

# The effect of physical activity level on mental health through COVID-19 pandemic

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## Abstract

Individuals' overall health and quality of life impacted by physical activity. People typically experience good mental health as result of how physical activity (PA) affects life quality. The presented paper will examine effect of physical activity practiced before and during COVID-19 pandemic on the mental health of individuals at Saudi society. A questionnaire designed and applied at random sample in Saudi Arabia for collecting data about demographic, habits of practicing physical activity before-during quarantine and mental health status of individuals. The collected data analyzed by software platform statistical analysis (SPSS). Statistics

measured frequencies and percentages. Non-parametric analysis tested trends before and during the quarantine.

Paper results appeared satisfaction of mental health for studying sample according to level of practicing the PA activity during quarantine comparing with numbers before that.

**Keywords:** COVID-19 pandemic, Physical activity, Mental health

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## 1. Introduction

COVID-19 announced as a pandemic world health organization (WHO) at 2020. Lack of treatment and vaccination changed the method used for individual protection, social distancing and complete lockdowns were the two procedures applied to avoid public contact. Thousands of people away of their daily behaviors as results of those procedures. Long term of the lockdown periods, increased the feeling of depressions and minimize the individuals' ability to stand the pandemic, it impacted people differently.

A significant impact on people's living patterns left by the COVID-19 epidemic. These consequences ranged widely, and they affected social and economic life. Individual psychology impacted by these changes, which in turn had an impact on mental health. On the other side, the complete lockdowns' impact on physical activity (PA) leaves high negative effects on mental health. The severity of these effects varied from person to person depending on their age, how much the pandemic affected economic conditions, and their propensity psychologically to effectively handle new situations.

During the pandemic, lockdowns reduced the use of PA (Karageorghis et al., 2021; Stockwell et al., 2021). The COVID-19 pandemic reportedly caused a mental health catastrophe, according to Giuntella et al., 2021. Numerous studies (Brown et al., 2021; Karageorghis et al., 2021; Marashi et al., 2021) have demonstrated the impact of PA on both physical and mental health. The COVID-19 pandemic reportedly altered people's behavior, which had an impact on their general health, according to Karageorghis et al., 2021. Anxiety disorders, stress, and other organic ailments were among these consequences (Wolf et al., 2021). Men and women of various ages suffered from these illnesses and afflictions.

Sports, recreation, and other forms of development are all included in physical exercise. Additionally, it includes activities of daily living such as dressing, personal hygiene, washing, eating, and getting out of bed. IADLs (instrumental activities of daily living) are also used to organize life activities, such as using a phone or cell phone, taking medication, holding and handling cash, shopping, and processing activities that are deemed physically demanding (Wolinsky et al., 2011).

The importance of physical activity for all people in all age groups and both genders agreed upon by wellbeing and scientific norms. Normal physical activity promotes healthy growth and progress while lowering the risk of infection in later life (Al-Za'abi et al., 2018; Hashem Kilani et al., 2020). Children can develop important mobility skills and create social connections through routine movement (Hashem Kilani, Al-Hazzaa, et al., 2013). Additionally, engaging in different forms of exercise is important to prevent cardiovascular diseases, stroke, type 2 diabetes, and other cancers (Al-Hazzaa et al., 2010; Hashem Kilani, Alzakwani, et al., 2013).

Along with improving balance, adaptability, and health, it also strengthens bones and muscles (Huang et al., 2020; H. Kilani, 2020; M. I. Kilani et al., 2003). Additionally, practicing proactive actions with elderly people would help them adjust and prevent falls and injuries (M. I. Kilani et al., 2003).

Studies have demonstrated a significant relationship between PA and both physical and mental health (Auny et al., 2021; Brown et al., 2021; Giuntella et al., 2021; Kaplan, 2002; Meiring et al., 2021; Stockwell et al., 2021). According to research done by authors, the pandemic's main impact on mental health was the worry and sadness it generated in people (Giuntella et al., 2021). The prevalence of these cases among young people noted by Giuntella et al. (2021) and Marashi et al. (2021). According to (Marashi et al., 2021), the impact of the pandemic's cause on mental health varied with age and income. Physical activity (PA) reported to offer protection against COVID-19 (Stockwell et al., 2021). Munindradasa (2021) demonstrated how the COVID-19 pandemic caused widespread worry among people. They claimed that people's lives were harmed by despair and stress brought on by financial stress, leaving mental repercussions.

