

PROJECT ON

IMPACT OF COVID-19 ON MENTAL HEALTH

GROUP-2
ST. XAVIERS COLLEGE, Mumbai(Autonomous)

MENTAL HEALTH CARE IS A RIGHT, NOT A PRIVILEGE

SUBMITTED TO MR.MAYUR MORE 2021-22

Department of I.T. / Statistics, MSC BDA-1 St. Xavier's College (Autonomous), Mumbai



AN INVESTIGATIVE SURVEY ON

IMPACT OF COVID-19 ON MENTAL HEALTH

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ACKNOWLEDGEMENT

We express our sincere gratitude to the Department of Statistics, St. Xavier's College for giving us the opportunity to carry out our survey on 'Impact of Covid-19 on Mental Health'. A special thanks to our teachers Mr. Mayur More for guiding us all the way from selecting a topic to conducting analyses. We would also like to express our gratitude to the rest of the faculty including Ms. Annapurna and Ms. Piyali whose academic teachings have played an important role in teaching us the concepts which helped us in analysing our findings.

PURPOSE AND OBJECTIVES:

Aim: To investigate impact of covid-19 on mental health.

Purpose: Coronavirus disease (COVID-19) pandemic has unfolded a tsunami of challenges for mankind experiencing loss of social networks, jobs, financial security, threatened loss of loved ones and taking toll on one's mental health. This has impacted the quality of relationships among parents, children and siblings. Students' mental health in higher education has been an increasing concern. The COVID-19 pandemic situation has brought this vulnerable population into renewed focus.

The consequences on mental health are going to be significant and must be dealt with the best way possible. We hope that the results of this survey will not only shed light on the impact of covid on mental health, but also propose possible solutions to avoid any further consequences on the future adult generation.

Target population: People 18-25 years of age in Mumbai.

Sample Size: 150

Objectives:

- 1) To analyze various factors affecting the mental health of an individual during the pandemic.
- 2) To determine the extent to which the usual activities, routines, livelihood and emotional lability of an individual have been affected in this period.
- 3) To investigate how prolonged screen time has caused concerns on mental health.
- 4) To determine how relocation during pandemic have affected the mental health.
- 5) To analyze how people overcome various mental health issues using the self-care methods.

Confidentiality Note: We respect your privacy. Your responses are completely anonymous and will be used for academic purposes only.

METHODOLOGY

OBJECTIVES:

The main aim along with 4 specific objectives of the study was defined.

QUESTIONNAIRE:

A comprehensive questionnaire was designed, consisting of 20 questions

encompassing various aspects such as demographics of the respondents, their preferences and attitude towards mental health and other required data needed for the objectives.

SAMPLE:

The sample (n=141) consisted of individuals 18 – 25 years of age from Mumbai, India.

SAMPLING METHOD:

The sampling method of SRSWOR (Simple Random Sampling Without

Replacement) was used.

DATA COLLECTION:

Data was collected by circulating the questionnaire via google forms.

DATA ANALYSIS:

Descriptive, Inferential, Association analysis was carried out using techniques such as chi square test, Pearson's correlation coefficient, etc. with the help of R and excel

PILOT SURVEY REPORT

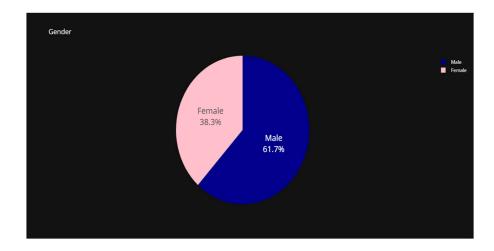
A pilot survey was conducted wherein 14 people were surveyed to ascertain whether sufficient analysis is possible from the data collected with our questionnaire.

Although we were fairly content with the data collected, some of the hidden errors in the questionnaire were rectified. Following are some of the changes:

- The income brackets were adjusted to enable greater analysis.
- Open ended responses came out to be vague. Therefore, we skipped that particular question.
- Q16 and Q17 were added later.
- The framing and formatting of some questions was improved.

