Summer Training Report

- **Study on Impact of COVID-19 on Mental Health of Adults**
- **Report on Online Course Customer Analytics**

By

Rakesh Reddy Surusani

Under the guidance of

Dr. P R Sodani

MBA Hospital and Health Management

2019-21

Institute of Health Management Research

The IIHMR University

Jaipur

ACKNOWLEDGEMENTS

I express my sincere thanks to Dr. P R Sodani (Dean, Faculty Mentor, IIHMR University) for his guidance and kind supervision for this report. The inspiration, encouragement and timely suggestions given by sir has helped me to shape and deliver my report.

I would like to pay my deep sense of gratitude to IIHMR University and its faculty for imparting knowledge and values. The learnings imparted during module delivery by the faculty has helped me sculpt the report to a great extent.

Lastly, I would like to thank my family and the Almighty for supporting me daily despite the hard times brought in by the pandemic situation

TABLE OF CONTENTS

PART-1 REPORT ON WORK FROM HOME

PART-2 REPORT ON ONLINE COURSE CUSTOMER ANALYTICS

Abbreviations:

BSE	Bombay Stock Exchange
GAD-7	General Anxiety Disorder 7-Item
MoHFW	Ministry of Health and Family Welfare
MERS	Middle East Respiratory Syndrome
NMDA	National Disaster Management Authority
PTSD	Post-Traumatic Stress Disorder
SARS	Severe Acute Respiratory Syndrome
UN	United Nations
WHO	World Health Organization

Report on Work from Home

By

Rakesh Reddy Surusani

Assigned and guided by Dr. P R Sodani (Dean, Faculty Mentor)

STUDY ON IMPACT OF COVID-19 ON MENTAL HEALTH OF ADULTS

MBA (Hospital and Health Management)

2019-21

Institute of Health Management Research

The IIHMR University

Jaipur

2. Introduction

In December of 2019, a group of uncharacteristic pneumonia cases have emerged in Wuhan, China, which resulted in rapid outbreak of coronavirus disease.(Wilder-Smith et al., 2020) On 9 January World Health Organization (WHO) stated that outbreak is triggered by novel coronavirus. It was declared as a public health emergency of international concern on 30 January 2020. The disease was named as COVID-19 by WHO on 11th of February. The disease rapidly spread across the world and was avowed as a pandemic by WHO on 11th of March. By this time it had already spread across 114 countries.(*Timeline of WHO's Response to COVID-19*, n.d.) This called for countries to take instantaneous and aggressive actions in order to regulate the spread of virus, approaches were being planned to perimeter the spread, save lives and minimalize the impact. The number of cases were rapidly rising, affected countries were dynamically trying to detect new cases, test for positive and segregate the positive cases and treat them. The virus by now has already reached community transmission and became very challenging to contain.

The first case of COVID-19 in India was reported on 30 January 2020. According to Ministry of Family Health and Welfare (MoHFW) India has a total of 648,315 cases, 394,226 recoveries and 18,655 deaths in the country as of on 4 July 2020.(*MoHFW | Home*, n.d.) On 22 March, Indian government had implemented a 14 hour voluntary curfew followed by a nationwide lockdown of 21 days by the order of Prime minister, this lockdown had affected the entire population of India in many ways. The lockdown was further extended on 14 April till 3 May which was followed by another two-week extension with sizeable relaxations. The government has started the unlocking phase on 1 June excluding the containment zones and non-essential items were made available to the general public.(*Coronavirus Lockdown Extended till 31 May, Says NDMA*, n.d.)

The response from the government though was aggressive it was requisite for containing the spread of the virus, the lockdown kept a hold on the spread of virus and the number of new cases were not rising exponentially. Use of facial masks and social distancing became the new norm and regular use of sanitizer and hand washing was promoted, there were strict restrictions on travel and movement was only allowed for essential items. The nation was divided into three zones namely Red, Orange and Green based on the number of active cases. Business establishments were shut down, educational institutions were closed until further notice and the BSE SENSEX witnessed a crash with an estimated loss of US$348 million on India.(*Trade*

Impact of Coronavirus Epidemic for India Estimated at 348 Million Dollars: UN Report - The Economic Times, n.d.)

Many migrant workers lost livelihood due to shutdown of factories and work places, they were left stranded and with lockdown imposed they had no place to live, thousands of migrants have walked for hundreds of kilometers to go back to their hometown and some were given shelter in the relief camps setup by the state governments. There was a sense of panic among the people, millions were left unemployed and the spread of fake news on social media created paranoia. There was panic buying and food supplies were disrupted. People were getting restless and scared of contracting the virus, there is an increased concern regarding the welfare of family members and often mental health is being ignored. The widespread social and economic catastrophe has produced a psychological impact of huge magnitude and the impact of COVID-19 has been profound. All this has been a challenge to the mental health care all over India.

We are being subjected to numerous amounts of pressure and going through an emotional turmoil, there have been outbreaks before even in the early parts of 20th century but the COVID-19 pandemic is on another scale of magnitude. The first reaction to pandemic has been panic and venturing into an unknown situation with fear clouding our minds, not knowing what to do and what to avoid, should we wear a mask if so which mask to use, how much distance should be maintained, is it safe to go outside, will there be a scarcity of essential items, endless doubts and worries. On the other hand, some of them are unworried and even reckless, who feel immune to the virus and do not follow any guidelines endangering their lives as well as others surrounding them. Social distancing and extended periods of lockdown has brought about changes to day to day activities, work from home and improved relation with ones living with us, social distancing has created separation from family members for those employed away from hometown, financial stress, boredom, anger, irritability and loneliness.

