

# Impact of COVID-19 Pandemic and Subsequent Lockdown on Quality of Life of High-School Students

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## ABSTRACT

COVID-19 is a pandemic which has caused significant disruptions in schooling and access to education. It is important to investigate the impact these lockdowns have had on the quality of life of high school students. Here, the World Health Organization Quality of Life (WHO QOL) bref survey is used to investigate the impact of the pandemic and subsequent lockdowns on the quality of life of high school students in urban Lahore, Pakistan. Using statistical analyses, it is found that concentrational levels, financial constraints, support from family and friends, and opportunities for leisure activities are the factors that significantly impact the quality of life of students. Furthermore, a correlation between general social determinants of health, including social and economic factors, was not seen, and is attributed to the skewness of the chosen demographic being from a higher income bracket.

**Keywords;** COVID-19 pandemic; lockdowns; quality of life; high school students.

## INTRODUCTION

The outbreak of the coronavirus began in Wuhan, China in December 2019, and, at the time, was identified as an unknown form of pneumonia. Rapidly transmitted from the infected patient, the coronavirus spread beyond the borders of China. The World Health Organisation (WHO) declared the coronavirus as the sixth public health emergency of international concern (PHEIC) on January 31, 2020. Just after 40 days, on March 11, 2020, the WHO declared the coronavirus to be a global pandemic.<sup>1</sup>

The COVID-19 wasn't slow to reach Pakistan. On February 26th, 2020, Pakistan reported its first case in Karachi. Given its nature, the virus rapidly spread in the country, becoming an epidemic, similar to other nations around the globe. With confirmed cases reaching an alarming number of 4601, the government of Pakistan placed a nationwide lockdown which was implemented on April 1, 2020 and was extended till May 9, 2020.<sup>1</sup> During this lockdown, life changed and, among other things, all educational institutions were either shifted to a virtual form of learning or were asked to close down their campuses until further notice.

The COVID-19 outbreak and subsequent lockdown affected the quality of lives of many across the nation. In order to investigate the quality of life of high school students in urban Lahore, Pakistan, WHO Quality of Life Bref was used.<sup>2</sup>

## MATERIALS AND METHODS

A descriptive cross-sectional study was carried out to investigate the quality of life of high school students in urban Lahore during the COVID pandemic and subsequent lockdown. 239 high school students of the same demographic were surveyed using the WHO QOL Bref survey. The survey was filled virtually, and participants were asked to answer the questions specifically with regards to the COVID pandemic and subsequent lockdown in Lahore, Pakistan. After collecting the data, a statistical test was carried out to better understand the data. The

statistical test that was carried out was the 'z test' at the 0.05 significance level.

(1)

$$z = \frac{\bar{x} - \mu_0}{\sigma}$$

where  $\bar{x}$  is the sample mean,  $\mu_0$  is the population mean and  $\sigma$  is the population standard deviation. The population data was assumed to be normally distributed.

A multiple regression analysis was also carried out using the Data Analysis Toolpak in Microsoft Excel to determine how much each factor affects or does not affect the overall quality of life. The hypotheses for the regression analysis are as follows:

(2)

$$H_0 : u_i = 0$$

(3)

$$H_a : u_i \neq 0$$

where 'i' covers all the factors (questions 2-26 in WHO QOL Bref).

A shorter version of the original questionnaire (WHO QOL Bref) was used to carry out this study. It contains 26 questions, and the first two questions refer to the overall perception of quality of life and health. The rest of the questions were divided into four domains: physical, psychological, social, and environmental. To assess the quality of life, individual questions were rated on a five point Likert scale. Score of one indicated low or negative perception and a score of five indicated high or positive perception. These scores were scaled in a positive direction, and the higher the score, the higher the quality of life. However, some aspects like pain and discomfort, negative feelings, and medicational dependence were scaled in a negative direction, meaning that lower scores denoted higher quality of life. The scores for each question in each domain were calculated according to a formula given by the WHO. The mean domain scores were

multiplied by four and were transformed to scores that could be used in the WHO QOL-100 assessment.

**RESULTS AND DISCUSSION**

A total of 239 high school students were surveyed in which 125 were girls and 114 were boys. The average age of high school students is 17.05 ± 2 years. The first question was asked to assess the ‘overall perception of quality of life.’ It is statistically significant to conclude that participants are not satisfied with their overall quality of life and with their general health (p values < 0.05).

Table 1: Relationship of general perception of quality of life and health with regards to COVID pandemic and subsequent lockdown.

Quality of life	Girls	Boys
<b>General Perception of Quality of Life</b>		
Poor	2(1.6%)	8(7%)
Neither poor nor fair	34(27.2%)	15(13.2%)
Fair	89(71.2%)	91(79.8%)
<b>Health satisfaction</b>		
Poor	14(11.2%)	9(7.9%)
Neither poor nor fair	46(36.8%)	26(22.8%)
Fair	65(52%)	79(69.3%)

Fair ≥ 4; Poor ≤ 2; Neither = 3

**Physical Domain:** It is statistically significant to conclude that the COVID pandemic and subsequent lockdown does not prevent the respondents from doing what they need to do due to physical pain and does not affect their ability to get around (p values < 0.05). However, there isn’t enough evidence in the data to conclude that respondents have enough energy for their daily work, are satisfied with the quality of their sleep, and are satisfied with their capacity to work (p values > 0.05).