The sample exhibited mild sadness and moderate anxiety because of the pandemic, according to Marashi et al. (Marashi et al., 2021). The outcomes additionally demonstrated a high correlation between anxiety and depression. In contrast, the findings indicated that the pandemic had a greater impact on the age range of 19 to 29 years, which had higher levels of anxiety and sadness than the group of 30-35 years. Because of the pandemic, the survey's findings indicated that strength-based exercise

declined by 32 minutes while aerobic activity among the sample fell by 22 minutes. Additionally, the findings indicated that those who did less PA during the pandemic had higher levels of anxiety and sadness. Even though a portion of the sample indicated that the number of physical activity hours had reduced, Sokic et al.'s research from 2021 showed that athletes who engaged in physical activity during the pandemic experienced the least depression.

In order to examine the impact of the pandemic on physical activity, Stockwell et al. (Stockwell et al., 2021) evaluated 45 articles. According to the findings of all investigations, the pandemic stopped or eliminated the practice of physical activity. While the population as a whole lowered its level of physical activity during the lockdown hours, more than 50% of adults and children with medical issues did. The overall findings demonstrated that the pandemic in general and the lockdown periods had a negative impact on physical activity practices. Giuntella et al. (2021) noted a decline in the number of steps taken during physical activity in 2020 as compared to 2019. Furthermore, compared to 2019, the amount of PA has sharply decreased in 2020. Because of the pandemic's lockdowns, people slept for longer periods. Males and females both reduced their physical activity levels during the epidemic, Katewongsa et al.'s research from 2021 demonstrates. Physical activity linked to the pandemic's temporal period, according to research by Dunton et al. (2020). With the passage of the lockdown time, physical activity significantly decreased.

The main aim of the presented work is examining how the COVID-19 epidemic has affected physical activity and Saudi Arabia's mental health.

The study used international criteria to assess respondents' physical activity levels and mental health within the context of the epidemic. This essay will use KSA as a case study to conduct a longitudinal investigation of the pandemic's impact on eastern communities.

## 2. Methodology

An analysis of the effects of physical activity (PA) on Saudi Arabian people' mental health and sleep habits was done in a quantitative manner during the COVID–19 epidemic. The questionnaire is a method for gathering data. The questionnaire for COVID–19 protection measures that made available online via Google Forms. The questionnaire has three parts. The first portion focused on compiling the sample's demographic data, such as age, gender, weight, height, and educational attainment, in addition to social status, health status, and tobacco use, as well as country of residence, housing, occupation, and the presence of chronic diseases.

The frequency of physical activity use among the random sample collected in the second section. Utilizing the Five–Dimensional WHO index, the third section of the questionnaire sought information on the respondents' mental health (Morgan, 1985).

A group of physical health experts given the questionnaire. The questionnaire given to the pilot sample took into account their suggestions and amendments. A random sample taken from the original sample of (50) respondents was used to test the distributed questionnaire. The questionnaire completed by the pilot sample twice, two weeks apart. Using the split–half procedures, the consistency of the answers is

measured. The pilot sample's overall consistency reached 86%, above the allowable limit (Hair et al., 2007).

614, people participated in the random sample of responders. The collected questionnaire run via SPSS for analysis. The descriptive statistics used to calculate the frequencies and percentages of replies on various parts. The impact of physical activity on the study sample's mental health was quantified using non-parametric analysis for discrete measurements (Hair et al., 2007).

Here are some examples of character traits, motion, and attitude. After confirming its legitimacy and customizing it to fit Saudi society, participants completed a multi-level electronic form that delivered to them. The WHO Five-Year Mental Health Index (WHO-5) and the WHO-5 are among the sub-levels of resolution in the demographic and cultural data.