There are many stigmas that surround COVID-19, people being isolated from the society, families of medical professionals being harassed, turning a blind eye towards people seeking help for COVID-19, people with symptoms treated with hostility, prejudices against people and healthcare professionals, loss of humanity due to panic and false beliefs. In addition, persons with preexisting mental illness are more vulnerable during the pandemic. Some of them have adapted to the changes by remaining calm, indulging in hobbies, connecting with loved ones through digital medium and cultivating new habits. As the pandemic progresses mental

health professionals should anticipate evolution in mental health issues. Families of people affected with the virus or those who have lost their loved ones to the pandemic can feel agonizing pain and sorrow leading to depression.

COVID-19 has wedged the mental well-being of everyone in one way or the other, it is expected to rise with days passing by, it has created a challenge where the resources are limited, we need to manage with what we got, we need to adapt and improvise, need to involve non psychiatric health professionals to provide psychiatric help.(Brooks et al., 2020)(Duan & Zhu, 2020). There is a void in assessing the influence pandemic has created on the mental health of people and this study aims to fill that void and know the perception of people regarding mental health during the pandemic in India.

3. Materials and methods

This was a cross-sectional, descriptive type of study carried out as a survey amongst adults of above 18 years in India. The sampling technique used to carry out the survey is convenience sampling which is a nonrandom sampling where population is easily accessible, available at any given time and willing to participate. An online form was developed using google forms along with a consent note for voluntary participation, the questionnaire was forwarded through means of Email, WhatsApp, and other social media platforms. Only adults above 18 years of age of Indian nationality were recruited in the study. The study began on July 08, 2020 and the responses were collected till July 10, 2020.

The questionnaire has five sections, in the first section the participants were asked to fill their sociodemographic details like age, sex, place of residence and their educational status, the participant names or other personal information was excluded in order to maintain anonymity, after giving their consent to proceed with the survey they were directed to the next section. The second section consisted of five questions which were aimed to assess their awareness regarding the coronavirus pandemic, the participants were asked if they were following social distancing and are aware of precautions to take to prevent from contracting the virus. The third section included the General Anxiety Disorder 7-item (GAD-7) test which is commonly used as a measure of general anxiety symptoms and psychometric analysis. The GAD-7 consists of seven questions and requires 1-2 minutes to complete, for each question it provides four response options of “not at all,” “several days,” “over half the days,” “nearly every day” and these responses are scored as 0,1,2,3 respectively. After adding the scores for each column, scores of 5,10, and 15 are taken as cutoff points for mild, moderate and severe anxiety

respectively when the test is used as a screening test, the GAD-7 has a sensitivity of 89% and a specificity of 82%, it can also be used to screen other common anxiety disorders like post-traumatic stress disorder (PTSD)(Spitzer et al., 2006)

The section four of the questionnaire was aimed to assess the impact of pandemic on the participants metal health, it has 12 questions and for each question they had a 5-point ordinal Likert scale to measure the variations in frequency at which they face these issues. The response categories are given a rank order and data is analyzed using a mode since it is quantitative data we are working with and using mean would be inappropriate for ordinal data.(Likert, 1932). Section 5, the last section of the questionnaire was aimed to assess the perception of the participants towards mental health, whether we need to talk more openly about mental health, is there a need to bring about changes in policies surrounding mental health and would they recommend a psychiatrist if needed.

3.1 Research Question

What is the impact of COVID-19 pandemic on the mental health of adults above 18 years of age in India?

3.2 Broad Objective

To study the impact of COVID-19 pandemic on mental health of adults above 18 years in India.

3.3 Specific Objectives

- To assess the knowledge regarding the pandemic
- To measure general anxiety symptoms and psychometric analysis using GAD-7 test
- To assess negative mental health impact of pandemic
- To assess the perception towards mental health and its need presently

4. Results

The study was conducted through an online survey related to the impact of the COVID-19 pandemic on mental health of adults in India. An overall of 207 responses were collected. All respondents were above the age of 18 years and from India. Out of the 207 responses recorded 199 participants have accepted to take part in the survey. The mean age of participants was found to be 24.92 ± 5.16 with minimum age being 19 years and maximum age respondent is 69 years. Among the participants 52.3% account to females and 47.2% males. The respondents were spread across 18 states of India, highest being from Telangana which account to 59.8%.

The maximum number of respondents were from urban region which is 83.4% of total respondents and remaining 16.6% were from rural areas. More than 95% of the respondents had an education level of graduates or and postgraduates. Most study respondents were students who account to 73.9% out of 199 with 15.6% presently employed and 10.6% unemployed. These sociodemographic details were part of section I of the questionnaire.

