Summer Training

at

Healthark Insights

From May 10th 2021 to July 10th 2021

A Report

On

Women's Mental Health during COVID-19

By

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MBA Hospital and Health Management

2020-22

IIHMR UNIVERSITY

AKNOWLEDGMENTS

I would like to take this opportunity to extend my gratitude towards IIHMR University, from where I got the chance to do a fruitful internship. I would like to thank the entire faculty and the administrative team at IIHMR.

I extend my special thanks to Dr. Veena Nair, for being my mentor and my guide throughout this journey. I thank her for all the knowledge she imparted and for her constant support and her invaluable advice, without which this project would not have been possible.

I would also like to express my thanks to Ms. Ritu Baliya, my mentor at Healthark Insights, for her encouragement and her teachings. Through her, I was able to learn the workings of a consulting firm and imbibe new skills. I am grateful for her patient teachings during mistakes and positive affirmations during achievements.

Finally, I would like to thank the entire Healthark Team, for their warm welcome and for making this a comfortable and an enticing journey. I would like to give my special thanks Dr. Purav Gandhi for giving me a chance to be a part of the Healthark Insights, and his constant efforts to make all the interns feel like an important part of the team. I am grateful for all that I have learned during the sessions with him.

Last but not the least; I would like to thank all the participants who took part in this survey.

HEALTHARK

Date: 13th July, 2021

Whom So Ever It May Concern

This is to certify that **Ms. Manya Mittar** worked with Healthark Insights Wellness Solutions LLP as an Intern Consultant from 10th May 2021 to 10th July 2021. During her internship, she conducted market assessment involving secondary research and basic excel modelling across Latin American, Russian and Saudi Arabian markets. She supported her seniors in preparing client deliverables in form of PowerPoint presentation and excel formats.

She has always shown responsible attitude towards the tasks assigned to her and completed them within time with utmost sincerity. She has been a good team player and was supportive to her other colleagues in the organization.

We wish her a bright future and success in her future endeavours.

Purav Gandhi

Sincerely,
Dr. Purav Gandhi
Founder & CEO
Healthark Insights

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OBSERVATIONAL LEARNING

Section 1 – Introduction

Healthark Insights is a management-consulting firm located in Ahmedabad, Gujarat. It was established in 2016, with an aim of solving complex healthcare problems. The firm provides solutions to healthcare problems using domain expertise and various other diverse skills. The firm provides clients with end-to-end capabilities, starting with business problem, to data to analysis to insights to prediction. The team consists of consultants from various top-tier consulting firms (Deloitte, ZS Associates) as well as individuals from other fields such as pharmacology, engineers, biostatisticians and researchers. Some of their clients include Johnson & Johnson, Roche, Abbott, Pfizer, Gilead Sciences, Novartis, Boehringer Ingelheim and Eli Lilly. Healthark Insights provides a range of services including:

- Strategy & Market Research: Supporting clients with focused strategic questions by conducted market assessments using primary and desk research and data analytics.
- Modelling and forecasting: providing forecast for both in market and pipeline products
- Medical writing
- Artificial intelligence : includes AI driven analysis, voice analysis, image analysis and IOT base analytic
- Business intelligence and reporting
- Claims analytics : to understand claims data
- KOL identification and mapping

The vision of Healthark Insights is to become the most renowned, trusted healthcare market research and consulting company worldwide.

Objectives

- My specific objectives from this internship at Healthark Insights is to learn the workings of a consulting company.
- To hone my secondary data collection skills and understand the method of secondary and primary data collection

- To understand the methods of visualizing and presenting data
- To understand how to assimilate large amounts of data and derive actionable insights from the same.

Section 2 – Mode of Data collection

All the projects that I was a part of required secondary data collection. Thus, my mode of data collection included use of

- Official government websites
- Other consulting firms
- Google scholar
- PubMed
- Country specific search engines (e.g. Baidu for China)
- Others like news articles and investor reports

Section 3 – General Findings on Learning

Healthark Insights is not organised in a departmental structure. Instead, all employees work on several different projects.

Here, I present my learnings according to the different projects I had the opportunity of being involved in.

1. Insights 10 Project

Under this project, the firm aims to provide life sciences clients with market insights and market reports through comprehensive market research, primary and secondary data collection. These market reports are to help the client with making relevant decision and strategy making process in their organisation. The firm also provides clients with consulting and advisory services on various aspects like Market Entry, Competitive

Landscape, Market dynamics, Market Trends etc. It provides syndicated and customized research reports, and consulting services in healthcare and allied industries. The reports are across a range of healthcare segments, which includes but are not limited to Biopharmaceuticals, Medical Devices, Providers, Payers, Healthcare IT, Digital Health and Animal Health.

