

Adolescent Mental Health and Physical Activity During the COVID-19 Pandemic in Padang City

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Abstract

The Covid-19 pandemic, a rapidly spreading infectious disease, limits one's activities and reduces physical activity as a result of the adoption of social isolation to reduce the risk of transmission. As the Covid-19 pandemic spreads, staying physically active is crucial to maintaining mental wellness. This study aims to investigate the relationship between physical exercise and adolescent mental health in the Covid-19 epidemic. This research uses a cross-sectional design and is quantitative. Using a stratified random sampling technique, 246 persons were sampled at SMPN Padang City. The Self Reporting Questionnaire-20 (SRQ-20) and Physical Activity Questionnaire-Adolescent (PAQ-A) questionnaires were distributed online using google forms for this study's collection of physical activity and mental health data. The data were analyzed using the Chi-square test. Adolescent mental health was shown to be significantly correlated with physical exercise (p-value = 0.000; OR 2.660; CI 1.568-4.515). Teenagers are advised to enhance their physical activity levels and learn about physical activities that can help prevent mental health difficulties during the COVID-19 pandemic in order to help prevent problems.

Keywords: Adolescent, Mental Health, Physical Activity

Introduction

Coronavirus disease 2019 (COVID-19) is caused by coronavirus, and it spreads through droplets and direct touch when an infected person sneezes or coughs (WHO, 2020). This virus can also be spread through concealed transmission, in which infected people do not exhibit symptoms and inadvertently infect others (Wu & McGoogan, 2020). The Indonesian government imposes laws to limit activities outside the home and physical distance. Restrictions on activities outside the house/social separation such as work, study, and religion to be done at home and activities involving numerous people that produce crowds should be avoided as much as possible. This social distance policy may result in emotional connections between individuals such as friends, neighbours, and even family. This significantly impacts mental health issues such as anxiety disorders and feelings of depression (WHO, 2020).

Various factors contribute to mental health difficulties during the COVID-19 pandemic, including limitations on travel, staying at home, maintaining distance, and outside activities, leaving people bored, stressed, anxious, and confused. Excessive information from the media, which increases stress and anxiety, can even affect symptoms of depression, mental health and increasing pressure, as well as feelings of despair and emotional tiredness (Roy et al., 2020).

Adolescents unable to adjust or manage themselves in new positions might become unstable and emotional, affecting their mental health since they are more vulnerable to life-threatening occurrences (Xu, Shen, & Wang, 2021).

The COVID-19 pandemic has had an influence on the mental and emotional health of children and adolescents in a variety of nations, causing a variety of symptoms. Moreover, a quarter of Latin American and Caribbean adolescents were anxious, and 15% were depressed. In China, 16 per cent of 194 cities reported moderate to severe depression symptoms, and 28 per cent reported mild to severe anxiety symptoms (Unicef, 2021). Another study reported 21.9 per cent of insomnia symptoms (Sun Q et al., 2021). Adolescents in Spain and Italy reported feeling restless and bored owing to changes in their emotions and behaviour during the quarantine period, which required them to stay at home and limit their activity outside the home (Orgilés et al., 2020).

According to Iqbal & Rizqullah's research, 63.6 per cent of respondents in Indonesia reported having mental health issues as a result of the COVID-19 epidemic. During the latter 30 days of the COVID-19 epidemic, problems frequently occurred; up to 26 responders (59 per cent) out of a total of 44 respondents, and roughly 9% of all respondents, had considered suicide (Iqbal & Rizqulloh, 2020). According to a poll by the Association of Indonesian Mental Medicine Specialists (PDSKJI), 6.8% of respondents had mental health issues, such as anxiety up to 65%, depression, 62%, and trauma up to 75%. (PDSKJI, 2020). According to research on young people in the city of Padang, 2.1% reported light anxiety, 43.9% reported moderate anxiety, and 54% experienced severe anxiety during the COVID-19 pandemic (Fitria & Ifdil, 2020).