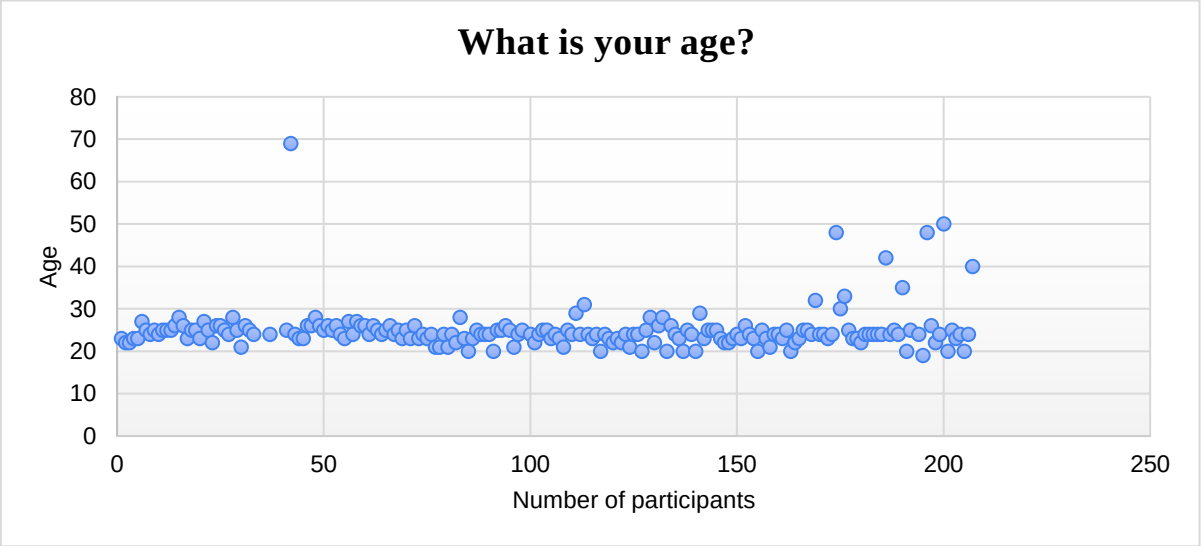


Fig.1. Age of the participants

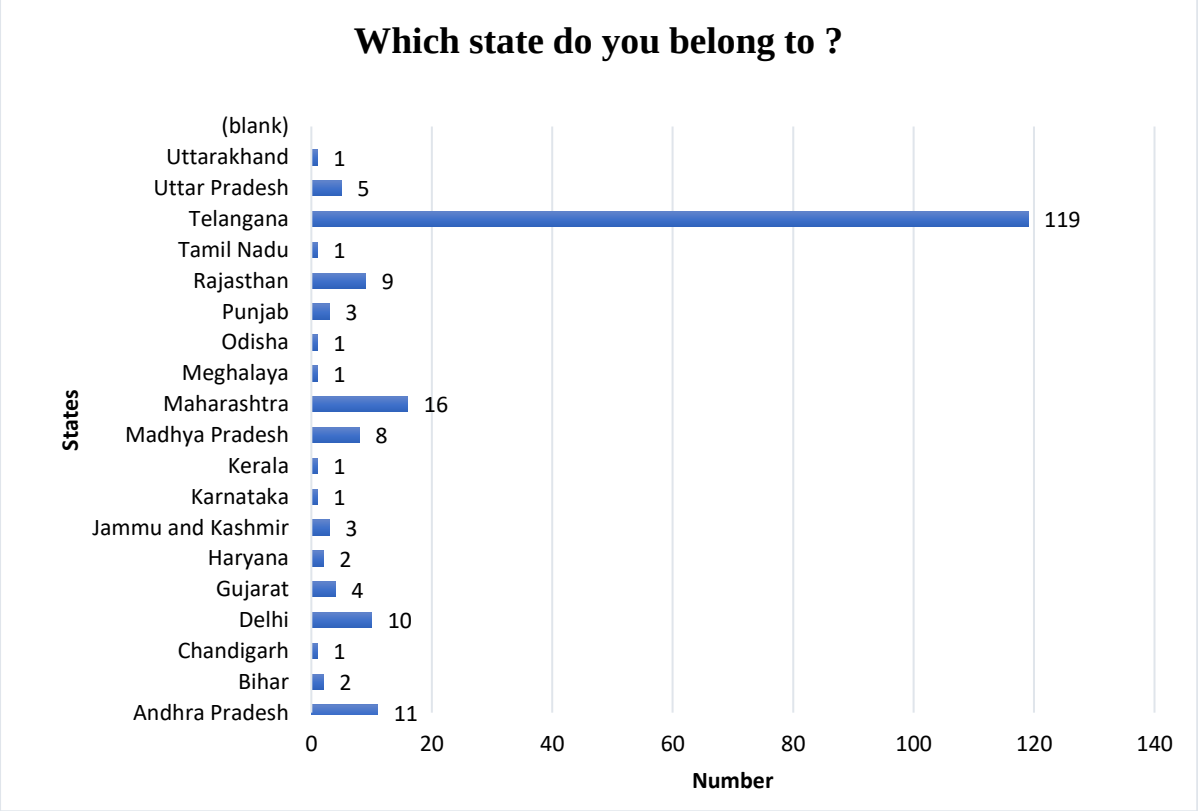
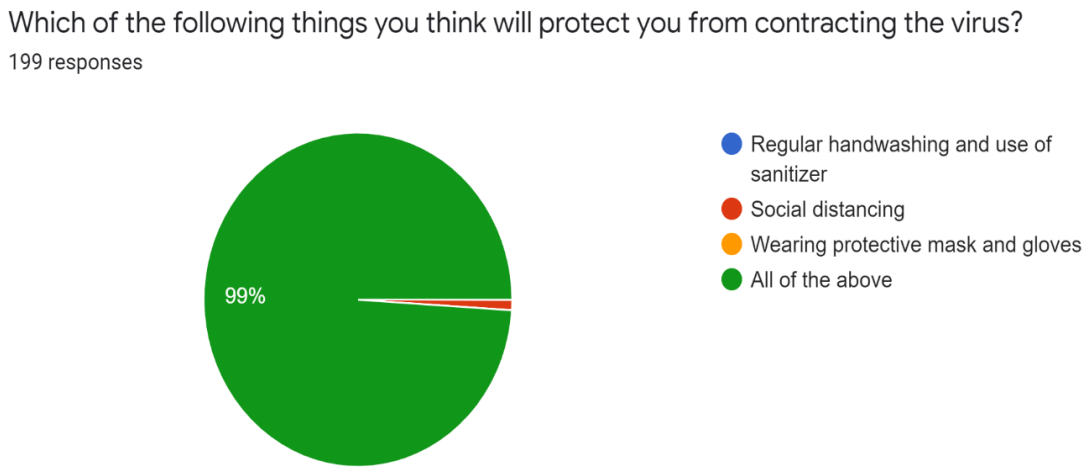
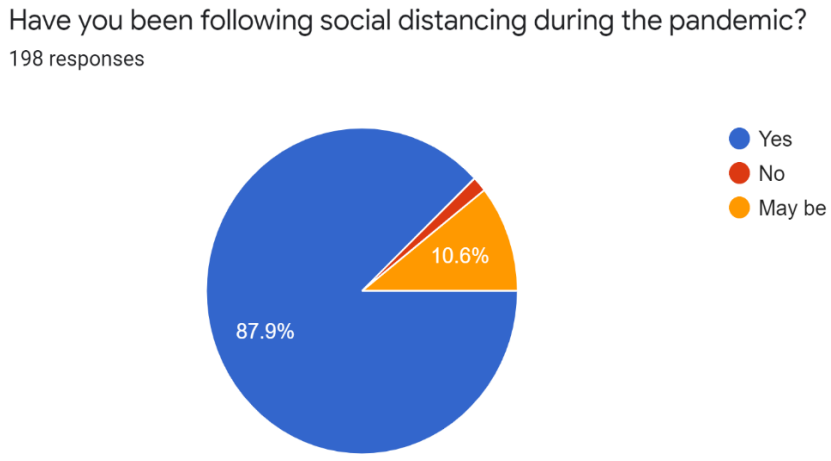


