

A Study Of The Relationship Between Psychological Well-Being And Body Mass Index Of Adolescents Using Ex-Post Facto Research Design.

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Received: July 01, 2018

Accepted: August 21, 2018

ABSTRACT

Physical and mental health go hand in hand. The mental health, specifically psychological well-being associated with underweight and obesity is as much a serious concern as physical problems. The sample consisted of 250 adolescents and their Body mass index was measured with the help of BMI machine and criteria for measuring BMI was taken from Indian Academy of Pediatrics. The result were computed with the help of SPSS software using ANOVA and Duncan multiple range test. To assess Psychological well-being of adolescents scale by Birlleson, (1990) was used. It was found that adolescents who were obese and underweight scored significantly higher scores on psychological well-being scale indicating poor psychological well-being in comparison to normal weight adolescents. It shows that poor psychological well-being can be a cause or effect of obesity or underweight at an early age.

Keywords: *Adolescents, BMI, Obesity, Psychological Well-Being, Underweight.*

Introduction

Physical and mental health go hand in hand (Reilly & Kelly, 2010). The mental health, specifically psychological well-being associated with underweight and obesity is as much a serious concern as physical problems (Reilly & Kelly, 2010). At times children with higher and lower than normal BMI has to undergo various types of weight-related teasing such as- name calling, peer teasing (Neumark-Sztainer et al., 2002). It complicated with weight-related gender dynamics (Madowitz, Knatz, Maginot, Crow & Boutelle, 2012). Obese and underweight children may face weight-related bullying since childhood and it may continue till adulthood and may cause a decrease in self-esteem or depressive symptoms (Bell et al., 2007). Adolescent obesity is consistently associated with both poor psychological and social functioning (Roberts & Hao, 2013). Obesity in adolescence has been found to be associated with a range of poor psychological outcomes. Previous research has indicated that adolescent girls are particularly susceptible to appearance-related anxiety with those who are obese reporting more negative physical perceptions of themselves and lower self-worth than their average weight peers (BeLue, Francis & Colaco, 2009). For young women in western societies, being overweight is often equated with being "ugly", rendering them more susceptible to bullying and victimization (Chrisler, 2011). Zimetkin, Zoon, Klein & Munson, (2004) reported that obese adolescents show more sadness, loneliness, and anxiety than their healthy weight peers, in addition to more emotional and behavioral problems. Furthermore, Fonseca, Matos, Guerra & Gomes-Pedro, (2010) replicated these issues with overweight adolescents. Forste & Moore, (2012) found lower life-satisfaction among overweight adolescent girls relative to healthy weight girls, and this negative association operates through perceptions of self, peers, parents, and school which may impact their subjective well-being. Adolescent obesity is reported to be strongly associated with poor psychological functioning and is a strong predictor of depression in adolescent females (Boutelle, Hannan, Fulkerson, Crow & Stice, 2010), and is significantly associated with low self-esteem (McClure, Tanski, Kingsbury, Gerrard & Sargent, 2010). Health-related quality of life is also significantly poorer in obese children and adolescents than in healthy-weight counterparts (Daniels, Armstrong, Malone & Burgess, 2010). Social stigma related to peer-pressure and conformity has a strong association with obesity in adolescence. Obese or overweight adolescents are more likely to experience peer victimization and stigma than their healthy weight counterparts. Adolescent obesity also carries significant physical health implications with a higher risk of a wide range of illnesses, including Type II diabetes, various cancers and cardiovascular illness (Benjamin, 2010). Similarly to obesity, underweight children also suffer from the poor psychological state of mind (Fairburn, Cooper & Shafran, 2003). Few types of research report adverse effect of underweight on thinking, concentration, lack of interest in things and nearby environment (Fairburn, Cooper & Shafran, 2003; Vanlint, 2013; Fairburn et al., 2015). Fairburn et al., (2015) reported

that mood is also affected by underweight and individual suffer from irritable and frequent mood swings and behavior problems (e.g. obsessiveness, rigid of daily routine, difficulty in being spontaneous).

Gap identification: In the Indian setting considering this particular age group (10-14 years) there are few studies found which are emphasizing/drifted adolescent's body mass index problems from the psychological perspective.

Objective:

To investigate the effects of psychological well-being on body mass index during early adolescence.