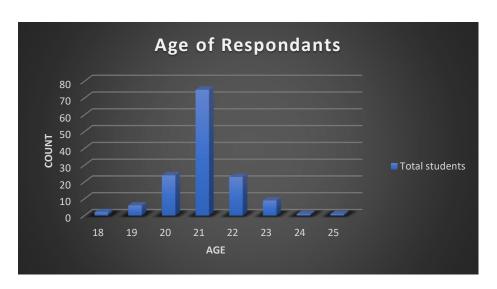
DEMOGRAPHICS

• Gender



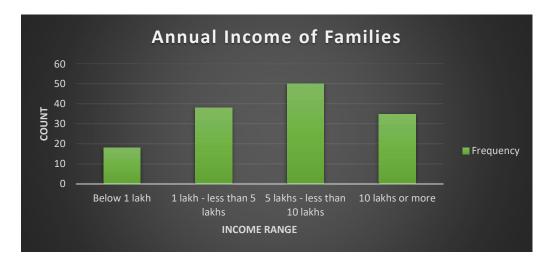
61.7% of the respondents were male while 38.3% of the respondents were female, i.e., the percentage of males in the sample was higher than the percentage of females.

Age



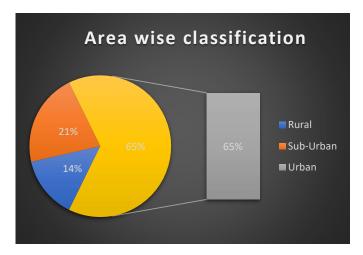
The **median** age is 21 years.

• Family Income



The median income is in the interval 5 – 10 lacs

Area



We observe that majority of the respondents i.e. 65% are from urban area followed by 21% from sub-urban while 14% belongs to rural area.

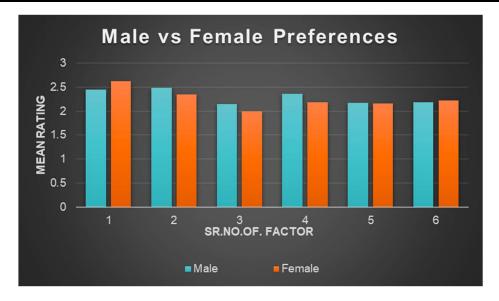
FACTORS AFFECTING MENTAL HEALTH

To analyze various factors affecting the mental health of an individual during the pandemic.

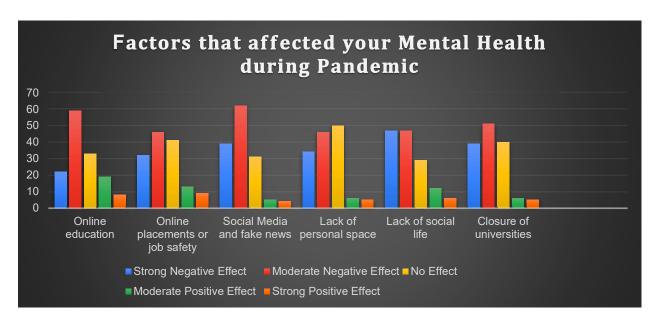
The respondents were asked to rate the influence of six factors on their impact on mental health on a 5– point Likert type scale with 1 indicating Negative Effect and 5 indicating Positive Effect. The mean and standard deviations of the 6 factors that affect the mental health are presented in the table below.

Sr. No.	Factors affecting the Mental Health	Total sam	ple (n=141)	Males (n= 87)	Females	(n= 54)
		Mean	S.D.	Mean	S.D.	Mean	S.D.
1	Online education	2.51	1.08	2.44	1.09	2.63	1.06
2	Online placements or job safety	2.43	1.12	2.49	1.12	2.35	1.12
3	Social Media and fake news	2.09	0.93	2.14	0.90	2.00	0.98
4	Lack of personal space	2.29	0.98	2.35	0.96	2.19	1.02
5	Lack of social life	2.17	1.11	2.17	1.20	2.17	0.96
6	Closure of universities	2.19	1.01	2.18	1.00	2.22	1.01

- The respondents rated "Online Education" having positive effect on mental health, followed by "Online placements or job safety".
- Social Media and fake news" tend to have negative effect on the mental health of an individual.
- The standard deviation is the highest in case of "Online Placements or job safety" followed by "Lack of Social Life". This shows that the respondents' ratings exhibited greater variation in these categories and we can conclude that they possess inconsistent attitudes w.r.t. these factors.
- Separate analyses by gender revealed that ratings in certain categories showed differences between the two genders. This can be better visualized in the graph below.