Fig.2. States of the participants

Section II: Awareness regarding the pandemic

Almost every single respondent was aware of the ongoing pandemic, 99% of the respondents answered that regular handwash, social distancing and wearing a protective mask will protect from contracting the virus, 2 respondents said that social distancing will prevent from contracting the virus. Out of the total respondents 87.9% of them have reported they have been following social distancing and 10.6% were not sure if they were following the norms. 43.7% of the respondents were actively tracking the number of active cases, the remaining 51.8% of them were tracking the number of cases but not actively, 6 respondents have said that they have been intentionally avoiding , and 3 have responded they don't keep themselves informed about the emerging cases. Out of the total respondents only 20.6% of them have said that they travelled long distances during the pandemic.





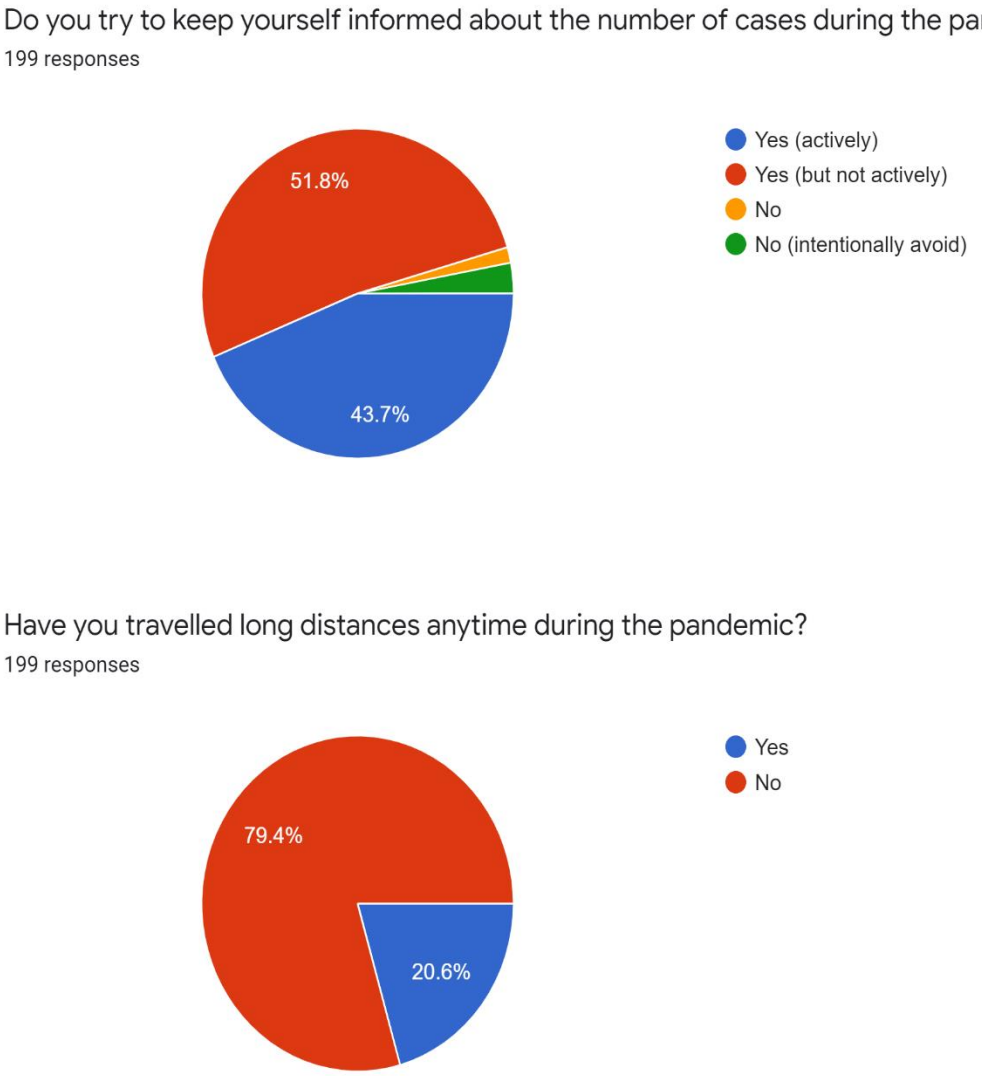


Fig.3,4,5,6. Awareness regarding the Pandemic

Section III: General Anxiety Disorder 7-Item (GAD-7) Test

Out of 199 participants 8 (4.02%) participants have reported severe anxiety, they were feeling nervous, not being able to stop or control worrying, they had trouble relaxing nearly every day. 79 (39.69%) participants have reported mild to moderate anxiety, they were easily irritable, feeling afraid of something awful happening and restless for several days and 56.2% reported that they have no anxiety and were not bothered by anything