Physical activity can impact mental health issues arising during the COVID-19 pandemic (Jacob et al., 2020). Physical movement can help lower sadness and anxiety symptoms, but physical inactivity may be connected with poor mental health during the COVID-19 pandemic (Ai X et al., 2021). According to Maugeri et al. (2020), physical activity efficiently improves mental health and reduces signs of mental health disorders such as depression and anxiety. This study aims to examine the association between physical activity and adolescent mental health at SMPN Padang City during the Covid-19 pandemic

Methods

Cross-sectional research was conducted. There were 984 participants in this study; all were students in classes VII and VIII at SMPN 11 Padang and SMPN 30 Padang. The formula produced a selection of 246 samples for the sample in this investigation. The proportionate stratified random sampling approach was used to carry out the sampling. The Physical Activity Questionnaire-Adolescent (PAQ-A) questionnaire by (Kowalski, 2004) was used in this study, and it consists of 8 items classified as light physical activity (Score 1-2.33), moderate physical activity (Score 2, 34-3.66), and strenuous physical activity (Score 3.67-5). The Self Rating Questionnaire (SRQ-20) was adopted from the SRQ questionnaire developed by WHO (World Health Organization) in 1994. Since 2007, the Indonesian Ministry of Health has utilized this questionnaire to examine the Indonesian population's mental health, consisting of 20 items classified as indicated mental health problems if the score is 6-20 and not indicated mental health problems if the score is 0-5. The statistical test used was the Chi-Square test.

Results and Discussion

Table 1. Frequency distribution of respondents by age and gender in adolescents (n=246)

Respondens characteristic	<i>f</i>	%
Age		
Children	6	2.5
Tenegee	240	97.5
Gender		
Male	87	35.4
Female	159	64.6

Based on table 1, most of the respondents were 14 years old (52.8%), as many as 130 respondents and most of them were female (64.6%), as many as 159 respondents.

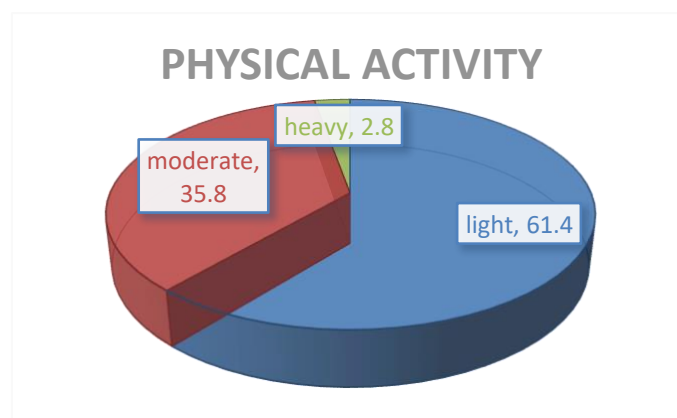


Figure 1. Distribution of physical activity during the Covid-19 pandemic (n=246)

The survey had 246 people participate. 61.4 percent engaged in light activity, 35.8 percent in moderate activity, and 2.8 percent in heavy activity. This study supports the findings of Khotimah and Wahjuni (2021), who discovered that 67.5 percent of teenagers engaged in light activities during the Covid-19 pandemic. The limits of movement and adolescents' lack of information about personal health to maintain fitness and develop body immunity are the causes of decreased physical activity during the Covid-19 epidemic. This research is supported by the analysis of Androutsos O et al. (2021). According to his research, 66.9% of adolescents' physical activity fell off during the Covid-19 epidemic.

Adolescents' physical activity during the Covid-19 pandemic was generally mild intensity, with as many as 179 respondents sitting more (talking, reading, and performing schoolwork) (74.4 percent). Dunton et al. (2020) discovered that physical activity declined more in older children (ages 9-13) than younger children during the COVID-19 pandemic. According to Rukmana E et al. (2021), as many as 59.6 percent of adolescents did not participate in physical exercise throughout the pandemic. Teenagers' physical activity levels are not the same as before the Covid-19 epidemic. Teenagers are not participating in extracurricular activities such as swimming, dancing, scouts, paskibra, and others at school or on campus due to the Covid-19 pandemic.