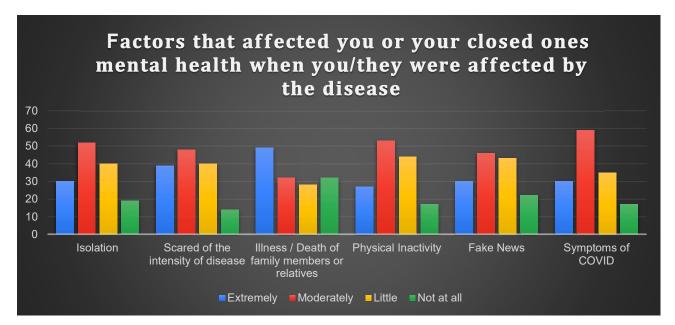


As we can see from the graph, Online Education (1), Online Placements and job safety (2), social media and Fake news (3) and Lack of Personal Space (4) show a noticeable disparity between the mean rating given by males and females



- A few factors that were thought to majorly effect mental health during the COVID-19 pandemic were taken into consideration namely: Online Education, Placements or Job Safety, social media and Fake News, Lack of personal space and social life, Closure of universities.
- Social Media and Fake News has a Moderate Negative Effect on maximum respondents followed by online education, closure of universities and Online Placements.
- Lack of personal space has no effect on maximum respondents.

To determine the extent to which the usual activities, routines, livelihood and emotional lability of an individual have been affected in this period.



- Illness/Death of family members or relatives has extremely affected the respondents.
- Symptoms of COVID, Isolation, scared of the intensity of the disease, Physical Inactivity and Fake News has moderate effect on mental health.

We will use **Chi – Square test** of independence to determine whether the following attributes are independent.

Attribute 1: Gender

Attribute 2: Physical Inactvity

i.e., To test whether the physical inactivity affecting mental health is dependent on gender or not.

Assumptions:

 \checkmark The sample is random.

✓ Large enough sample size: Applying chi square test to small samples exposes the test to an unacceptable rate of Type II (non – rejection of a false null hypothesis) error. Many researchers set the minimum required sample size at 50. Our sample meets this criterion.

✓ Adequate cell size: When values in each individual cell are too small, the value of chi square tends to be overestimated. This is result in too many rejections of the null hypothesis. To avoid making incorrect inferences, cell size should be at least 5.

Hypothesis:

H0: A and B are independent i.e. There is no association between gender and physical inactivity affecting mental health during the pandemic.

H1: A and B are not independent i.e. There is an association between gender and physical inactivity affecting mental health during pandemic.

Level of significance: 0.05

Observed frequencies:

Physical Inactivity						
Gender	Not at all	Little	Moderately	Extremely	Total	
Male	12	27	32	16	87	
Female	5	17	21	11	54	
Total	17	44	53	27	141	

R CODE

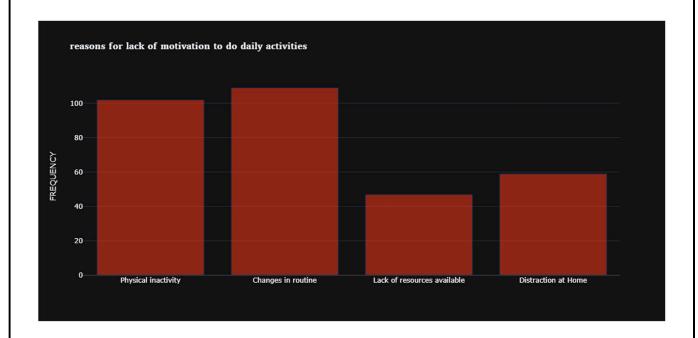
```
obs=matrix(c(12,27,32,16,5,17,21,11),nrow=2,byrow=TRUE)
colnames(obs)<-c("Not at all","Little","Moderately","Extremely")
rownames(obs)<-c("Male","Female")
```

obs

chisq.test(obs,correct=F)

OUTPUT

Since p- Value > α , we accept H0 at 5% LOS. We can conclude that A and B are independent and we can say that there is no association between gender and physical inactivity affecting mental health during pandemic.



- As illustrated from the above graph, Changes in Routine is the main reason behind lack of motivation to do daily activities.
- However, restrictions caused by pandemic encouraged people to stay at home causing to have a negative effect on physical activity, hurting their mental health.

