

**The Study on The Mental Effect of Complete Lockdown on The Young and Adult
Population of Mumbai Metropolitan Area**

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Abstract

The Covid-19 wave hit India in the start of the year 2020. The government implemented a complete lockdown in the last week of March in 2020. This Lockdown was a new experience for many and hence it affected the mental health of a lot of individuals. This paper tries to study the effect of lockdown on mental health on the people on Mumbai Metropolitan Area. The survey was conducted 3 months after being in extreme lockdown. The PHQ-9 questionnaire is used to measure the depression level of individuals. The study reveals that there is a significant difference in the mental health of individuals before and after the lockdown. It also provides an insight into the gender gap in mental health.

Keywords: *PHQ-9, Depression, Lockdown, Mumbai, Adult, Mental Health*

1. Introduction

The COVID-19 wave hit India in the month of March. The government had to announce a complete lockdown in the last week of March. All establishments were closed due to Corona and people were not allowed to venture out of their homes. Life has come to a standstill in the bustling city of Mumbai. Mumbai is known as the city that never sleeps. However, the streets wore a deserted look when complete lockdown was implemented. The initial confusion, misinformation, being locked up in homes, no income, etc were some of the factors that affected the mental health of people all over the world.

This study uses PHQ-9, the most basic tool for assessing the mental health of people. It is a self-administered questionnaire which is usually used as a first step while diagnosing people with mental issues. It consists of 9 Questions hence it is called PHQ-9.

2. Literature Review

It is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. It has been validated for use in primary care (Cameron et al, 2008). It can be used for screening for depression because it has 61% sensitivity and 94% specificity in adults (Maurer,2012). PHQ-9 helps in finding the severity of depression in an individual. (Kroenke,K et al,2001). It helps in narrowing down individuals with an extreme level of depression. The PHQ-9 is the depression module of PRIME-MD, which scores each of the nine DSM-IV criteria as "0" (Not at all), "1" (Several days), "2"(More than half the days) and "3" (nearly every day). The total is then calculated and severity of Depression assessed as 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe.

The research by Adam-Prassl et al, 2020 reveals the difference in the mental health of women during the lockdown due to financial worries or childcare responsibilities. This study also reveals the same gender gap in mental health due to lockdown.

3. Methodology

A Survey was carried out in the month of May 2020 to assess the mental health of the individuals in Mumbai. This survey consists of 2 parts: personal details like age, gender, employed/studying and the PHQ-9 questionnaire for before and after lockdown. This survey was circulated amongst individuals in Mumbai and its surrounding suburbs using WhatsApp. A total of 231 responses were collected. The first step was encoding the response values in PHQ-9 as numbers.

Value	Number
Not at all	0
Several days	1
More than half the days	2
Nearly every day	3

The next step was to sum up the 9 values to find the severity of Depression before and after lockdown. The values for “Before lockdown” and “After lockdown” were summed separately. The severity of depression is measured as per the standard scale.

The data for “Before lockdown” and “After lockdown” were subjected to the Z-test to find if there was any difference between the samples. The paired Z-test was carried out because the sample size is more than 30.

4. Results and Discussion

The Survey was answered by 231 individuals, 133 male and 98 females. The age of individuals varied from 21 to 68 years. 46 people were aged below 25, 02 were above 60 and the rest were between the age of 25 and 60.

The study revealed that a total of 14 people were Moderately Severe & Severely depressed before lockdown and it increased to 32 after the lockdown. Out of the 14 depressed individuals, 05 females were depressed before and 15 after the lockdown. The number of depression in males is higher. The study shows number of depressed males as 09 before and 17 after the lockdown. The percentage of depression has increased two-fold due to lockdown from 6.06% to 13.85%. The depression in females has shot up by 11.17% from 35.71% to 46.88%. However, the depression in males has gone down by the same percentage from 64.29% to 53.13%.

Another notable aspect was related to employed/student status of individuals. It shows that 13 out of 14 depressed people were depressed before lockdown whereas 28 out of 32 were depressed after the lockdown. The depression level of people who were busy due to employment or studies has gone down from 92.86% (before) to 87.51% (after) lockdown.

Although, when we look at the percentage depression amongst individuals it seems low because we have considered only 2 categories of extreme depression i.e. Severe and Moderately Severe. The Z-test can be used to check whether there is a considerable difference between the mental health of individuals before and after the lockdown.

H₀ hypothesis: There is no difference between the values of people before and after lockdown.

$\alpha=0.05$

z-Test: Two Sample for Means		
	<i>BEFORE</i>	<i>AFTER</i>
Mean	6.619047619	8.155844156
Known Variance	18.80607042	28.31977437
Observations	231	231
Hypothesized Mean Difference	0	
Z	-3.402458124	
P(Z<=z) one-tail	0.000333913	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	0.000667826	
z Critical two-tail	1.959963985	

Since p-value < α , H₀ is rejected.

The average of Before Lockdown's population is considered to be not equal to the average of the After Lockdown's population. In other words, the difference between the average of the Before Lockdown and After Lockdown populations is big enough to be statistically significant.

p-value equals **0.000667826**, ($p(x \leq Z) = 0.000333913$). This means that the chance of type I error (rejecting a correct H_0) is small: 0.0006678 (0.067%).

The smaller the p-value the more it supports H_1 .

The test statistic Z equals **-3.402458**, is not in the 95% critical value accepted range: [-1.9600 : 1.9600].

$x_1 - x_2 = -1.54$, is not in the 95% accepted range: [-0.8900 : 0.9600].

The statistic S' equals 0.452 The observed standardized effect size is medium (0.32). That indicates that the magnitude of the difference between the average and average is medium.

This study is just very superficial and for accurate assessment longitudinal studies need to be conducted. (Ahrens et al, 2021)

5. Conclusion

The Extreme Lockdown implemented in the year 2020 put a lot of mental strain on individuals. Some of the people who were occupied due to work or studies were a bit relaxed due to a break from their grueling schedule. Also, women were more stressed out because of the additional responsibilities when all the members of the family were at home and no house help was available as well as the financial worries. The men were clearly relaxed from their tensions.

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