Hypothesis:

The three groups (underweight, normal and overweight) of early adolescents would differ significantly in their psychological well-being.

Methodology

Research design: The present study has used a quasi-experimental investigation using the ex-post facto approach with contrast group comparison that compared three types of samples: 1. Overweight/obese adolescents with higher than 30 BMI or 85 to 95 percentile 2. Underweight adolescents with lower than 18 BMI or who fall on less than 5 percentile and 3. Normal adolescents who had BMI- 25 to 30 or 5-85 percentile according to Indian Academy of Pediatrics (Khadilkar & Khadilkar, 2015).

Setting of the present study:

The present study is a field-based study of a cross-sectional sample from three different private schools of Jaipur city (Rajasthan) to identify children with different body mass index (overweight/obese, underweight and normal).

Sample:

It was a non-probability purposive sample. The selection of the sample of this study was based on the pre-determined criteria of BMI (those who were overweight/obese or underweight or with normal BMI). A total number of 250 students from three different schools of Jaipur city (capital of Rajasthan) were selected. Out of 250 school children, 100 children who measured normal body mass index, 100 children who measured above normal body mass index and 50 children who measured below normal body mass were selected. An equal number of girls and boys in each BMI group of children balanced the gender ratio of this sample. Due to the special relevance of early adolescents in understanding the variables that influence BMI during early adolescence, this study was confined to a sample of students in the age range of 10-14 years (enrolled in class V to IX). The children with normal BMI served as the control comparison group for both above normal and below normal BMI. Equal numbers of students in each category of BMI were selected from each grade and each school to minimize the systematic bias or error variance due to sample selection.

Ethical consideration:

The present study is a simple ex-post facto quasi-experimental research and did not require any clinical trials for altering body mass index of children. Therefore, no ethical violation was done. In addition, permission was obtained from the School Principal, Class Teachers' and informed consent from the Parental of the adolescents of this study was obtained through a circular explaining the purpose and procedure of the study. Informed consent from the students' sample was also taken prior to data collection.

Inclusion criteria:

1. Since it is a study of body mass index among early adolescents, children of the age range 10-14 years who were studying in the grades of V – IX were included in the study.
2. This study was restricted to children from three comparable schools with similar standards of education, reputation and fee structure.
3. Only those students and their parents were included in the study who had given the written consent to participate in the study based on the informed decision. Some 20 students/parents amounting to 4% did not respond to our appeal of the study. 20 extra students/parents were contacted depending on the need of the category based on BMI.

Exclusion criteria

1. This study was restricted to three private schools and of grade V-IX, students of higher secondary and children out of school were not included in this study.
2. Those children/parents who did not give the written consent to participate in the study.
3. Those who were taking treatment for certain alignments.

Statistical tool

Contrast group comparison of underweight, overweight and normal weight adolescents was identified and computed with the Analysis of Variance (ANOVA) and Post hoc Duncan multiple range test using LSD method with the help of SPSS software IBM-20.

BMI measuring tool

Body mass index of adolescents was measured by using BMI machine model (OMRON-HBF 212).

Psychological test

Adolescent Wellbeing Scale was devised by Birleson, (1990) to pick up possible wellbeing in older children and adolescents. The scale has 18 questions each relating to different aspects of an adolescent's life, and how they feel about them. They are asked to indicate whether the statement applies to them most of the time, sometimes or never. The responses to each question are scored 0, 1 or 2. The test demonstrated satisfactory levels of test-retest reliability ($r > .80$) and internal consistent reliability ($\alpha = 0.73 - 0.90$) and has concurrent validity and discriminate validity. Permission to use the test was granted from the author through e-mail.

Result

Table: 1.1 Mean, S.D, F value, df and p-value of psychological well-being of body mass index of early adolescents

Body mass index	Mean	Std. deviation	F value	"df"	"p" value
Normal	9.46	2.372	513.25	2	.00***
Underweight	19.36	2.497			
Overweight/obese	30.46	6.702			
* Significant at = .05*; .01** beyond .01*** N=250					

Table: 1.2 Duncan multiple range (LSD method) and Level of Significance of psychological well-being of different level of body mass index of early adolescents

	BMI	Mean Difference	"p" value
Psychological well being	Normal Underweight	-9.500	.00***
	Normal Obese	-22.990	.00***
	Underweight Obese	-13.490	.00***
Significant at = .05*; .01** beyond .01*** N=250			

