

How Much Does Nutrition & Physical Activity Impact Obesity?

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Abstract

There is an evident link between nutritional choices and diet on an individual's risk of obesity, but the extent to which these two impact the disease is unclear. This paper aims to expand upon how diet and exercise influence a person's risk of obesity and how other factors may contribute to the disease's prevalence. The data collected by researchers in peer-reviewed articles show that obesity is a multifactorial issue influenced by biological, societal, and environmental factors that can make dieting and exercise hard. The researchers used descriptive and analytical statistical data to portray the relationship between these variables. We believe these findings will help readers understand that changing diet and exercise habits are very beneficial but may not be the only solution to combating the obesity epidemic. Reform to current obesity education programs may be necessary to be more effective.

Keywords: Obesity, physical fitness, nutrition.

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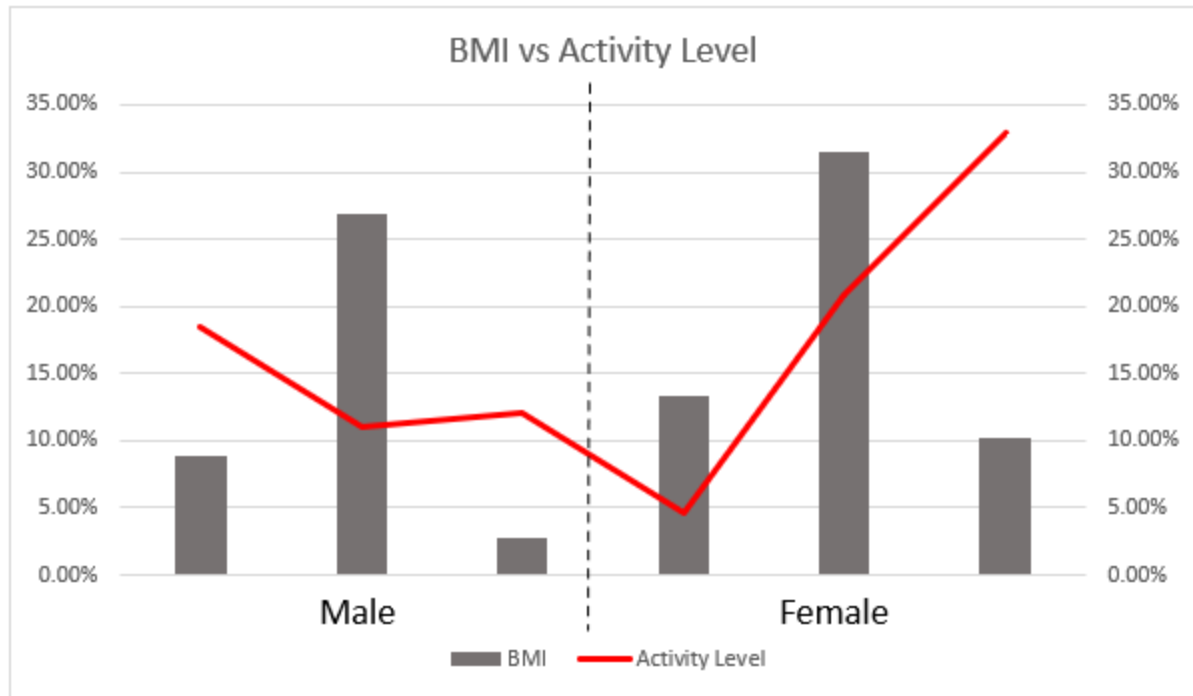
Obesity worldwide has tripled since 1975.⁵ Various factors contribute to the etiology of the disease, such as existing health conditions and genetics, things that people cannot always control. While this is true, diet and physical activity are two influential factors people can modify that can significantly reduce their risk of acquiring obesity. The question, however, is the extent to which diet and physical activity work amid other individualistic factors to prevent obesity in individuals without the disease and reduce obesity in those with the disease.

Materials and Method

To examine the effects of exercise on obesity, we analyzed articles that used numerous exercise intervention methods on obese patients. Many of them focused on different exercise intensities, like high intensity interval training versus aerobic exercise, and their respective effects on different markers, such as BMI or VO₂ max. We did similar measures to examine the effects of food on obesity with a focus on how food choices affect obesity. Statistical analysis was used to identify trends between these two factors.