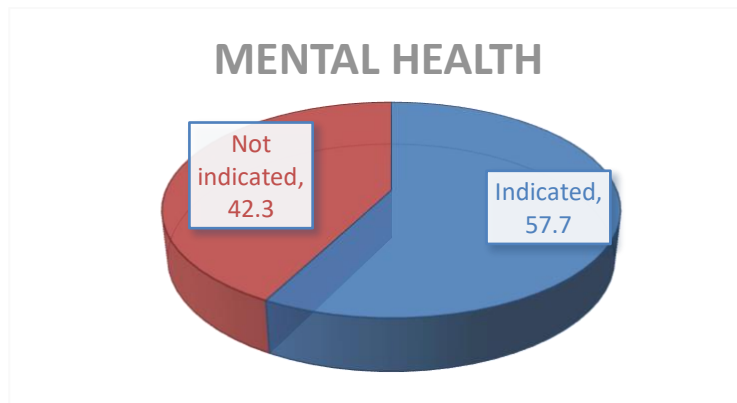


Figure 2. Distribution of mental health frequency during the Covid-19 pandemic

According to the findings of the teenage mental health research (Figure 2), the majority of respondents (57.7 percent) reported mental health difficulties, while fewer respondents did not indicate mental health concerns (42.3 percent). The majority (69.8 percent) of female respondents reported mental health difficulties, whereas nearly half of male respondents reported mental health problems (35.6 percent). The findings of this study are also validated by Mubasyiroh et al. (2017), who found that 64.8 percent of women have mental health disorders.