To Determine the dependance between Fear of Infection and Factors Affecting Mental Health



On a scale of 1 (No Fear) - 5 (Extremely Feared) we can analyse that majority of the respondents were scared, while around 43 of the respondents were very scared of getting infected.

We conducted a **Chi-Square test** of independence, between fear of infection and factors affecting mental health. The following were the p-Values :

H01: Isolation is independent of Fear of Infection.

H02: Scared of intensity of disease is independent of Fear of Infection.

H03: Illness/Death is independent of Fear of Infection.

H04: Physical Inactivity is independent of Fear of Infection.

H05 : Fake News is independent of Fear of Infection.

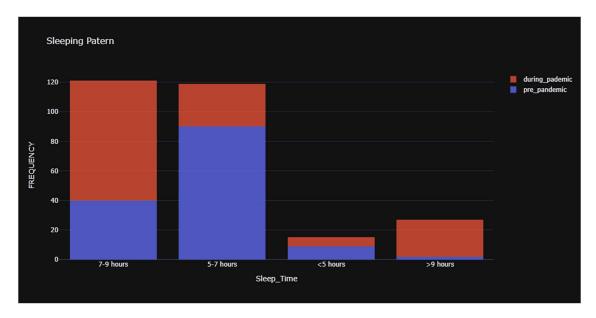
H06 : Symptoms of Covid is independent of Fear of Infection.

	p- Values						
	Isolation	Scared of intensity of disease	Illness/Death	Physical Inactivity	Fake News	Symptoms of Covid	
Fear of Infection	0.0221	0.0002	0.0144	0.2154	0.1363	0.0002	

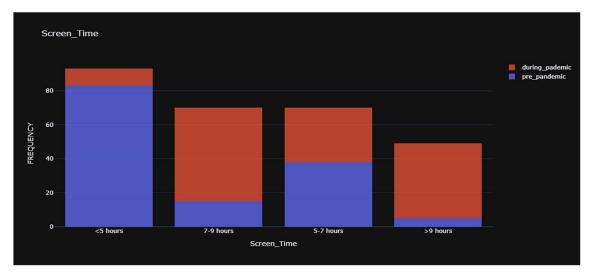
Hence we can accept the hypothesis H04 and H05. Physical Inactivity and Fake News are independent of Fear of Infection.

However, we reject H01, H02, H03, H06. Isolation, Scared of intensity of the disease, Illness/Death, Symptoms of Covid is dependent on the fear of infection which basically leads to loneliness, stress, panic, fear among the respondents.

To investigate how prolonged screen time has caused concerns on mental health.



As evident from the graph, the average hours of sleep was of longer duration during the pandemic compared to pre-pandemic which can be stated as if people do not face uncomfortable sleep cycle, their mental health is better.



Since the pandemic shifted work and education to online, the average screen time during pandemic increased compared to the average screen time prepandemic which is in tandem with the fact that less physical activity and more screen time impacts mental health of an individual during the pandemic.

PEARSONS CORRELATION

Hence, we performed a Pearson correlation coefficient to understand if the two variables 'Screen Time' and 'Sleeping Time' are logically related to each other or not.

The Pearson correlation coefficient is a measure of the strength of a linear association between two variables and is denoted by r. Basically, a Pearson correlation attempts to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient, r, indicates how far away all these data points are to this line of best fit (i.e., how well the data points fit this new model/line of best fit).

The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0 indicates a negative association; that is, as the value of one variable increases, the value of the other variable decreases.

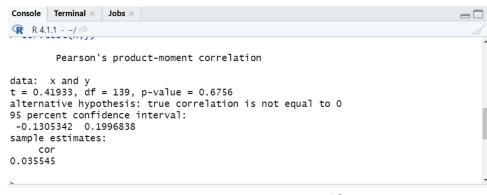
R CODE (PRE PANDEMIC) -

```
x=correlation_data$'avg sleep pre pandemic'
y=correlation_data$'avg screen time pre pandemic'
cor.test(x,y)
plot(x, y, pch = 19, col = "lightblue")
```

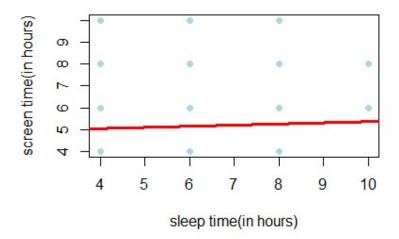
Regression line

abline($Im(y \sim x)$, col = "red", Iwd = 3)

OUTPUT



Before Pandemic



The correlation coefficient between Screen Time and Sleep Pattern Pre-Pandemic came out to be: r = 0.035545

Which shows very weak positive correlation (Almost close to 0) between the two variables.

i.e., as Screen time increases, the sleep time also increases.