### **3. Results and Discussion**

Analysis for the data that collected from the random sample through questioner done by applying SPSS. Demographic characteristics, mental health measurements, and Physical activity state analysis results will discussed as following

#### **3.1. Demographic characteristics**

Both men (57.1%) and women (42.9%) completed the surveys that were distributed. The levels of physical activity among various ages were also determined by including a variety of ages. The age groups with the

highest participation rates were those between 42 and more years old (37.1%), followed by those between 32 and 41 years old (36.1%), 23 to 31 years old (20.0%), and 18 to 22 years old (6.8%). With this age distribution, it is possible to examine the differences between the PA techniques used by COVID-19 and the mental health of various groups. Figure 1, shows that graduates (30.0%) and bachelors (57.5%) held the majority of educational levels.

95.0 % of the participants in the survey were from cities, while 5.0 % were from urban areas. According to the sample, smokers made up 80.7% of the respondents, while non-smokers made up only 19.3%. 73.2% of the sample's participants were married, compared to 23.2% who were single and 3.6% who had recently been divorced as in figure 1. Because of COVID-19 pandemic lockdowns, the difference in demographic features provides a chance to look into the physical activity level among Saudi citizens as well as monitor their overall health.



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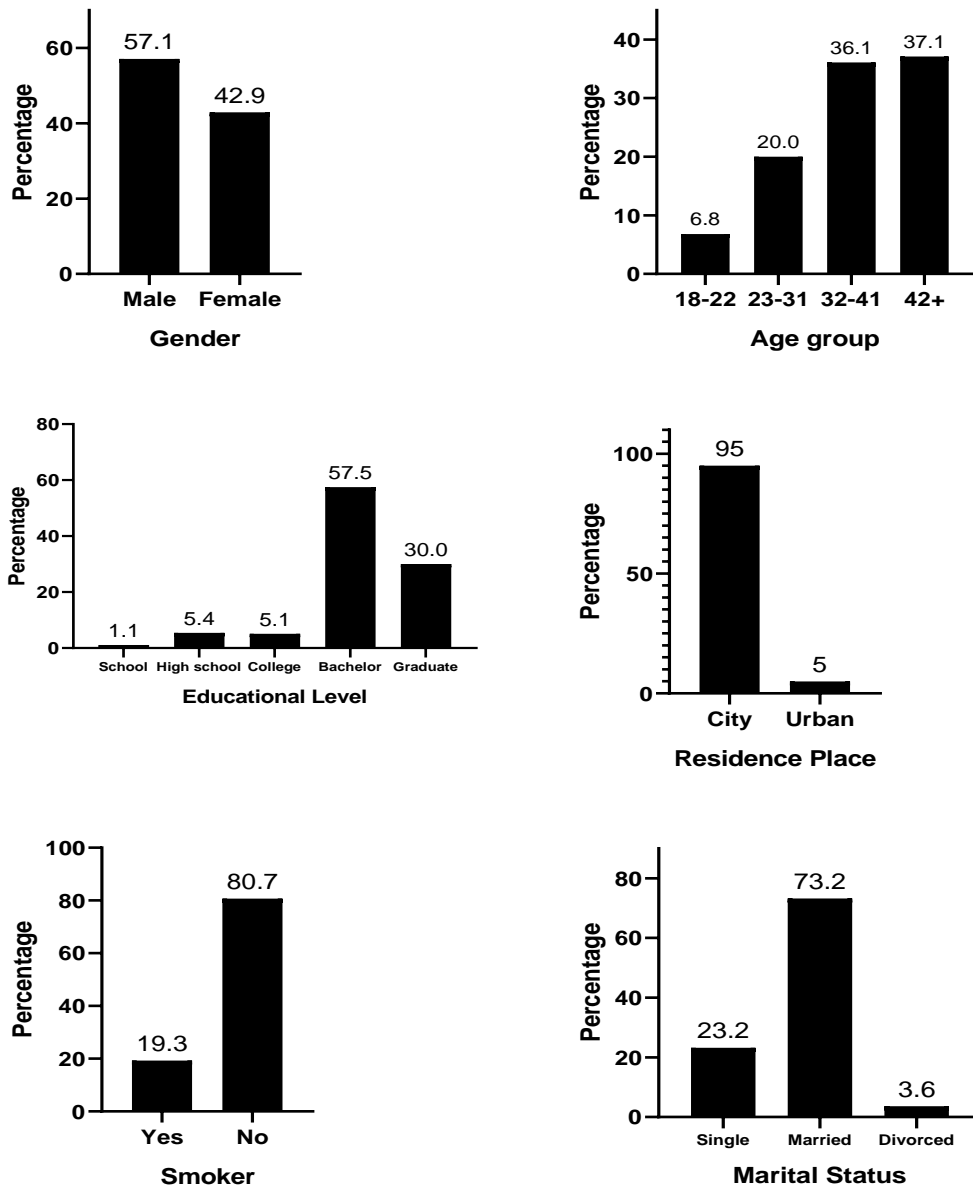