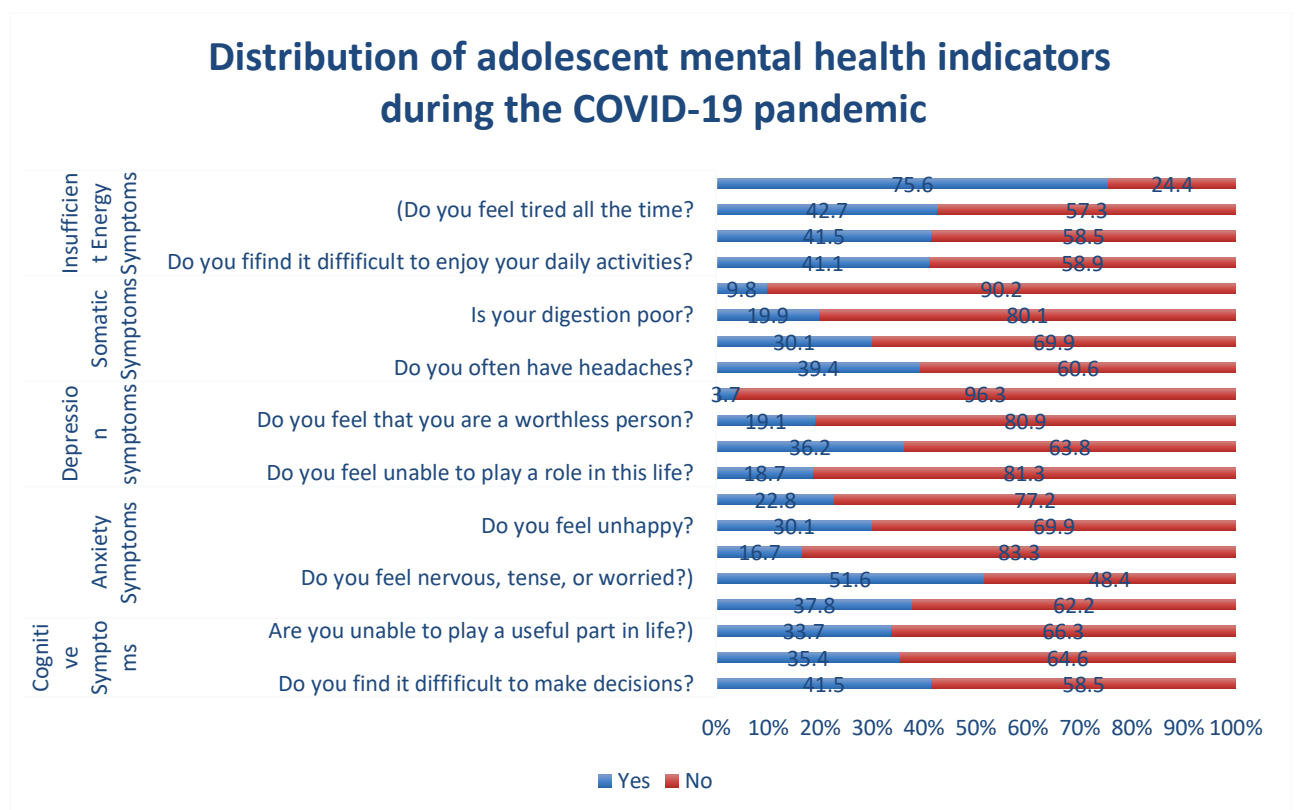


Figure 3. Distribution of mental health indicator during the Covid-19 pandemic

The SRQ-20 questionnaire was used to assess mental health concerns, which included five indicators: cognitive symptoms, anxiety symptoms, depressive symptoms, somatic symptoms, and feelings of low energy. According to the survey findings, nearly half (41.5 percent) of respondents frequently found it difficult to think properly due to evidence of cognitive disorders. Most (51.6 percent) teenagers frequently feel anxious, tense, and worried, and (36.2 percent) adolescents lose interest in many things due to depressive symptoms. Adolescents

typically deal with regular headaches, while signals of diminished energy and tiredness are experienced by nearly all (75.6 percent).

Table 2. Relationship between physical activity and adolescent mental health

Physical Activity	Mental health				P value	OR	95%CI
	Indicated		Not indicated				
	<i>f</i>	%	<i>f</i>	%			
Light	101	66.9	50	33.1	0.001	2.66	1.5- 4.5
Moderate and heavy	41	43.2	54	56.8			

Respondents who engage in light physical exercise are characterized primarily by mental health issues (66.9 percent). Meanwhile, the majority of the 95 respondents who engaged in moderate to vigorous exercises did not report any mental health issues (56.8 percent). At SMPN Padang City, there is a link between physical activity and adolescent mental health during the Covid-19 pandemic. The odds ratio is 2.66. (95 percent CI 1.568-4.515). This study found a link between physical exercise and adolescent mental health at SMPN Padang City during the Covid-19 pandemic. Based on the data analysis results, the p-value = 0.000 (p-value < 0.05). A significantly significant p value (p 0.05) suggests that physical activity levels and mental health are strongly related.

According to Brailovskaia et al. (2021), there is a link between physical activity and teenage mental health, specifically depression during the Covid-19 pandemic. According to this study, the majority of teenagers (66.9%) with low exercise reported mental health difficulties, while almost half (43.2%) with moderate and heavy activity reported mental health problems. According to the findings of the study, adolescents who engage in light physical activity appear to be more vulnerable to mental health problems. This study also discovered that women had more mental issues and lower levels of physical exercise than men. According to Pieh et al. (2020), the COVID-19 pandemic and lockdown appear to be most stressful for young adults (35 years), women, people without work, and those with low income. Physical activity was connected to psychological discomfort indirectly in both males and females via attractiveness appraisal, however the indirect effect was higher in females than males (Haugen et al., 2014). In this study, there were no significant differences based on age group. In contrast to Denche-Zamorano et al., (2022), inactive young individuals had a higher chance of acquiring anxiety, depression, and other mental problems.