**Psychological Domain:** It is statistically significant to conclude that the COVID pandemic and subsequent lockdown have made respondents’ lives less enjoyable, have made them feel that their lives aren’t that meaningful, have affected their concentration levels, and have led towards unsatisfactory behaviours towards themselves (p values < 0.05). This is because of stay-at-home orders which have created problems for respondents to carry out their daily activities such as recreational activities. However, there isn’t enough evidence in the data to conclude whether respondents are satisfied with their bodily appearance and whether they experience negative feelings (p values > 0.05).

**Social Domain:** In the social domain, it is statistically significant to say that respondents are not extremely satisfied with their personal relationships, sex life, and support from friends (p values < 0.05). This could be because of strict social distancing and a lack of interaction with peers and family, thus leading to a lack of feeling of security, support, and happiness.

**Environmental Domain:** After carrying out statistical tests, it can be concluded that high school students have more than enough money to meet their needs, have readily available information for their daily life, don’t have

extensive opportunities for leisure activities, are satisfied with the condition of their living place, and are not satisfied with their mode of transportation (p values < 0.05). This could be because the high school students are dependent on their parents for money, information, and condition of their living place, and are from a higher than average income bracket. They are not satisfied with the mode of transportation and opportunities for leisure activities due to closing down of public transport and roads. However, after conducting the statistical test, it was concluded that there isn’t enough evidence to decide whether students feel safe in their daily lives, are satisfied with their physical environment, and are satisfied with their access to healthcare services (p values > 0.05).

**Multiple Regression Analysis:** According to Table 2, the factors that reject the null hypothesis are statistically significant. Because the dependent variable in the multiple regression is the overall quality of life, the results show that these factors from Table 2 affect the overall quality of life at the 0.05 significance level and a predicted line equation for the overall quality is given in Appendix A.

From Table 2, it can be concluded that life satisfaction of high school students significantly affects the overall quality of life. This is because the more satisfied a person is with their life, the better the quality of life will be.<sup>3</sup> Moreover, the world has moved towards a digital era which has globally impacted the quality of life of many. In order to be successful, readily available information and money are required and play a vital role in being successful.<sup>4</sup> More money means more needs will be met and an accessibility to information means that students can work easily on their projects. Thus the aforementioned factors significantly affect the overall quality of life of high school students in urban Lahore.

This study shows that the COVID pandemic and subsequent lockdown have significantly impacted the quality of life of high school students in urban Lahore, especially in the psychological, social, and environmental domains. In order to improve the quality of life, all factors which are affecting the quality of life, such as interactions with friends, support from family, and leisure activities, should be addressed by strictly following all SOP’s as this is becoming the new norm.

**Appendix A.** Multiple Regression Analysis Equation:

$$\text{Overall QOL (Y)} = 1.535 + 0.312X_1 - 0.0841X_2 + 0.2X_3 - 0.0551X_4 - 0.0299X_5 - 0.0279X_6 - 0.0303X_7 + 0.114X_8 + 0.183X_9 + 0.0573X_{10} - 0.0273X_{11} - 0.00827X_{12}$$

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Table 2: Multiple Regression Analysis.

Variables	Coefficients	Standard Error	P-value	Decision
Intercept	1.535	0.3327	$6.617 \times 10^{-6}$	Reject $H_0$
How satisfied are you with your life?	0.3124	0.06151	$7.953 \times 10^{-7}$	Reject $H_0$
How much do you need any medical treatment to function in your daily life?	-0.08412	0.05550	0.13099	Accept $H_0$
How much do you enjoy life?	0.2001	0.06984	0.004555	Reject $H_0$
To what extent do you feel your life to be meaningful?	-0.05507	0.05136	0.2847	Accept $H_0$
How well are you able to concentrate?	-0.02998	0.05215	0.5659	Accept $H_0$
How safe do you feel in your daily life?	-0.02792	0.05037	0.5799	Accept $H_0$
How healthy is your physical environment?	-0.03036	0.05544	0.5844	Accept $H_0$
Do you have enough money to meet your needs?	0.1142	0.05524	0.03971	Reject $H_0$
How available is the information that you need in your day to day life?	0.1836	0.06648	0.006206	Reject $H_0$
To what extent do you have the opportunity for leisure activity?	0.05736	0.04849	0.2380	Accept $H_0$
How satisfied are you with your sleep?	-0.02732	0.04085	0.5042	Accept $H_0$
How satisfied are you with your access to your health services?	-0.008278	0.04596	0.8572	Accept $H_0$