Figure 1: Sample Demographic Characteristics

### 3.2. General – Mental Health Measurements

The findings indicated that Saudi citizens had a variety of health issues, prior either to or following the pandemic. The findings indicated that the majority of the sample was overweight or obese (35.7% and 28.6%, respectively). These two populations were more prone to have greater health issues during the epidemic. The majority of the sample (80.0%)

has additionally demonstrated that they have chronic illnesses. The sample's overall health was in excellent condition (72.9%). The sample's average health status was 18.6%, while the lowest was a low health status of 8.6% as shown in figure 2.

The findings indicated that the sleeping patterns and mental state of the examined group most affected by the COVID-19 pandemic. Because of the pandemic, the majority of the sample reported having poor sleep quality and more than one third of the sample (38.6%) revealed signs of mental instability.

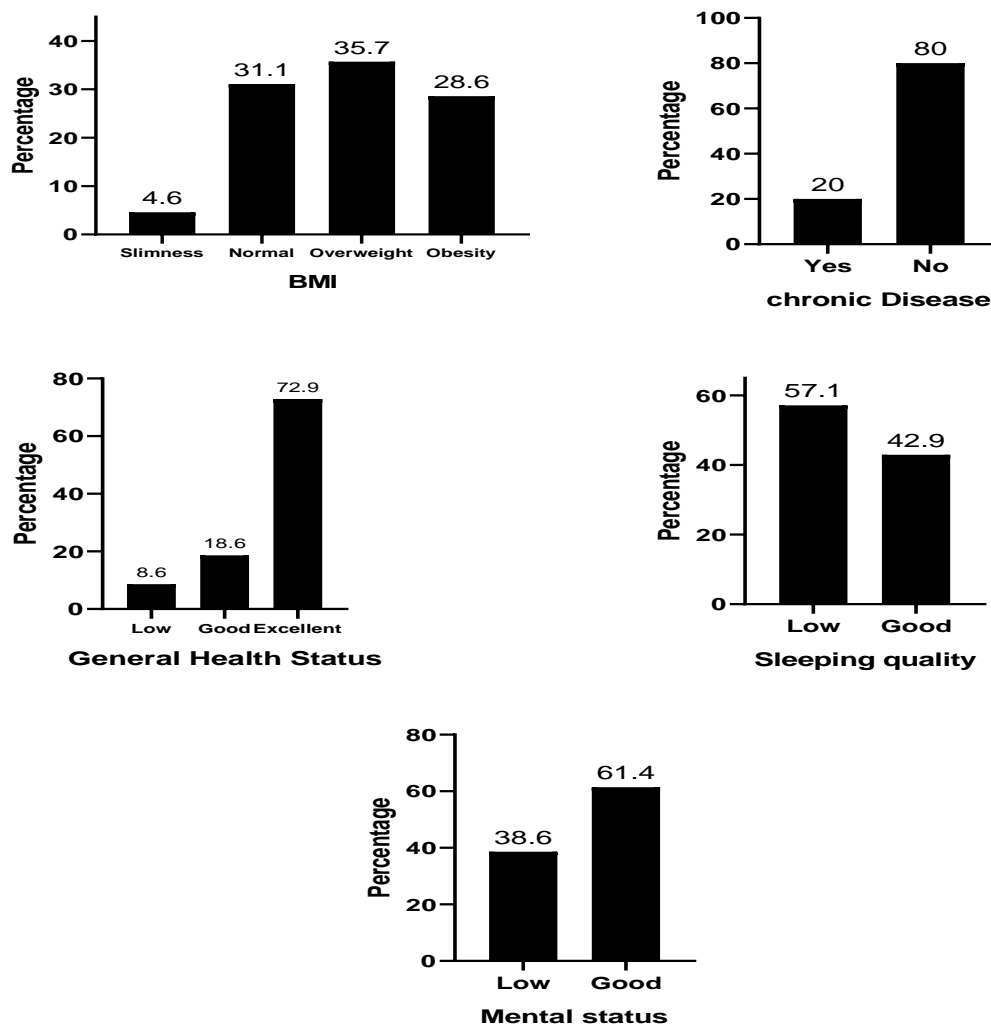


Figure 2: Respondents General Health Conditions

### 3.3. Physical Activity (PA) Before – During Quarantine

The findings demonstrated that both before and throughout the quarantine periods, the patterns of physical activity had changed. From 223 respondents prior to the quarantine to 259 respondents during the quarantine, there has been an increase in the non-practitioners of high intensity physical activity (HIPA). Additionally, the number of HIPA practitioners before the quarantine grew from 73 to 96, while the number of responders who had practiced HIPA twice climbed from 66 to 76. The number of practitioners grew during