R CODE (DURING PANDEMIC)-

x=correlation_data\$`sleep hours`

y=correlation_data\$`screen time`

cor.test(x,y)

plot(x, y, pch = 19, col = "lightblue")

Regression line

abline($lm(y \sim x)$, col = "red", lwd = 3)

OUTPUT-

Pearson's product-moment correlation

data: x and y

t = 1.5323, df = 139, p-value = 0.1277

alternative hypothesis: true correlation is not equal to 0

95 percent confidence interval:

-0.0372225 0.2880575

sample estimates:

cor

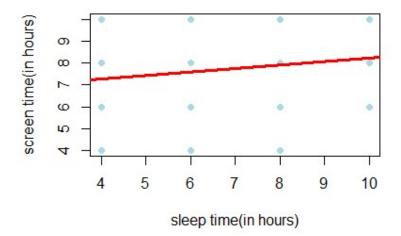
0.1288827

```
Console Terminal × Jobs ×

Pearson's product-moment correlation

data: x and y
t = 1.5323, df = 139, p-value = 0.1277
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.0372225 0.2880575
sample estimates:
cor
0.1288827
```

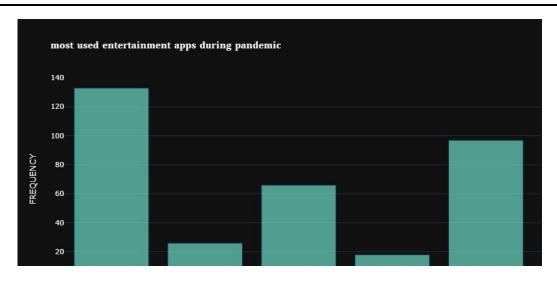
During Pandemic



The correlation coefficient between Screen Time and Sleep Pattern during Pandemic came out to be: r = 0.1288827

Which shows weak positive correlation between the two variables.

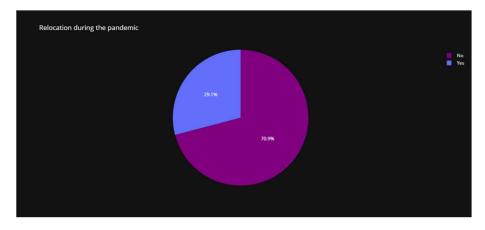
i.e., as the Screen Time increased the sleep time also increased during the pandemic which states that the sleeping pattern wasn't that affected since lockdown was imposed, which restricted people to move out which helped to take more rest.



The most used entertainment apps during pandemic were Instagram, OTT Platforms, Games which results in more screen time leading to depression and anxiety.

To Determine How Relocation During Pandemic Have Affected the Mental Health.

RELOCATION AND FEAR OF DISEASE



Most people did not relocate during the pandemic

We will use Chi – Square test of independence to determine whether the following attributes are independent.

Attribute A: Intensity of Fear of Disease

Attribute B: Relocation

i.e., To test whether the fear of disease is dependant on relocation or not

Hypothesis:

HO: A and B are independent i.e. There is no association between Intensity of Fear of Disease and Relocation during the pandemic.

H1: A and B are not independent i.e. There is an association between Intensity of Fear of Disease and Relocation during pandemic.

Level of significance: 0.05

R CODE

obs=matrix(c(5,3,12,14,7,7,16,37,29,11), nrow=2,byrow=TRUE)

colnames(obs)<-c("Not scared","Little scared", "Moderate scared", "Highly scared", "Extremely scared")

rownames(obs)<-c("YES","NO")

obs

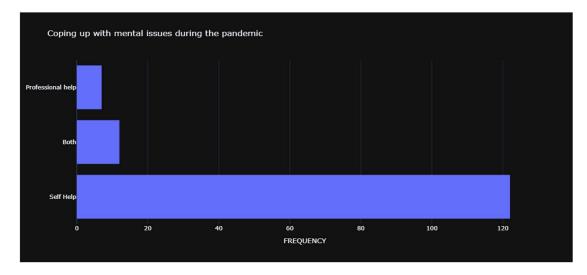
chisq.test(obs,correct=F)

