

Obesity among Adolescents during Pandemic COVID-19

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ABSTRACT

Background: Recently, studies had proved that the COVID-19 pandemic has affected adolescent daily life due to the rules such as movement control order (MCO) by the government. This may cause adolescents to have the potential to develop obesity. The study's aim is to evaluate the differences in eating behaviors, dietary intake, activity status, and other factors such as stress levels among adolescents during pandemic COVID-19. **Result:** Some studies revealed that overconsumption of food, stress & depression may result in overweight and obesity among adolescents through abnormal changes in their diet and lifestyles. **Conclusion:** Consequently, COVID-19 restriction will lead to the presence of an unhealthy diet and lack of physical activities. Therefore, promoting a healthy lifestyle among adolescents is crucial and ensuring parents' participation by giving them attention and caring.

Keyword: COVID-19

1.0 INTRODUCTION

According to WHO, obesity is defined as abnormal or excessive fat accumulation that presents a health risk. A BMI exceeding 25 is considered overweight and exceeding 30 is considered as obese (WHO, 2013). According to Gan WY et al., (2011), at this adolescent stage are more likely to have unhealthy eating behavior, poor physical activities, and drug abuse. Meanwhile, the pandemic of COVID-19, is also known as SARS-Cov-2 has interrupted every individual lifestyle. As Androniki Stavridou et al., 2021 mentioned, this is because all authorities such as schools, university, and factories are required to close, and all people are forced to stay at home to control and lower down the COVID-19 cases. The purpose of this study identifies how COVID-19 pandemic affects in dietary intake, activity, and weight status among adolescents during the lockdown. Therefore, the objective of this study is to evaluate the changes in weight and lifestyle. As the lifestyle become sedentary and dependent, it would be high risk of getting obesity and other diseases such as cardiovascular problem, hyperlipidemia, and diabetes.

2.0 LITERATURE REVIEW

This research also has been done that how the COVID-19 pandemic affects the lifestyles during lockdown previously and there are different ideas or opinions that are provided. According to WHO, over 340 million children and adolescents aged between 5 to 19 were facing overweight or obese in the year 2016. The prevalence of overweight and obesity among children and adolescents aged 5-19 has increased rapidly from just 4% in 1975 to just over 18% in 2016. The rise has occurred similarly among both boys and girls: in 2016 18% of girls and 19% of boys were overweight. Marianna Pellegrini et al., (2021) mentioned on the impact of COVID-19 has changed everybody's lifestyle especially adolescents such as their eating behavior that is unbalanced diet, physical activity which they become sedentary with the online classes, and mental health problems which become more stress and depress in the home, but they might release it through eating such as chocolate and desserts. Due to some issues such as poverty during the pandemic COVID-19,

they may develop unhealthy eating behaviors because of the high cost of healthy foods and they rather prefer low-cost food such as instant noodles. According to Gan, et al., (2011), they also love to consume snacks that contain high fat and calories dense food that could have a high risk of being overweight or obese. Marianna Pellegrini et al., (2021) also mentioned, sometimes isolation at home will worsen lifestyle behavior by reduced outing and increased weight gain due to sedentarism. Furthermore, E Tajik et al., (2015) highlighted those adolescents are weak in coping with stress and depression. At the same time, these might cause changes in physiologic outcomes, for example, changes in appetite, hormonal changes, and gastric emptying causing them to become craving for something to eat.

3.0 METHODOLOGY

This study is using a systemic review through meta-analysis that refers from others selected papers. The 5 main articles or journals will mainly be focused on while others are for additional information purpose. The first paper is from Switzerland under publisher MDPI which review obesity in children and adolescent during the COVID-19 pandemic. The second paper is from Malaysia that publishes by University Putra Malaysia which reviews differences in eating behaviors, dietary intake, and body weight status between male and female Malaysian university students. The third paper is from Malaysia, University Putra under publisher Pyrex Journal which reviews stress, depression, and obesity among adolescent. The fourth paper is from Malaysia which reviews on obesity determinants among Malaysian 12-year-old school adolescents and the last paper is from Italy under publisher MPDI which reviews changes in weight and nutritional habits in adults with obesity during the 'Lockdown' period caused by COVID-19 virus emergency.

4.0 DISCUSSION

Topic, author, location	Hypothesis	Methods	Results	Gap	Recommendation
Obesity in children and adolescents during COVID 19 Pandemic Androniki Stavridou Switzerland (2021)	An increase in sedentary behavior and quarantine time, decrease in physical activities could also be associated with obesity	Study Design- Snowballing technique. Inclusion criteria - Cohort studies - cross-sectional studies - - case-control studies Data Extraction - Data Extraction form Quality Assessment- Evaluate the risk of the adolescent through Newcastle-Ottawa Scale	A total of 15 articles were eligible; 9 identified 17,028,111 children, adolescents, and young adults from 5–25 years old, 5 pertained to studies with an age admixture (n = 20,521), and one study included parents with children 5–18 years old (n = 584). During the COVID-19 era, children, adolescents, and young adults gained weight.	Higher obesity rates were recorded during the pandemic, with the prevalence being increased more than 15% in many US states. During the lockdown, BMI increased significantly in adolescents and young adults (15–17 years) in China, while the prevalence of obesity rose from 10.5% to 12.9% ($p < 0.001$) in these age groups	Healthcare professionals should highlight the risk of obesity and promote prevention strategies, including parental participation. Worldwide policies, guidelines, and precautions measures should structurally be established.
Differences in eating behaviors, dietary intake, and body weight status between male and	An unbalanced diet due to excessive or inappropriate intake of calories	Socio-demographic background information	About 14.3% of males and 22.4% of females were underweight (UW), while 14.0% of	264 male and 360 female students in Universiti Sains Malaysia which reported that 27.4%	More attention should be focused on the calories and nutrition intake of this population based on