The entire project has been divided into different countries, disease segments and healthcare services. Each individual was allotted one of each of the above segments. The project progressed in a stepwise manner, from building syndicated reports, which would be uploaded online onto the company's website. The next step was preparation of decks/PowerPoint presentations, which included more extensive research and information. The final step is the creation of customised market report based on individual client needs.

Here, I outline my role and responsibilities as part of this project

a. NETHERLANDS
    i. My first project consisted of making syndicated market reports for the disease and healthcare services segment in Netherlands.
    ii. My first task for this project was the preparation of syndicated market report for liver cancer in Netherlands.
    iii. I made 16 reports based on the country Netherlands ranging from disease segments to healthcare services.
    iv. Other topics I researched and made reports on were as follows:
        - Liver cancer
        - Breast cancer
        - Dementia and Alzheimer's Disease
        - Cardiovascular disease
        - Melanoma
        - Colorectal cancer
        - Migraine
        - Prostate cancer
        - Medical marijuana
        - Home healthcare
        - Parkinson's disease

- Stroke
- Hypertension
- Lung cancer
- Sleeping aids
- Ophthalmology

v. For all these reports, the objective was to find conclusive information regarding the following topics
    - The market size of the disease/ healthcare service segment in Netherlands.
    - The healthcare expenditure for the same
    - The factors which act as the market drivers for the disease segment/healthcare service.
    - The number and ways by which the market is divided into segments; e.g. the market segments may be based on the end-user, or the types of drugs or diagnostic services available.
    - The top players in the particular market; those which hold a major/dominant share in the market
vi. The information was consolidated to form a syndicated market report, according to a previously decided format.
vii. After a review from the mentor, the report would be uploaded onto the Insights10 website.
viii. I gained several insights on Netherlands from this exercise. Some of these were as follows:
    - Netherlands has an extremely high incidence rates of cancer, in comparison to its surrounding countries
    - High rates of substance abuse, especially in the form of smoking, particularly in women were notable
    - Netherlands allows the use of medical marijuana for ailments such as cancer, for pain management and more. However, in recent years the national committee of doctors has discouraged the use of medical marijuana.
    - The government of Netherlands puts focus on prevention of diseases and spends a significant amount for the same.

b. BEHAVIOURAL HEALTH

i. My next task for the Insights10 project was to prepare syndicated market reports on the topic of behavioural health for different geographies.

ii. This included the following

- Global
- EU
- APAC
- USA
- UK
- Germany
- Netherlands
- Japan
- South Korea
- China
- Australia
- Canada
- Indonesia
- Brazil
- France
- Kenya
- India
- Sweden
- Egypt

iii. For the global, EU and APAC geographies, apart from the topics already listed above, information regarding healthcare regulations was also added in the report.

iv. These reports were also uploaded online after mentor's review.

v. Some of the learnings from this task were as follows

- Through this task, I gained knowledge regarding how different countries differ in their ways of tackling the problem of behavioural healthcare.

- Behavioural health is a wide subject area which includes variety of topics such as mental health, substance abuse, marriage counselling and more
- A striking observation was the difference regarding behavioural health between western and the eastern countries.
- The behavioural healthcare segment has grown immensely in the western countries, because of high number of cases and acceptance and awareness of such issues.
- However, eastern countries still grapple with stigma related to such issues. Due to this, there is a huge unmet treatment need in the eastern countries
- Individuals in eastern countries prefer the use of digital health application, which protect their privacy.
- Another observation was the culture of shackling of individuals with psychosocial disabilities. This was particularly stark in Indonesia, where it is banned, but still widely prevalent.

c. Clarivate-Amgen Osteology Project
    i. This was a client-based project that I was involved in.
    ii. The project was done in collaboration with DRG-Clarivate for the pharmaceutical company Amgen.
    iii. The objective of this project was to collect information regarding the biosimilar drugs market in the JAPAC region.
    iv. This included gathering knowledge regarding the clinical development, factors affecting the pricing, access and reimbursement of biosimilar drugs. Another aspect was the commercialisation of the biosimilar drugs in the particular countries. Finally, information was also needed on the various biosimilar drugs already approved in the specified countries
    v. The countries included were as follows:
        - China
        - Singapore
        - Hong Kong
        - Thailand

- South Korea
- Australia
- Taiwan

vi. The project included regular catch up meetings with the DRG-Clarivate team.

vii. Some of the learnings from this project included
    - Through this project, I developed an understanding of biosimilar drugs. It is an upcoming field, and holds immense potential, because of expiry of patents of branded drugs and increasing healthcare expenditures
    - Different countries have adopted varied regulations for registration and approval of biosimilar drugs.
    - The development of biosimilar drugs is a delicate and an expensive process. It requires many comparative studies, non-clinical, clinical, safety and efficacy studies.
    - However, due to their lower prices, in comparison to the branded drugs, they offer hope of treatment to many people.