OUTPUT

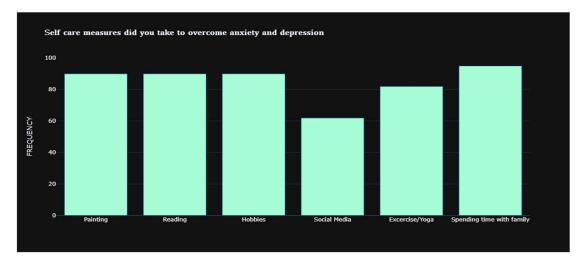
```
Terminal ×
Console
                 Jobs ×
R 4.1.1 · ~/ ≈
> obs=matrix(c(5,3,12,14,7,7,16,37,29,11),nrow=2,byrow=TRUE)
> colnames(obs)<-c("Not scared","Little scared","Moderate scared","Highly scare
d", "Extremely scared")
> rownames(obs)<-c("YES","NO")</pre>
> obs
    Not scared Little scared Moderate scared Highly scared Extremely scared
YES
             5
                                           12
                           16
                                           37
                                                          29
                                                                           11
NO
> chisq.test(obs,correct=F)
        Pearson's Chi-squared test
data: obs
X-squared = 4.1419, df = 4, p-value = 0.3871
```

Since p- Value > α , we accept H0 at 5% LOS. We can conclude that A and B are independent and we can say that there is no association between Intensity of Fear of Disease and Relocation during pandemic.

THERAPY AND METHODS OF COPING



Majority of the respondents coped up with mental health through self help. A little of the respondents took professional help i.e. from Counsellors, Online Resources, Mental Health Practioners, while some took professional as well as Self-help.



The self care measures taken by the respondents were Spending quality time with family, pursuing some hobbies like, Painting, Reading, etc.

Some also kept themselves busy with Exercise or Yoga.

Social media had a positive and a negative impact on mental health as well, but it did helped few respondents to cope up with their mental health issues.

CONCLUSION:

The study was initiated keeping certain objectives in mind. Following are the conclusions drawn w.r.t. the objectives:

• To analyze various factors affecting the mental health of an individual during the pandemic.

This was undertaken in the "Factors affecting Mental health" section. The mean and SD of the ratings on various parameters gave us an insight as to which factors are highly valued by the respondents. We learnt that respondents considered Online Education having positive effect on mental health, followed by Online placements or job safety. Social Media and fake news tend to have negative effect on the mental health. We also performed separate analyses by gender. Descriptive analysis showed a possibility for a statistically significant difference between males and females.

Illness/Death of family members or relatives has extremely affected the respondents.

Symptoms of COVID, Isolation, scared of the intensity of the disease, Physical Inactvity and Fake News has moderate effect on mental health.

We also performed a Chi-Square Test on Gender and Physical Inactivity affecting mental health of an individual at 5% L.O.S.

And the result could be summarised as there is no association between gender and physical inactivity affecting mental health during pandemic.

 To determine the extent to which the usual activities, routines, livelihood and emotional lability of an individual have been affected in this period.

Changes in Routine is the main reason behind lack of motivation to do daily activities. And the restrictions caused by pandemic encouraged people to stay at home causing to have a negative effect on physical activity, hurting their mental health.

We performed a Chi-Square test to analyse and the result obtained was that Scared of intensity of the disease, Illness/Death, Symptoms of Covid is dependent on the fear of infection which basically leads to loneliness, stress, panic, fear among the respondents.

To investigate how prolonged screen time has caused concerns on mental health.

Since the pandemic shifted work and education to online, the average screen time during pandemic increased compared to the average screen time pre-pandemic which is in tandem with the fact that less physical activity and more screen time impacts mental health of an individual during the pandemic.

• To determine how relocation during pandemic have affected the mental health

Only 30% of the population relocated during the Pandemic. We performed a Chi-Square test to analyse and the result obtained was that the Intensity of Fear of Disease was independent of Relocation.

• To analyze how people overcome various mental health issues using the self-care methods

Majority of people used self care methods compared to professional methods. Self Care Methods like Pursuing hobbies, Exercise and Yoga helped the respondents to cope up with the mental health.