Results

Interesting enough, some studies showed that eating had more profound impacts on obesity than physical activity. One study conducted by Yousif and Kaddam among Sudanese students with BMIs greater than 25 showed statistical insignificance between physical activity and BMI.⁶ These students participated in vigorous activity, moderate activity, and walking. Vigorous activity was defined as activities such as running and construction work.⁶ Moderate included swimming and carrying light loads, whereas walking included all types of walking.⁶



Despite this, a study conducted by Dewi et al. claimed that fat mass percentage, rather than BMI, is more significant as it can distinguish between fat and muscle.³ Pazzianotto-Forti et. Al observed increased VO2 max and walking speed following aerobic, resistance, and combination intervention exercises, indicating increased cardiovascular fitness, which is related to fat mass.⁴ Yousif and Kaddam also examined the effects of diet and whether the students reported restrained eating, uncontrolled eating, or emotional eating.⁶ Statistical tests determining the relationship between BMI and eating behavior showed a significant association. According to a study by Antin and Hunt, culture played a role in low-income, African American women's food choices and how filling the food was, not its nutritional value.¹ An increased prevalence of obesity was found in this sub-group as a result.

The combined effect of diet and exercise can have profound effects on weight loss and obesity. Diet changed coupled with exercise have more effects on weight loss than diet and

exercise alone and also conferred a smaller waist circumference and reduced fat percentage than diet-only.²

Discussion

Obesity is a prevalent disease worldwide, especially in the United States. According to the CDC, obesity in the United States was 41.9% in 2017. Researchers state that not making wise nutritional choices and completing limited or no physical activity can contribute to obesity. However, obesity rates continue to increase despite public efforts to increase food quality and encourage exercise. Increasing these two factors alone may not be enough to combat this complex issue; however, these two, coupled with other factors, may work. It is known that obesity is a multifactorial disease caused by a combination of personal efforts and biological, societal, and environmental factors that can make dieting and exercise hard. Individual palates and taste preferences, upbringings, culture, and genes can determine how hard or easy it is to exercise and diet. Therefore, obesity does not have a simple solution.

Regarding physical activity, researchers recommend that individuals participate in thirty minutes of moderate physical activity at least five days a week and fuel their bodies with foods rich in vitamins and minerals. By making these two healthy choices and considering individual influences, the risk for obesity would decrease, along with their chances of developing associated comorbidities, like diabetes. In conclusion, a person's chances of becoming obese can be impacted by physical activity, diet, and other related factors. Obesity prevention programs must take into account these complex set of factors when trying to reach this group.

References

1. Antin, T.M.J., & Hunt, G (2012). Food choice as a multidimensional experience. A qualitative study with young African American women. *Appetite*, 58(3), 856-863.
Retrieved from <https://doi.org/https://www.sciencedirect.com/science/article/pii/S0195666312000220>.
2. Chin, S. H., Kahathuduwa, C. N., & Binks, M. (2016). Physical activity and obesity: What we know and what we need to know*. *Obesity Reviews*, 17(12), 1226–1244.
Retrieved from <https://doi.org/10.1111/obr.12460>.
3. Dewi, R. C., Rimawati, N., & Purbodjati, P. (2021, April 14). *Body mass index, physical activity, and physical fitness of adolescence*. Journal of public health research.
Retrieved April 18, 2023, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8129745/>
4. Eli Maria Pazzianotto-Forti, Marlene Aparecida Moreno, Emma Plater, Silvia Beatriz Serra Baruki, Irineu Rasera-Junior, W Darlene Reid, Impact of Physical Training Programs on Physical Fitness in People With Class II and III Obesity: A Systematic Review and Meta-Analysis, *Physical Therapy*, Volume 100, Issue 6, June 2020, Pages 963–978, Retrieved from <https://doi.org/10.1093/ptj/pzaa045>.

5. World Health Organization. (n.d.). *Obesity and overweight*. World Health Organization. Retrieved April 18, 2023, from <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

6. Yousif, M.M., Kaddam, L.A. & Humeda, H.S. Correlation between physical activity, eating behavior and obesity among Sudanese medical students Sudan. *BMC Nutr* **5**, 6 (2019). Retrieved from <https://doi.org/10.1186/s40795-019-0271-1>