The Present study explores the association of psychological well-being of early adolescents with different level of BMI. In table 1.1 Results revealed that significantly higher score ($M=30.46$; 19.36), of early adolescents with higher and below than normal BMI was found as compared to early adolescents with normal BMI, ($M=9.46$). These mean scores clearly indicated that obese and underweight adolescents suffer from many kinds of psychological problems (anxiety, depression, lack of motivation, lower self-esteem etc.) in comparison with normal weight adolescents. The F value was found to be significant ($F=513.25$, $p \text{ value} < .01$). Table:1.2 Further, the post hoc comparison of psychological well-being by Duncan LSD method revealed following results. There was significant difference found in adolescents with normal BMI and below than normal BMI (mean difference= -9.500 , $p < .01$). Similarly, the difference was found to be significant between other two groups - adolescents with normal BMI and higher BMI and adolescents with below than normal BMI and higher BMI (mean difference= -22.990 ; $p < .01$; -13.490 , $p < .01$).

Discussion

The results of this study confirm the hypothesis that poor psychological well-being leads to higher or lower BMI in early adolescents in comparison to normal adolescents. The possible notions of early adolescents having higher or lower BMI because of poor psychological well-being can be as follows:

Obesity/underweight is a highly visible condition, meaning that everybody can evaluate the weight status of others and make commentaries about it (Warschburge, 2005). It is generally agreed that being "too fat or too thin" is one of the most stigmatizing and least socially acceptable conditions in modern societal prejudice in late childhood (Schwimmer, Burwinkle & Varni, 2003). In a society where good figure/body is valued and self-determination is emphasized, obese adolescents are often viewed as undesirable, lazy and responsible for their condition. As a result, obese adolescents are often subject to negative stereotyping, discrimination

and social rejection (Schwimmer, Burwinkle & Varni, 2003). Often they encounter physical bullying by peers (such as pushing, hitting, or kicking), verbal teasing (name calling, being made fun of), and social exclusion (such as being excluded from peer activities, being avoided or ignored) (Schwimmer, Burwinkle & Varni, 2003). Obese girls seem to be at greater risk for self-esteem problems because body image is an important component of their self-esteem. Apart from these general viewpoints of poor psychological well-being the present research tries to convey some important variables (used in the present study) that are associated with the poor psychological well-being of children with BMI i.e., it is wisely said that “let food be your medicine and your medicine be your food.” Not only is there a relationship between food consumption and physical health, but there’s a direct link to mental and emotional health as well. Research suggests that foods directly influence our brain chemistry (even if only temporarily), but food choices also influence mood swings (Rajasthan Patrika, 2017). Different foods, for example, soft drinks, fast-food, packaged foods lead to plummeting moods, anxiety, and troubled sleep in children (Devi, 2010). There is a strong association between physical activeness and good mental health, as active/fit body leads to a healthy mind (Rao, 2013). Further, a good sleep is also very important for staying active all day, as well as good sleep, leads to relaxing and free mind (Rao, 2013).

Conclusion

Obesity and underweight in adolescents are complex problem among adolescents. There are so many factors which could be responsible for the increase and decrease of body mass index of adolescents. The present research tries to convey that poor psychological well-being can be a cause or effect responsible for higher/lower BMI in early adolescents.

Limitation

A similar study with much larger sample from diverse locations of the country with varied demographic specifications enhances the general ability. Multiple regression analysis could further fix the proportion of the variance of individual variables.

Conflict of Interest: The authors declare no conflict of interests.

Source of funding: Self

References:

- Bell, L., Byrne, S., Thompson, A., Ratnam, N., Blair, E., & Bulsara, M. et al. (2007). Increasing Body Mass Index z-Score Is Continuously Associated with Complications of Overweight in Children, Even in the Healthy Weight Range. *The Journal of Clinical Endocrinology & Metabolism*, 92(2), 517-522. doi: 10.1210/jc.2006-1714.
- BeLue, R., Francis, L., & Colaco, B. (2009). Mental Health Problems and Overweight in a Nationally Representative Sample of Adolescents: Effects of Race and Ethnicity. *PEDIATRICS*, 123(2), 697-702. doi: 10.1542/peds.2008-0687.
- Benjamin, R. (2010). The Surgeon General's Vision for a Healthy and Fit Nation. *Public Health Reports*, 125(4), 514-515. doi: 10.1177/003335491012500402.
- Birlleson P (1990). The validity of Depressive Disorder in Childhood and the Development of a Self-Rating Scale; a Research Report. *Journal of Child Psychology and Psychiatry*. 22: 73–88.
- Boutelle, K., Hannan, P., Fulkerson, J., Crow, S., & Stice, E. (2010). Obesity as a prospective predictor of depression in adolescent females. *Health Psychology*, 29(3), 293-298. doi: 10.1037/a0018645.
- Chrisler, J. (2011). “Why Can’t You Control Yourself?” Fat Should Be a Feminist Issue. *Sex Roles*, 66(9-10), 608-616. doi: 10.1007/s11199-011-0095-1.
- Daniels, S., Armstrong, E., Malone, D., & Burgess, S. (2010). Psy47 Obesity- And Weight-Specific Health-Related Quality Of Life Instruments For Obese Children And Adolescents. *Value In Health*, 13(3), A214. doi: 10.1016/s1098-3015(10)73049-7.
- Devi, R. (2010). *Childhood obesity* (1st ed.). Hyderabad, India: Icfai University Press.
- Fairburn, C., Bailey-Straepler, S., Basden, S., Doll, H., Jones, R., & Murphy, R. et al. (2015). A transdiagnostic comparison of enhanced cognitive behaviour therapy (CBT-E) and interpersonal psychotherapy in the treatment of eating disorders. *Behaviour Research And Therapy*, 70, 64-71. doi: 10.1016/j.brat.2015.04.010.
- Fairburn, C., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: a “transdiagnostic” theory and treatment. *Behaviour Research And Therapy*, 41(5), 509-528. doi: 10.1016/s0005-7967(02)00088-8.
- Fonseca, H., Matos, M., Guerra, A., & Gomes-Pedro, J. (2010). How much does overweight impact the adolescent developmental process?. *Child: Care, Health And Development*, 37(1), 135-142. doi: 10.1111/j.1365-2214.2010.01136.x
- Forste, R., & Moore, E. (2012). Adolescent obesity and life satisfaction: Perceptions of self, peers, family, and school. *Economics & Human Biology*, 10(4), 385-394. doi: 10.1016/j.ehb.2012.04.008.

- Madowitz, J., Knatz, S., Maginot, T., Crow, S., & Boutelle, K. (2012). Teasing, depression and unhealthy weight control behaviour in obese children. *Pediatric Obesity*, 7(6), 446-452. doi: 10.1111/j.2047-6310.2012.00078.x.
- McClure, A., Tanski, S., Kingsbury, J., Gerrard, M., & Sargent, J. (2010). Characteristics Associated With Low Self-Esteem Among US Adolescents. *Academic Pediatrics*, 10(4), 238-244.e2. doi: 10.1016/j.acap.2010.03.007.
- Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P., & Mulert, S. (2002). Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. *International Journal of Obesity*, 26(1), 123-131. doi: 10.1038/sj.ijo.0801853.
- Rajasthan Patrika. (2017). *Obesity*, p. 15.
- Rao, G. (2013). *Child Obesity* (1st ed., pp. 37-46). New York: Prometheus Books.
- Reilly, J., & Kelly, J. (2010). Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: systematic review. *International Journal of Obesity*, 35(7), 891-898. doi: 10.1038/ijo.2010.222.
- Roberts, R., & Hao, D. (2013). Obesity has few effects on future psychosocial functioning of adolescents. *Eating Behaviors*, 14(2), 128-136. doi: 10.1016/j.eatbeh.2013.01.008.
- Schwimmer, JB, Burwinkle, TM, & Varni, JW (2003). Health-related quality of life of severely obese children and adolescents. *Journal of the American Medical Association*, Vol. 289, pp. (1813-1819).
- Warschburge.P. (2005). The unhappy obese child. *International Journal of Obesity*, 29,127 –129.
- Zametkin, A., Zoon, C., Klein, H., & Munson, S. (2004). Psychiatric Aspects of Child and Adolescent Obesity: A Review of the Past 10 Years. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(2), 134-150. doi: 10.1097/00004583-200402000-00008.