According to study, low-intensity physical exercise is linked to the beginning of mental health disorders during the COVID-19 pandemic. Significant inverse association between cardiorespiratory fitness and levels of psychological difficulties (Avitsland A et al., 2020). These disorders and mental issues weaken the immune system, making a person more susceptible to infections. Furthermore, physical activity can assist improve the immune system and help prevent infection (da Silveira MP et al., 2021). Physical activity, according to neurobiological models, impacts brain-derived neurotransmitters, endorphins, and neurotrophic factors, which have consequences for a person's body and mental function (Briguglio et al., 2020). Physical activity can improve mood, self-confidence, and reduce anxiety and stress by increasing blood flow to the brain and increasing the circulation of adrenaline and endorphins (Haverkamp, B. F et al., 2021)).

Children and adolescents (6-17 years) should engage in 60 minutes or more of moderate-to-vigorous physical activity each day, the majority of which should be aerobic, with vigorous activity at least three days per week, including muscle- and bone-strengthening physical activity (Erickson et al., 2019). Physical activity is not only recommended as a non-

pharmacologic therapy for various pathological affections and for maintaining general health status, but it also has beneficial effects on cerebrovascular and cognitive functions (Rêgo, et al., 2019) and as an anti-depressive- [Cooney, et al., 2013]. Endurance activity increases circulating growth and neurotrophins (such as brain-derived neurotrophic factor, or BDNF), both of which have an influence on the brain. Physical activity can raise serum calcium levels, which can trigger dopamine synthesis in the brain. Dopamin affects mood and reward-related brain activities, and several writers have speculated that the beneficial qualities of physical activity may be owing to its potential to enhance dopamin concentration (Di Liegro et al., 2019).

Although our study focuses on the experiences of teenagers in Padang City regarding the challenges they suffer during the pandemic, such as social isolation and limits on outdoor activities, the same phenomena affect adolescents worldwide. As a result, our findings are applicable beyond the immediate geographic setting. Our findings are congruent with other countries' research, such as those in Europe and North America. Meta-analysis studies reveal that increased physical activity is connected with greater quality of life as well as fewer symptoms of depression, anxiety, and stress across all age groups. Women are more vulnerable to changes in mental health, whereas males are more vulnerable to changes in physical activity (Marconcin, *et al.* 2022). During the COVID-19 pandemic, teenagers who spent too much time looking at screens had a higher risk of depression (OR = 1.44 for depression, OR = 1.55 for anxiety), whereas teenagers who increased their physical activity had a lower risk of depression (OR = 0.58 for depression, OR = 0.66 for anxiety) (Xiang, M et al., 2022).

This study's findings highlight the need to regulate the activity done alone at home and use free time. Another strategy for implementing adolescent mental health interventions is to reduce screen use. During the pandemic, schools tried various ways to encourage youth physical activity, including offering sports classes at home. Students are asked to play games/exercises at home, record or produce videos of the activities, and then send the recordings to the teacher. Apart from examining sports subjects, this exercise promotes youngsters' physical activity. Our findings offer a unique perspective on the Southeast Asian setting, demonstrating how cultural, social, and economic elements specific to the region may influence the link between physical activity and mental health. The techniques and interventions produced from our research findings can be used to help youth problems all over the world. For example, the success of a specific long-distance physical exercise program by video conducted in Padang City could serve as a model for educational institutions in other nations seeking to do the same.

Conclusion

During the Covid-19 epidemic, most teenagers engaged in light physical exercise and reported mental health issues. During the Covid-19 epidemic, there is a significant link between physical activity and teenage mental health. Adolescents who engage in light physical exercise are 2.66 times more likely to have mental health problems than adolescents who engage in moderate to vigorous physical activity. More research is needed to determine the best types and intensities of exercise for promoting mental and physical health. Schools should consider physical activity as a strategy to overcome mental health problems.

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