QUESTIONS- GAD-7 Test Over the last 2 weeks how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly everyday
[Feeling nervous, anxious or on edge]	56%	24%	16%	4%
[Not being able to stop or control worrying]	58%	28%	9%	6%
[Had Trouble relaxing]	60%	26%	11%	3%
[Being so restless that it is hard to sit still]	66%	23%	6%	6%
[Becoming easily annoyed or irritable]	46%	35%	11%	9%
[feeling afraid as if something awful might happen]	48%	33%	9%	10%

Table.1. General Anxiety Disorder (GAD-7) Test

Section IV: Impact on mental health during pandemic

Over the past two weeks the respondents have done the following things, 33% of them reported that they were worrying about the pandemic sometimes, whereas 7% have reported that they always worry about the pandemic, 39% have reported that they sometimes think about the pandemic and 25% often think about it, 14% respondents have reported that they are often worried about contracting the virus and 14% never worried about contracting the virus, 25% respondents reported that they often worry about their family members contracting the virus and only 5% never worry about it, 43% of them feel the need to go outside sometimes and 24% rarely feel the need to go out, 42% of them responded that they had no trouble sleeping and 7% had faced issues sleeping, 44% of them felt the need to talk to someone often or sometimes, 45% have reported that they rarely have any work stress and 10% reported continuous work stress, 34% of respondents often felt uncertain about the future and 14% were never affected, 39% have reported that they never felt lonely and 27% felt lonely sometimes, 7% respondents felt financial stress during the pandemic 59% rarely had any financial stress, 30% of them reported feeling angry and irritable sometimes and 57% have reported rarely they felt anger and irritable.

Questions Over the past 2 weeks how often have you done the following things	Total	Sometimes%	Often%	Rarely%	Always%	Never%
[Worrying about the pandemic]	199	33%	19%	27%	7%	15%
[Thinking about the pandemic]	199	39%	25%	24%	6%	7%
[Worried about you contracting the virus]	199	41%	14%	25%	6%	14%
[Worried about your family members contracting virus]	199	38%	25%	14%	19%	5%
[Feel the need to go outside]	199	43%	11%	24%	7%	17%
[Difficulty in sleeping]	199	21%	7%	25%	5%	42%
[Feel the need to talk to someone]	199	28%	16%	24%	8%	25%
[Stress about work]	199	27%	18%	22%	10%	23%
[Feel uncertain about the future]	199	33%	16%	21%	18%	14%
[Feeling lonely or isolated]	199	27%	12%	18%	5%	39%
[Financial stress]	199	22%	12%	25%	7%	34%
[Feeling irritable and angry]	199	30%	8%	24%	5%	33%

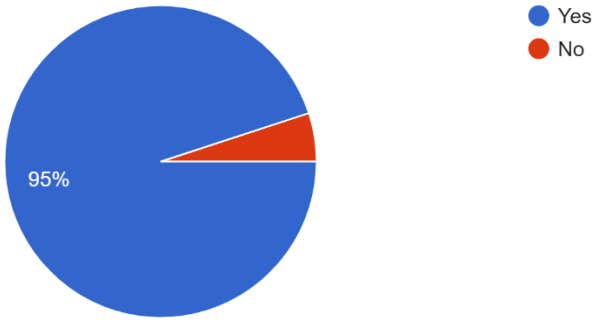
Table.2. Impact on mental health

Section V: Perception towards mental health

When the respondents were asked if there is a need to pay more attention to mental health 95% of them responded that there is a need to address the issue, when asked about how often they spend time to relax 16% have reported they rarely or never relax and 84% have mentioned they relax often and always. 77% of respondents have said that they would recommend consulting a psychiatrist when needed and 33% have would not recommend, almost every respondent 93% of them feel that there is need to talk more openly about the mental health issues. 84% of them responded that we need more health policies and programs to tackle mental health issues.

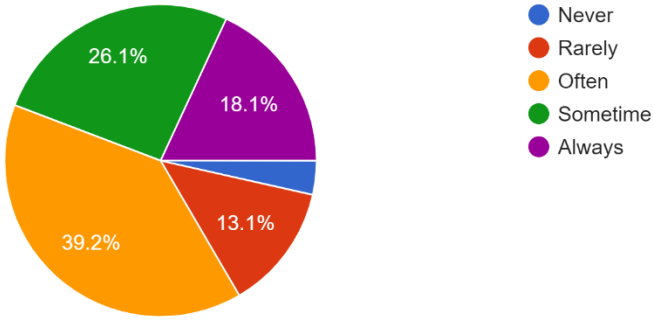
Do you feel there is a need to pay more attention towards mental health?

199 responses



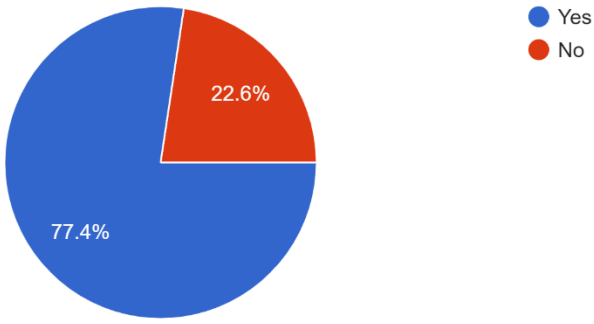
How often do you take time to relax and take rest?

199 responses



Would you recommend consulting a psychiatrist if needed?

