

## The Link Between Mental Health and Obesity: Role of Individual and Contextual Factors

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The International Journal of Preventive Medicine has always shown interest in studies on obesity.<sup>[1,2]</sup> An interesting article has been recently published in the journal by Jari *et al.* The paper is on the association between overweight/obesity and anxiety/depression among Iranian adolescents and uses data of the CASPIAN-III study.<sup>[3]</sup> Due to the global epidemic of obesity and the need for evidence-based practice and policy for prevention,<sup>[1,2,4]</sup> the publication is timely.

The study<sup>[3]</sup> has enrolled a nationally representative school-based sample of 10-18 year old adolescents ( $n = 5,528$ , 50% females). Based on this study, 8% and 9% of Iranian adolescents are overweight and obese, respectively. In addition, 59% and 63% of the sample have high anxiety and depressive symptoms, respectively. The study does not show an association between overweight/obesity and anxiety/depression. Authors speculate that the lack of a link between mental health and obesity among Iranian adolescents might be due to a positive attitude toward fatness of adolescents among families and peers.<sup>[3]</sup>

The study has several strengths as it uses a nationally representative sample, has a large sample size, includes both genders, has a wide age range of participants, measures both anxiety

and depression, estimates threshold effects of both over-weight and obesity, and directly measures height and weight.<sup>[3]</sup>

Besides the above strengths, the study has some limitations. Major limitations of the study include not applying survey weights despite clustered sampling, relying on self-reported symptoms of anxiety and depression rather than conducting structured interviews that can provide information for Diagnostic and Statistical Manual (DSM) based diagnoses, and the lack of conceptualization of gender, age, ethnicity, and region as effect modifiers. My discussion here is on the last issue.

Although overall findings are also important due to the global obesity trends and the need for evidence based policy and practice for prevention,<sup>[5-7]</sup> results are also important because they suggest how the association between obesity and mental health may depend on a wide range of factors from individual to contextual factors.<sup>[8-19]</sup> We need cross-country comparison of factors associated with obesity to better understand the effect of contexts that shape risk factors and consequences of a health conditions like obesity.<sup>[20,21]</sup>

The link between mental health and obesity is complex and may vary based on individual (e.g. age,

gender, race, ethnicity and culture) or structural (e.g. nationality and region) characteristics.<sup>[8-11]</sup> Age may influence mental health causes or consequence of obesity and may moderate the mental health-obesity link. Early adolescence and late adolescence are very different in terms of cognitive and social functioning.<sup>[22,23]</sup> Analysis of a nationally representative sample of adolescents in grades 7-12 who had participated in the National Longitudinal Study of Adolescent Health suggested that only among the youngest adolescents, a significant link could be found between overweight and obesity on depression.<sup>[24]</sup> Using the 1996 National Longitudinal Study of Adolescent Health, Swallen *et al.* found that among the youngest adolescents, obesity was linked to depression and self-esteem.<sup>[8]</sup>

Obesity may be differently associated with shame and stigma during early, mid, or late adolescence.<sup>[8,24,25]</sup> Sjöberg *et al.* showed that shame only mediates the effect of obesity on depression among 15-17 years old.<sup>[25]</sup> Such assumptions are being supported by major theories of human development that suggest social orientation and self-concept develop with the aging of adolescents.<sup>[22,23]</sup>

Gender may also modify the association between obesity and mental health. Several studies among adults have shown that men and women may be very different in terms of association between mental health and obesity.<sup>[19,25]</sup> At least two studies among adolescents have suggested that obese girls may be more prone to depression than obese boys.<sup>[26,27]</sup>

Ethnicity should be considered as another candidate moderator of the association between obesity and mental health. Studies mostly among adults have shown that ethnic groups may be very different in terms of association between depression and obesity.<sup>[17,18]</sup> Although in different directions, both Gavin, *et al.*<sup>[17]</sup> and Sachs-Ericsson Sachs-Ericsson *et al.*<sup>[19]</sup> have reported that the association between obesity and major depression disorder depends on race/ethnicity.<sup>[17]</sup> A growing literature suggests that the intersection of ethnicity and gender may shape the mental health profile of obese people.<sup>[8-11]</sup>

Historically, most studies on the association between obesity and depression have been conducted among adults<sup>[28-30]</sup> and our knowledge is very limited on this link among adolescents.<sup>[31]</sup>

Most clinical attention has been given to physical aspects of health of adolescents with obesity, rather than to mental health of individuals.<sup>[32]</sup> Despite previous studies, our understanding on the link between obesity and mental health among adolescents is very limited.<sup>[3]</sup> In response to such a gap in the literature, CASPIAN-III and other nationally representative data sets should be analyzed for the association between obesity and mental health, while ethnicity, gender, age, or their intersections are conceptualized as possible moderators.

To conclude, although findings reported by Jari *et al.*<sup>[3]</sup> are supported by some previous studies,<sup>[8]</sup> adolescents should not be considered as a homogene sample regarding the link between obesity and mental health. I hope this discussion has emphasized a need for further analysis of similar datasets to solve the dilemma of obesity – mental health association among adolescents and adults.

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