<p>female Malaysian University students</p> <p>Gan WY Nasir MT</p> <p>Selangor, Malaysia</p> <p>(2011)</p>	<p>or other nutrition is closely related to a higher risk of overweight</p>	<p>Anthropometric measurements by identifying the body mass index.</p> <p>Eating behaviors questionnaire- assess the frequency of meals being consumed per day.</p> <p>Dietary Intake Assessment- 24 hours dietary recall method.</p> <p>Statistical Analysis</p>	<p>males and 12.3% of females were overweight or obese (OW)</p> <p>More OW males (69.7%) and females (71.4%) were at high risk of abdominal obesity than NW males (1.8%) and females (4.5%).</p>	<p>of the students (32.8% females and 20.1% males) were underweight, 9.6% (6.1% females and 14.4% males) were overweight and 1.8% (0.6% females and 3.4% males) were obese.</p> <p>Only a third of the participants (30.8% males and 38.6% females) consumed breakfast daily.</p> <p>Our study showed that 27.8% of the male and 20.5% of the female students ate fast food at least once a week.</p>	<p>the recommended intake to maintain health. Nutrition education programs and interventions among university students should highlight the importance of the consumption of three main meals, iron and calcium-rich foods, and reduction in salt intake. Future research should assess serum micro-nutrients concentration in combination with anthropometric and dietary assessments to have a clearer picture of the nutritional status of university students</p>
<p>Stress, depression, and obesity among adolescent</p>	<p>Obesity among adolescents can cause depression and emotional</p>	<p>Descriptive design - used for quantitative studies.</p>		<p>Studies revealed that stress led to overweight and obesity among</p>	

E Tajik, LA Latiff (2015)	disturbances, especially in female	Data collection -interview and survey (questionnaires)		adolescents through decreasing physical activity and increasing food intake.	
Obesity determinants among Malaysian 12-year old school adolescents Aryati Ahmad, Nurzaime Zulaily Malaysia (2021)	Evidence from the developed countries showed that environmental factors, lifestyle preferences including increased portion of meals and decreased physical activities play pivotal roles in obesity	Cross-sectional study involved all adolescent in Kuala Terengganu.	The majority of adolescent (59.2%) were categorized as normal according to BMI-for-age z-score (BAZ) whilst 15.2% and 17.4% were in the obese and overweight category, respectively	This study discovered that 15.2% and 17.4% of the school adolescents in Terengganu (Malaysia) were overweight and obese. Parental BMI, birth weight, and intake of dairy products were positively associated with increases in BMI z-score. Parents who difficult to control their body weight often struggle in establishing a healthy lifestyle within the household.	Parental awareness, attitude, and action are extremely important in the initial steps to provide healthy behaviors among the household to prevent adolescent obesity.
Obesity and unhealthy lifestyle associated with	Poor executive function proficiency may	Cross-sectional study that targeted adolescents aged	1/3 of the adolescents (32.6%) in this research were	It could be that adolescents who had poor EF were	Improve EF by changing lifestyle

poor executive function among Malaysian adolescents (2012)	have side effects on adolescents' school academic performance.	between 12 to 19 years old. Collection data -Self-administered questionnaires (sociodemographic characteristics)	overweight or obese. Unhealthy lifestyle behaviors were also present in the adolescents. Around 70.0% of the adolescents are being reported that they skipped breakfast, while 47.2% skipped lunch and 47.4% skipped dinner. Only 6.2% of the adolescents were found to engage in high levels of physical activity.	predisposed to unhealthy behaviors which progressively contributed to obesity	behaviors during adolescence.
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5.0 CONCLUSION

In a summary, it can be concluded that of most adolescents' lifestyles are being affected by the COVID-19 pandemic through the restriction of lockdown in most of the country to lower the cases and mortality rate. Therefore, all adolescents in primary, secondary, and university must attend their the online platform by using Google meet, zoom, and Microsoft team. This would be an advantage for them to loot a burning house, whereby they didn't pay attention but instead of sleeping, eating and do whatever they wanted during the online class. This is because teachers and lecturers cannot focus on them one by one. This may lead to an unhealthy and dependent lifestyle due to an unbalanced diet such as skipping breakfast and sedentary for example lack of physical activities. Some of them might be influenced by stress and depression due to the long period of lockdown during the COVID-19 pandemic because they experienced a hard time getting on track with themselves by suffering to maintain their academic and assignments. They will reduce stress by having dessert and snacks instead to lower the stress. Finally, parents should keep an eye on their children's changes of behavior and lifestyles same as school and university should have the authority to control and help them to improve their lifestyles by organizing an interesting event such as online workout, health education or personality test for them. During the pandemic, a friend also plays a vital role as an advisor for them by helping them to handle stress, giving advice, and rebounding the health issues more quickly.

6.0 TERMINOLOGIES

1. Induction: is the of discovering a general principle from a set of facts.
2. Exclusion: defined conditions or characteristics that would make it inappropriate for a person to be enrolled.
3. Inclusion: is the specific conditions or characteristics that make it appropriate to apply an individual to a study
4. Triangulation: refers to the practice of using multiple sources of data or multiple approaches to analyzing data to enhance the credibility of a research study.
5. Validity: refers to how well an instrument measures what it is intended to measure.
6. Probability: this means that every member of the population has the chance of being selected.
7. Similarity: refers to something that is almost the same.

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