199 responses



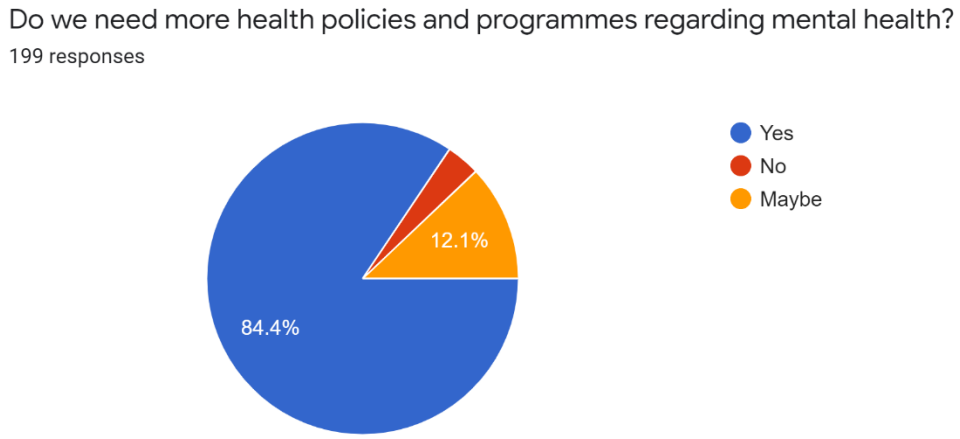


Fig.7,8,9,10. Perception towards mental health

5. Discussion

We have faced epidemics and pandemics before, the Cholera pandemic, the Flu pandemic, the Spanish flu and other outbreaks like SARS, MERS, all these events have one thing in common that is the destruction they leave behind, they have shattered the world, created global panic and terrorized countries. But COVID-19 is on a different level altogether, it is turning out to be a chief of destruction for most of the world, never has such an incident affected so many individuals across the world. It has caused panic, anxiety and confusion among the general public, apart from the physical health implications the pandemic produced plenty of psychological complications which have been pushed under the rug. Hence, this study attempted to study the impact of pandemic on mental health of people in India.

(Qiu et al., 2020)has conducted a nationwide large scale survey in the general population of china during COVID-19 pandemic, they began collecting data when WHO declared the pandemic as public health emergency, they used a self-report questionnaire which was made available online, they had a total of 52730 responses in which 35% have reported psychological distress, females were subjected to more stress than males and the study also showed that juveniles were under less stress compared to adults, whereas young adults of 18-30 years showed high levels of stress which confirms young people tend to obtain information from social media that can easily trigger stress. Study also showed that among working people migrant workers had highest levels of distress. On the contrary shanghai has a large population of migrant workers but distress was not spiking because shanghai has the best public health

system. This shows that effective and timely interventions from the government and proper awareness among population can lower the distress levels.

(Wang et al., 2020) conducted a survey in china to comprehend the heights of anxiety, stress and psychological impact during early stages of pandemic, the study was an online survey and included 1210 responses. A total of 52.8% respondents reported the psychological impact as moderate to severe anxiety and moderate to severe depression. They were worried about their family members contracting the virus and were happy with the information available regarding the virus. Females, and being a student with suggestive indications of virus were allied with higher anxiety and depression. On the contrary handiness of information and use of preemptive measures reduced their effects.

Majority of the population in our study are graduates and post graduates who are well aware of the pandemic and kept themselves regularly informed regarding the pandemic, 4% of the respondents were having high anxiety and 39% were mildly facing anxiety, most of them reported that they were worried more about their family members contracting the virus than worrying for themselves, this maybe because we are always constantly worried on back of our mind that we may face unwanted circumstances, there is also lack of health services which adds to the anxiety, majority of them constantly think about the pandemic, some of them have been struggling financially during the pandemic, many have been laid off from their jobs especially migrant workers who had nowhere to go and left stranded during pandemic, people living in rural areas are in better space of mind frame than urban areas where there is lot of movement, activities and higher risk factors, there is lots of misinformation on social media which escalates the anxiety levels with rumors and false facts. Almost half the respondents felt the need to talk to someone during the pandemic, some respondents have reported that they have been purposely staying away from the news about pandemic, people are emotionally exhausted, there is immense pain and anguish in people who have lost their loved ones to the pandemic.

(Lau et al., 2005) has conducted a similar survey in June 2003 in Hong Kong to understand the different facets of public responses related to the SARS epidemic, in their study they found out that high proportion of respondents felt helpless, disturbed and apprehensive because of the epidemic, there were signs of posttraumatic symptoms and increased stress in the family.(Lau et al., 2006) has conducted a similar study in Hong Kong using a telephonic survey during the SARS epidemic and reported that SARS had brought some positive impacts on social/family

supports and mental health awareness. These positive changes were associated with other negative impacts the epidemic SARS has presented. This shows that though there are negative psychological implications of a pandemic, with proper awareness and support you can bring about positive changes.

Quarantine is an unpleasant situation, there is loss of freedom, separation from family, uncertain over the future, boredom and anger. It creates histrionic effects, but the potential benefit of a quarantine must be weighed carefully against possible psychological effects. We need to bring in about awareness regarding the necessity of mass quarantine.(Brooks et al., 2020). Epidemiological data on mental health of people with the virus and healthcare professionals treating them is not yet available hence the need for care is still unknown, the mental health measures taken during SARS outbreak can be used for reference to provide interventions where needed. Active screening for psychiatric ailments like depression and anxiety in patients and family members, treatment and management, active involvement of health personnel and psychiatric care professionals is need of the hour.(Xiang et al., 2020)

(Bao et al., 2020) highlighted the services provided in china, use of internet and social media to share strategies for dealing with stress, enhancing social support system, eliminating stigma around pandemic, using psychosocial service system like telephone-based counselling. They believe including mental health in public health emergency system will empower the world to fight COVID-19. Our study population is mildly under stress but there are many more who need help and care for their mental health. Along with being cautious of the virus, improving services for mental health care is very much needed, online based counselling and virtual consultation might be the need of the hour.

6. Limitations

The sampling method used for the survey is convenience sampling hence the results cannot be generalized to the whole population, the study has major participants who are highly educated and well aware of the pandemic, their stress levels and anxiety levels cannot be matched with those of uneducated and those who are not aware of the situation. The study was only conducted online, and questionnaire was only in English.

