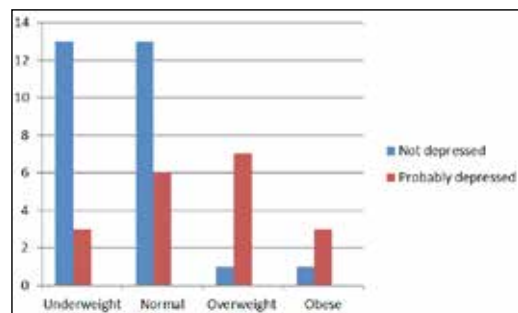
and the cumulative score is rated on a scoring grid. The grid sets a range of 0-5 as "probably not depressed", 6 and above as "possibly depressed". Statistics was done using SPSS Software package.

Results:

Table 1 shows the BMI status and scale of depression among the study population. The statistics shows that among 16 subjects who are underweight only 3 of them are probably depressed while more than 70% of the overweight / obese individuals fall under the probably depressed criteria. Graphical representation is given in Graph 1

Table: 1 - Relationship between BMI and Depression scale

	Not depressed	Probably depressed
Underweight	13	3
Normal	13	6
Overweight	1	7
Obese	1	3

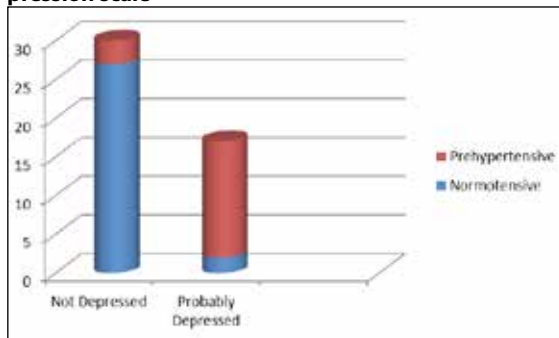


Graph: 1 - Relationship between BMI and Depression scale

Table 2 shows the relationship between Blood pressure and depression scale. The statistical data shows that most of the prehypertensives are probably depressed while normotensives are not. The values are depicted in table 2 and diagrammatically represented in graph 2.

	Not Depressed	Probably Depressed
Normotensive	27	2
Prehypertensive	3	15

Table: 2 - Relationship between Blood pressure and Depression scale



Graph: 2 - Relationship between Blood pressure and Depression scale

Discussion:

Results regarding the association between Body Mass Index (BMI) and depression in adolescence unfolding a linear association (increase in BMI with level of depression). Both overweight and obese individuals are showing an increased grading in the depression scale. Most of the overweight / obese individuals are probably depressed. Similarly a positive correlation was found between prehypertensives and depression. Most of the prehypertensives were probably depressed.

Adolescence is a crucial age, whether for weight concerned issues or for depression. Obesity and depressive disorders in teenage are risk factors for chronic non-communicable diseases in adulthood.^{4,5,6}

To begin with, adolescence is a period of change in physical / body composition, probably more intricate than in adults. Secondly, covariables envisaged differ from one study to another. And finally heterogeneity in results may also arise from the diverse scales used to measure depression.^{6,7}

The association between self-esteem and obesity was uncertain whether self-esteem was constantly related to obesity.^{8,25,26} In general, many clinical studies have found a strong relationship between overweight / obesity and depression more often than a community-based studies.⁹ Apparently, adolescents who are overweight / obese were more likely to experience anxiety and depression than perceived normal and underweight adolescents. Dissatisfaction with body and discrimination may aggravate the social and emotional consequences of overweight in this age group¹¹. Compared to normal BMI adolescents, obese adolescents have a higher prevalence of school and mental health problems, including poor academic performance and self-esteem, anxiety, depressive disorders, and a greater number of reported suicide attempts.¹²

Inflammation has also known to be associated with depression, which is supposed to be a stressful event, leading to high levels of pro-inflammatory cytokines. In people with normal BMI, fat tissue contains fat cells, but in people with elevated BMI, fat tissue is laden with macrophages, cells that ingest pathogens and other foreign materials and release inflammatory cytokines such as TNF-alpha and interleukin-6 that continuously activate the immune system at a low level, therefore contributing to a chronic inflammatory state.¹³

Evidence is growing that individuals with prehypertension have higher cardiovascular risk factors and more cardiac events compared with those with normal blood pressure. Additionally, patients with prehypertension are more likely to progress to frank hypertension.¹⁸

Prehypertension, obesity and depression were associated with occurrence of CHD.¹⁹ A high trait anger level is found to be associated with increased risk of stroke in persons younger than 25 years.^{20,21,22} Symptoms of anxiety and depression in the National Health and Nutrition Examination Survey follow-up study²³ and hostility and depressive symptoms in the Coronary Artery Risk Development in Young Adults were shown to be associated with incident hypertension in previously normotensive persons.²⁴

Hence, we come to a stand that prehypertension may lead to development of depression or vice-versa.

Conclusion:

Depression is prevalent among teen-age group and is strongly associated with various psychological and socio-environmental domains. Future prospective and experimental studies are needed to expand our understanding of the risk factors and the morbidity to enable better preventive programme planning.^{24,25}

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