quarantine compared to the period prior to the quarantine for more HIPA practices. This could be a result of the young people in the sample practicing HIPA in a focused manner. As shown in figure 3, the results of the Chi-square test for the frequency before and during the quarantine were significant ( $p < 0.01$ ).

Period to period, different amounts of time spent engaging in high-intensity physical activity. When compared to the non-practitioners, 223 responses during the quarantine were HIPAs who had never practiced, while 259 were. Over the course of the quarantine, there were less HIPA practitioners overall. According to the findings, during the quarantine periods of 30, 45, and 60 minutes, the number of HIPA practitioners increased. As shown in figure 3, the Chi-square test revealed significant differences between the comparisons made before and after the quarantine ( $p < 0.01$ ).

When compared to HIPA, moderate intensive physical activity (MIPA) practiced various trends. During the quarantine, there were less MIPA

non-practitioners. Furthermore, throughout the quarantine, performing MIPA once or twice became less common. More MIPA practitioners are present during quarantine periods the more frequently MIPA practiced. Chi-square = 14.14 and  $p < 0.05$  were used to determine the significance of the comparison between before and after the quarantine periods. The number of people who did not practice MIPA during the quarantine declined. As seen in figure 3, the number of practitioners increased throughout the quarantine period for the other periods. Number of practitioners increased throughout the quarantine period for the other periods.