7. Conclusion

The pandemic has created a lot of panic and fear among people, there are lots of emotions and trauma the general population are going through, government has taken necessary steps to

prevent the spread of virus and healthcare professionals have been in the frontline fighting the pandemic, but a lot of people are going through mental turmoil and there are no proper facilities for mental healthcare, the health professionals who are treating the COVID-19 patients are also under immense stress and depression, the impact of pandemic on mental health is being ignored and the issue needs to be brought to the forefront, effective and rapid communication is essential, psychological crisis intervention should also be included in the pandemic prevention steps, online patient counselling and family counselling should be set up, other health care professionals and frontline personnel need to be polished in basic psychiatric management and evidence based medicine. With the pandemic advancing into the deeper stages, increasing mental health issues need to be addressed.

8. References

- Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: address mental health care to empower society. In *The Lancet* (Vol. 395, Issue 10224, pp. e37–e38). Lancet Publishing Group. https://doi.org/10.1016/S0140-6736(20)30309-3
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. In *The Lancet* (Vol. 395, Issue 10227, pp. 912–920). Lancet Publishing Group. https://doi.org/10.1016/S0140-6736(20)30460-8
- *Coronavirus lockdown extended till 31 May, says NDMA*. (n.d.). Retrieved July 4, 2020, from https://www.livemint.com/news/india/covid-19-lockdown-4-0-coronavirus-lockdown-extended-till-31-may-says-ndma-11589715203633.html
- Duan, L., & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. In *The Lancet Psychiatry*. https://doi.org/10.1016/S2215-0366(20)30073-0
- Lau, J. T. F., Yang, X., Pang, E., Tsui, H. Y., Wong, E., & Yun, K. W. (2005). SARS-related perceptions in Hong Kong. *Emerging Infectious Diseases*, *11*(3), 417–424. https://doi.org/10.3201/eid1103.040675
- Lau, J. T. F., Yang, X., Tsui, H. Y., Pang, E., & Wing, Y. K. (2006). Positive mental health-related impacts of the SARS epidemic on the general public in Hong Kong and their associations with other negative impacts. *Journal of Infection*. https://doi.org/10.1016/j.jinf.2005.10.019
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of*

Psychology, *140*, 44–53.

- *MoHFW | Home*. (n.d.). Retrieved July 4, 2020, from https://www.mohfw.gov.in/
- Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. In *General Psychiatry* (Vol. 33, Issue 2, p. 100213). BMJ Publishing Group. https://doi.org/10.1136/gpsych-2020-100213
- Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal* Medicine, 166(10), 1092–1097. https://doi.org/10.1001/archinte.166.10.1092
- Timeline of WHO's response to COVID-19. (n.d.). Retrieved July 4, 2020, from https://www.who.int/news-room/detail/29-06-2020-covidtimeline
- Trade impact of Coronavirus epidemic for India estimated at 348 million dollars: UN report - The Economic Times. (n.d.). Retrieved July 5, 2020, from https://economictimes.indiatimes.com/news/economy/foreign-trade/trade-impact-of-coronavirus-epidemic-for-india-estimated-at-348-million-dollars-un-report/articleshow/74487020.cms
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *International Journal of Environmental Research and Public Health*, *17*(5), 1729. https://doi.org/10.3390/ijerph17051729
- Wilder-Smith, A., Chiew, C. J., & Lee, V. J. (2020). Personal View Can we contain the COVID-19 outbreak with the same measures as for SARS? *The Lancet Infectious Diseases*, *20*, e102–e107. https://doi.org/10.1016/S1473-3099(20)30129-8
- Xiang, Y. T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Ng, C. H. (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. In *The Lancet Psychiatry* (Vol. 7, Issue 3, pp. 228–229). Elsevier Ltd. https://doi.org/10.1016/S2215-0366(20)30046-8

ANNEXURE

Online Questionnaire form:
https://docs.google.com/forms/d/e/1FAIpQLSfbtOl0bWYqSs3KotdvtC3QPkPqa_RSkDBkzZbEJNk-lrpWnQ/viewform?usp=sf_link

PART-2

Report on Online Course Customer Analytics

By

Rakesh Reddy Surusani

Assigned and guided by Dr. P R Sodani (Faculty Mentor)

MBA (Hospital and Health Management)

2019-21

Institute of Health Management Research

The IIHMR University

Jaipur

Student's Name	Rakesh Reddy Surusani
Roll No	0969
Course Name	Customer Analytics
Website	www.coursera.com
Number of Hours	15 hours approx.
Course Instructor	▪ Eric Bradlow, Professor of Marketing, Statistics, and Education, Chairperson, Wharton Marketing Department, Vice Dean and Director, Wharton Doctoral Program, Co-Director, Wharton Customer Analytics Initiative, The Warton School. ▪ Peter Fader, Professor of Marketing and Co-Director of the Wharton Customer Analytics Initiative, The Warton School. ▪ Raghu Iyengar, Associate Professor of Marketing, The Warton School. ▪ Ron Berman, Assistant Professor of Marketing, The Warton School.
Objective(s) of the course	▪ To describe the major methods of customer data collection used by companies and understand how this data can inform business decisions. ▪ To describe the main tools used to predict customer behaviour and identify the appropriate uses for each tool. ▪ To communicate key ideas about customer analytics and how the field informs business decisions. ▪ To communicate key ideas about customer analytics and how the field informs business decisions.

Learning Methodology:

The course is available on Coursera platform. The lectures were delivered via videos with the help of PowerPoint presentations as resources. For application, videos and examples from real life situations were demonstrated.