Section 4 – Learnings and Limitations

As a part of my internship in Healthark Insights, I gained a varied learning experience. Each different project exposed me to different types of information. The conclusive learnings I gained were as follows:

- The most important learning was the collection of data. I learned the various techniques and resources that can be used for secondary data collection. Secondary data collection included comprehensive research using different search engines for different geographies. It also included combing through various market and industry reports, as well as annual reports of the numerous companies in the industry.

- I learned not to restrict myself to the use of a single language. For data collection in different countries, I used the regional languages. For this, I relied on services like google translator and onlindoctranslator.
- I also learned how to consolidate the large amounts of data I gathered. This included the understanding of which data would be useful and to remove the data which would not be useful. I learned how to organise the data in a manner that would allow its easy usage later.
- My most important learning was the understanding of how to gain information from the large amounts of data. This depends upon the type of information, which is required by the client. The final details that need to be provided depend upon the purpose of the client. Thus, it is important to recognise the impetus which drives the client.
- I also learnt how to visualise data and present in an appealing manner. The presentation should be attractive, informative as well an easy to understand.
- As a part of the internship, I also did a certification on data visualisation on the online platform of Coursera. This included courses on basic and advanced excel, which included lessons ranging from the basics of excel to advanced excel including data visualisation and modelling and forecasting using excel. The last course of the certification talked about presentation skills and how to present the data to a client.
- The firm also had regular huddle sessions for discussion amongst the staff members, to share knowledge and tips and tricks. There were also training sessions, which covered many topics such as building a forecasting model to preparation of an effective deck.
- Overall, it was a fun filled and enriched learning experience

Limitations that I felt were mostly related to online work/ working remotely. Work from home restricted the amount of experience that I gained. It would have been a wonderful opportunity to work on the ground and to learn from the experience of my seniors and my mentor.

Overall it is was a fruitful and enriching experience.

PROJECT REPORT

STUDY OF WOMEN'S MENTAL HEALTH DURING COVID-19

ABSTRACT

Through this study, I aimed to understand the levels of anxiety and depression in women (15-60 years) of India and USA, during the times of the COVID 19 pandemic and the coping mechanisms used by women in the face of such situations. This study is a cross sectional study conducted using an online English google survey form. The sample was collected using non-random sampling, and the form was made available through WhatsApp platform from June24th, 2021 to June 27th, 2021. The survey form included questions regarding the socio-demographic features of the sample and coping mechanisms. It also included standardised tests for anxiety and depression, GAD 7 and PHQ 9 respectively. The results obtained were as follows. In the Indian sample, 21.4% sample showed anxiety as per the cut-off score of >= 10, and 16.7% showed depression as per the cut-off score of >= 10. In the USA sample, these were 12.5 and 16.7% respectively. In the sub sample of victims of domestic violence from India, the levels of anxiety and depression were higher: 39.3% and 35.7% respectively. In the USA sample, no participant had been a victim of domestic violence. The most commonly used coping mechanisms were reported to be "talking to friends", "spending time with children" among others. The low dependence on medical care and social support groups were also seen.

Keywords: : "mental health", "COVID 19", "pandemic", "women", "mental illness", "depression", "anxiety"

Section 1 – Introduction

Rationale

The Wuhan district of China saw the emergence of COVID – 19 in December 2019. WHO named the virus responsible for this disease as the SARS COV-2 virus. [1] It is a novel coronavirus, which was thought to be accountable for large number of pneumonia cases, in Wuhan, whose cause could not be determined. This triggered the attention of

physicians and international agencies. [1] It is considered "one of the most highly pathogenic Coronavirus" [2] and has crossed the species barrier. It is believed to have originated from bats and is a single stranded RNA virus.[2] The clinical features associated with COVID 19 are varied including dry cough, ARDS, myalgia, dyspnoea and many more. [3] It can be classified on the basis of severity of symptoms as mild, moderate, severe and critical. [3] According to WHO, as of June 26th, 2021, there have been 179,686,071 confirmed cases and 3,899,172 deaths. [4] The virus is 'highly contagious' and can spread through direct as well as indirect routes. [5] Because of this nature and rate of transmission, preventive measures such as 'isolation and lockdown' [5] became necessary. Countries, worldwide, established guidelines for social distancing and quarantine to prevent the spread of the virus. Unfortunately, this led to an increased burden of mental disorders like anxiety, depression, PTSD and many more due to a variety of reasons. Some of the reasons were believed to be due to fear of infection, loss of a loved one, economic and financial distress, unemployment and many more.[6] Thus, one of the most worrying secondary effects of COVID 19 has been its indirect effect on mental health. This makes it important to understand the extent of impact of COVID 19 on mental health.