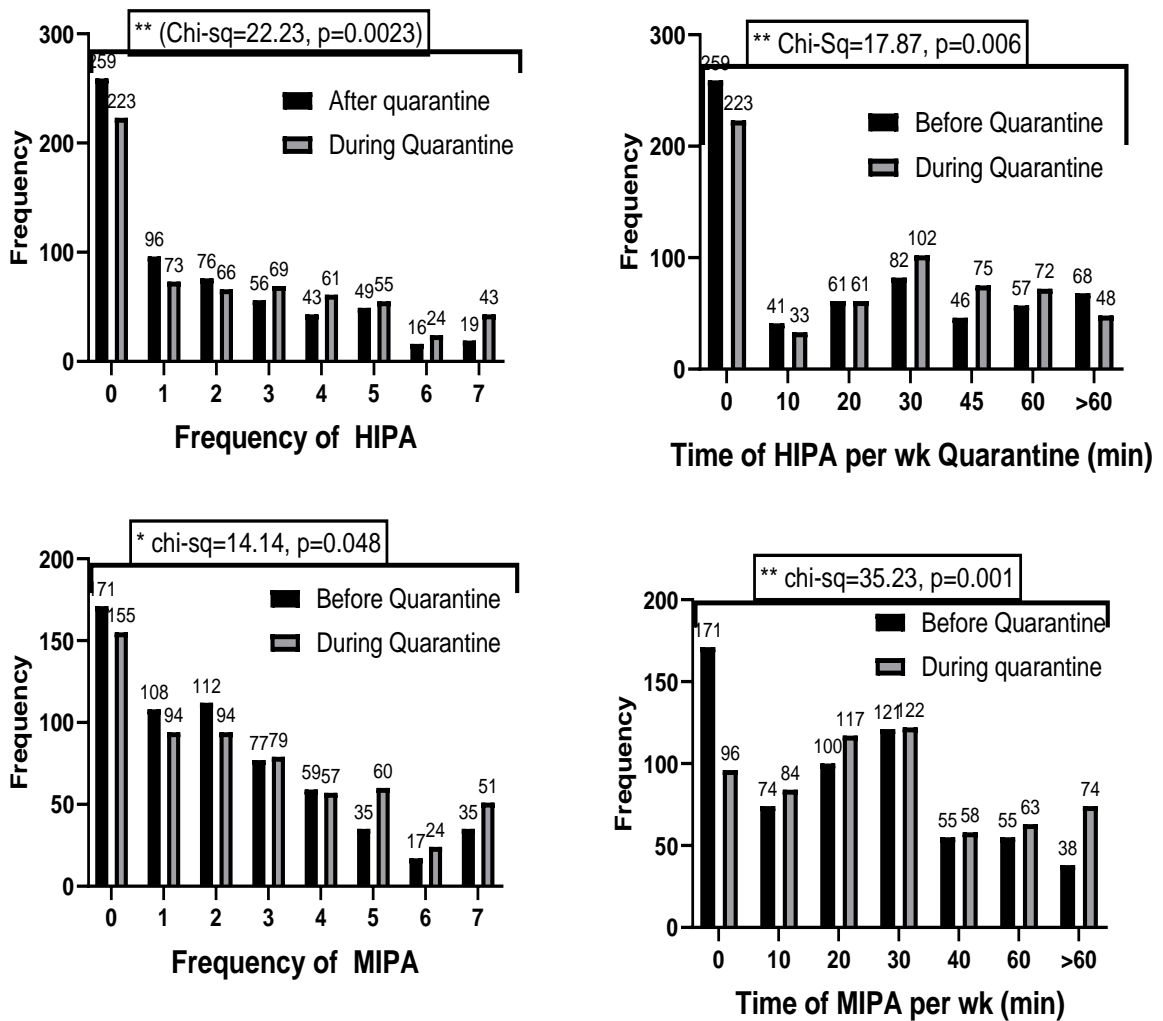


Figure 3: Levels of Physical Activity before – During Quarantine

#### 4. Conclusions and Recommendation

The presented paper study high and moderate intense physical activity practicing before and during COVID-19 quarantine. A random sample of participants selected for answering the designed questionnaire that used to collect data. 614 participants of Saudi citizens answered the questionnaire. Most of the sample were married and smokers. A

considerable percentage of the sample suffer chronic diseases. Results showed that

- Most members in the sample have decent mental health.
- Only around a third of the sample did not engage in either high–intensity physical activity (HIPA) or moderate–intensity physical activity (MIPA).
- Response of the quarantine sample varied in terms of how frequently it engaged in physical activity.
- There were more non–practitioners during the quarantine than there had been previously for the low frequencies.
- The sample's mental health improved throughout quarantine because of the practically constant physical activity practice.

The inclination of citizens to engage in physical activity is strong during and before the quarantine, but this tendency should, accompanied by the instruction of citizens of these practices using appropriate media tools. This is what we can recommend after analyzing the findings of our study.

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