MODULE	OBJECTIVES	CONTENT	KEY LEARNING	APPLICATION
Introduction to Customer Analytics	▪ To understand the idea of customer analytics ▪ To understand the data structures, technologies and decisions firms are making ▪ To understand the insights of customer behaviour	▪ What is descriptive analysis and insights of it ▪ What is predictive analysis and insights about customer behaviour ▪ What is prescriptive analysis and how can a company make more money	How analytics help you predict the future better How analytics helps you make better business decisions Understanding customers and markets through customers	
Descriptive Analytics	▪ To understand what descriptive analysis is ▪ To understand how descriptive data is collected ▪ To understand types of descriptive data collection methods	▪ What is descriptive analytics ▪ Descriptive data collection: survey overview ▪ Descriptive data collection: Net promoter score and Self reports ▪ Survey design ▪ Passive data collection ▪ Media planning ▪ Causal data collection	Descriptive analysis is a way of linking the market to the firm through decision. It's the information that is needed to make decisions Types of decisions managers need to make, some may be exploratory in nature, other can be purely descriptive and can be causal in nature The data that needs to be collected depends on the type of question that we need answers for. For exploratory data collection we have focus groups, internet communities and online communities	When we need answers for why the sales are going down for a company, we can do an exploratory data collection using focus groups or internet communities to know their sentiments about the company and what they feel about the product. Example of companies which collect exploratory data: C space In descriptive data collection we can make

			In descriptive data collection we need answers to who are our customers, what is their wallet share for our company, this can be done in active ways and passive ways, active ways are surveys and customer self-reports. In surveys you have issues with what questions to ask, and how you validate a survey, questions in surveys are of different types itemised, comparative, ranking, paired comparison, Likert scale, continuous scale, type of question depends on what answer we need at the end. surveys are easy to conduct, cost effective In self reporting customers reach out to companies. In designing a survey first step is to make sure results are generalizable, then list what you want to know, draft questions, evaluate, test, retest redraft then most important step get approval from company Passive data collection can be point of sales	valid surveys which target a population which can be generalised with the whole population, we can formulate questions based on the answer we require, or we can use self-reports from the customers to find answers In passive collection we can use mobile data, web data and other forms of passive data collection methods to know how company is doing, whether the opinion is positive or negative, what our customers are looking at whether our own website or competitors

			data, social media, data about radio, web data, mobile data. Next is the causal data collection, this is a more stringent data collection method, here we try to make causal link, it is a field experiment Correlation is different from causation; correlation is relation between two variables and causation is one variable producing an effect on other.	
MODULE	**OBJECTIVES**	**CONTENT**	**KEY LEARNINGS**	**APPLICATION**
Predictive Analysis	• What is predictive analysis • Tools used to do prediction • Which tool to use for which prediction • Language, framework and understanding of the tools used in prediction	• Different types of prediction we make • Ways of quantifying data • Regression analysis • Demand curve • Making predictions • Making predictions using data set • Probability models • Implementation of probability models	When we predict anything, we predict for a fixed period in the future, like we may want to know in the next year how many purchases will someone make. We quantify data in two ways one is predicting one period ahead and other is predicting more than two periods ahead. For predicting one period ahead we use regression analysis Regression is quantifying the relation between two variables. Explaining a dependent variable from a set of	Predictive analysis helps us predict the future, with the data sets which are available from the past we can predict the future activities like when will the customer buy, how many will they buy. When we want to know about the next period we use regression and with the help of regression we predict if it is going to change

			predictor variables called independent variables Regression helps us put numbers behind demand curve, with 1$ change in price how much does demand change Regression helps manager make predictions of demand for prices not there yet. Regressions can also help with multiple independent variables Recency, Frequency, Monetary Value (RFM) used in 1960s Regression types models are limited to predict for only certain period, without data we cannot predict into the future Probability models help in predicting for a longer horizon of time.one example of probability model is buy till you die model and several other models are available for lots of activities like purchases, website visits etc. In probability model's recency trumps frequency, which in turn trumps the monetary value.	anything really or not, in case of demand and price if the regression is good then we can predict the change in demand with change in price with the existing price models or even the ones which are not existing. Probability models are helpful in predicting for two and more periods, we can measure things like lifetime customer value, how many more years will the customer stay with us or drop out of our company. These predictive models help in making several decisions which will help with the future of the company, what decisions to make and how to change the outcomes.

MODULE	OBJECTIVES	CONTENT	KEY LEARNINGS	APPLICATION
Prescriptive Analysis	• What is prescriptive customer analytics • How to define a problem • How to define a goal and objective of a company • Optimization- how to take an action	• What is prescriptive analytics • Using the data to maximise revenue • Parameters of the model • Market structure • Competition and online advertising models	Difference between prescriptive analytics and descriptive and predictive analytics How to use data from descriptive analytics and increase the revenue of the company or increase the sales of the product with prescriptive analytics First step is to define the goal which is maximise revenue, then action which is setting the price or changing it, for this we need a model to give us relation between price and revenue generation How to find what should be the price change to obtain maximum revenue How to increase the profits of the company which is minus the production costs and other costs incurred The optimization process tries to increase price until there is no additional gain in profit. When we increase the price way too much revenue reduces, cost increases and negative gain in profit	Predictive analytics uses the data obtained in descriptive analytics and future predicted in predictive analysis to optimise a solution to increase profits, increase revenue, or increase the quantity of products sold. What prices need to be set and where do we need to stop to get optimum results in competition with other companies and how the customers behave.

			At what point should we stop, that is when increasing revenue equals to increase in cost and decrease in revenue equals to decrease in cost, we get optimal profit. Marginal revenue is equal to Marginal cost. How the market structure affects our optimum price. Based on the customer whether they want to buy a single product or multiple products we can sell them by bundles to optimise profit. To get optimal profit by selling multiple products the difference between willingness to pay and cost should be positive. If more ads are shown on different platforms will the click through rates rise in online advertising, no the impact on the CTR doesn't change.	