Limitations and Scope for Improvement:

- Important thing to be noted is that the topic of this study, which is trying to analyze the impact of covid19 on mental health is a largely qualitative topic and hence there is little to no data that is quantitative.
- This study used self-reported questionnaires, which have issues with subjectivity and reliability.
- Finally, since we had to do an online survey, our respondents were people who know to read and understand English. And therefore, our survey was restricted to educated people in Mumbai.
- In addition, because of the limited sample size, these findings may not represent the entire population. Therefore, a larger sample size might be needed.

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 https://science.thewire.in/health/we-must-intervene-now-to-check-the-covid-19-induced-mental-health-pandemic/
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https://doi.org/10.1016/j.ajp.2020.102083

QUESTIONNAIRE:

1.	Age in completed years.
	0 18
	o 19
	0 20
	o 21 o 22
	o 23
	0 24
	o 25
2.	Gender
	o Male
	o Female
	o Prefer not to say
3.	Area
	o Rural
	o Urban
	o Sub-Urban
4.	Annual Income of your family
	o Below 1 lakh
	o 1 lakh – less than one lakh
	o 5 lakhs – less than 10 lakhs
	o 10 lakhs or more

5. What are the factors that affected your Mental Health during Pandemic?

	Strongly	Moderately	No Effect	Moderately	Strongly
	-ve	-ve		+ve	+ve
Online education					
Online placements or job safety					
Social Media and fake news					
Lack of personal space					
Lack of social life					
Closure of universities					

	o Voc						
	o Yes						
	o No						
				ted you or you			
nos	t aurın	g tne pand		nen you/they v			
Isola	ation		Not at all	Little	Moderat	ely	Extremely
	ed of the i	ntensity of					
Illne	ss / Death	-					
	nbers or re						
	sical Inactive News	vity					
	ptoms of C	COVID					
	o No How s	scared wei	re you of be	eing getting in	fected?		
).		T			T T	5	
		scared wei	re you of be	eing getting in	afected?	5	HIGH
	Hows	T			T T	5	HIGH
	How s	1	2		4		
	LOW What	1	reasons for	3	4		
	How s	were the	reasons for	3	4		
	How s Low What Distr	were the raction at ho	reasons for ome	3	4		
	How s Low What Distr Lack Char	were the raction at ho	reasons for ome es available routine	3	4		
10.	How s Low What Distr Lack Char	were the raction at he raction	reasons for ome es available routine	3	vation to do o	laily activ	
.0.	How s Low What Distr Lack Char	were the raction at he raction	reasons for ome es available routine	lack of motiv	vation to do o	laily activ	
.0.	How s Low What Distr Lack Char Phys	were the raction at he raction	reasons for ome es available routine	lack of motiv	vation to do o	laily activ	
0.	How s Low What Distr Lack Char Phys What < < 5 h	were the raction at he raction	reasons for ome es available routine	lack of motiv	vation to do o	laily activ	

12.	What were your average hours of sleep during pandemic?
	o <5 hours
	o 5-7 hours
	o 7-9 hours
	o >9 hours
13.	What was your average screen time pre-pandemic?
	o <5 hours
	o 5-7 hours
	o 7-9 hours
	o >9 hours
14.	What was your average screen time during pandemic?
	o <5 hours
	o 5-7 hours
	o 7-9 hours
	o >9 hours
15.	What were your most used entertainment apps during pandemic?
	□ Instagram
	□ Facebook
	□ Twitter
	□ News apps / T.V
	□ Games
	□ OTT platforms
	□ Other
16.	Did you relocate during the pandemic?
	o Yes
	o No

17. you !	What problems/hardships did you face after this relocation that affected r mental health?
	□ Toxic environment
	□ Lack of personal space
	□ Problem in arranging basic amenities
	□ Other
18.	How did you cope up with the mental health issues during pandemic?
	o Self Help
	o Professional Help
	o Both
19. dep :	What all self care measures did you take to overcome anxiety and ression? (could be more than one)
	□ Spending time with friends and family
	□ Exercise/Yoga
	□ Social Media
	□ Pursuing Hobbies (Gardening, Reading, Painting etc.)
	□ Other
20.	If professional help was taken, where did you get the help from?
	□ Counsellors
	□ Mental health professionals
	□ Practitioners
	□ Online resources
	□ Other