WHO defines "mental health as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to her or his community." [7] This would include being involved in productive activities like schooling, caregiving and more. It would also include being able to adjust according to varying situations and having healthy relationships. According to CDC, "mental health includes emotional, psychological, and social well-being." [8] Mental illness as defined by The American Psychiatric Association "are health conditions involving change in emotion, thinking or behaviour (or a combination of these). Mental illnesses are associated with distress and/or problems functioning in social, work or family activities". Mental illnesses are characterised by abnormal thoughts, behaviours and relationships with others. Some of the increasingly encountered mental illnesses include anxiety, depression, bipolar disorders and schizophrenia. [9]

Depression is the most common cause of disability worldwide (WHO), estimated to be affecting 264 million people worldwide. Depression is characterised by a variety of

symptoms, which can include sadness, loss of sleep and interest, feelings of guilt and low self-worth. Severe depression can also lead to suicide.[7]

Bipolar disorder is another common mental disorder in which patients show manic and/or depressive episodes. In between these episodes, the individual goes through normal periods. According to estimates, it affects 46 million people worldwide.[7]

Schizophrenia presents as psychosis along with distortion of the perception of self, hallucinations and delusions. It is a serious mental disorder affecting 20 million worldwide, starting usually during late adolescence.[7]

Overall, it is believed that globally there are approximately 1 billion people who suffer from at-least 1 mental disorder. COVID 19 will lead to aggravation of these statistics, because of isolation, fear and anxiety, physical, social and financial distress.[10]

Mental disorders pose a huge burden to the society. It is estimated that 68% of adults with mental health disorders also struggle with medical conditions like cardiovascular diseases, diabetes and more. The cost of managing the physical health of patients with underlying mental disorders is 3 times than that of the patient without an underlying mental disorder. Loss of productivity due to these mental illness costs USD 1 trillion each year to the global economy, which is expected to increase to USD 6 trillion by 2030.[10]

Mental disorders may be precipitated by various risk factors like stress, nutrition, genetics etc. in addition to individual factors, it also includes social support, work conditions. Treatments and preventive methods are available to tackle these mental disorders. These include cognitive therapies, talk therapies as well as medications. However, access is greatly restricted due to a numerous factors including related stigma, poor knowledge and information. As stated by WHO, an exorbitant percentage of 76% to 85% people show unmet treatment needs for mental disorders, in low and middle income countries.[7]

Review of Literature

The most accepted definition of mental health has been given by WHO, which revolves around a person's ability to adapt and be productive. CDC mentions that mental health "includes emotional, psychological, and social well-being". Galderisi et al questioned these definitions, bringing attention to the fact that the people may experience negative emotions depending on different situations. In addition, an individual may not be able to be productive towards the community, due to physical or political conditions. According

to the earlier definitions, such individuals would not be considered as being in good mental health. To overcome such a difficulty, they proposed a new definition for mental health which stresses on an individual's internal equilibrium which is a dynamic state and can change depending upon life situations. They elucidate mental health to be a "dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium." [11] Manwell et al indicate that the moral framework in which they are framed affects such definitions. According to them, for practical purposes and for comparison between different cultures, the definitions should be based on biological aspects. [12]

The topic of mental health has started to command an increased focus worldwide. Globally, mental health issues are present at an alarming scale, leading to disability, suicide and increasing healthcare costs. The increased attention towards mental health over the years can be evidenced from Bernhard H Liese's article on "International funding for mental health: a review of the last decade". Over the years, the international funding towards mental health has increased substantially. Various mental health programmes have been developed like the Movement for Global Mental Health, Mental Health Gap Action Programme by the World Health Organization (WHO), to list a few. Mental health has also been added to Sustainable Development Goals in 2016. Between 2006 and 2016, the international funding increased by USD 100 million. [13]

Risk factors of mental health have been studied. They can be social or biological. Many of such social factors vary according to the situations of individuals. The various socio-demographic factors, which may act as a risk factor for mental health, include economic status, level of education, marriage, practice of religion, gender and others. Lower risk of psychiatric problems are associated with being married, having a higher economic status, male gender, having a higher level of education (university) and being employed.[14] Nature of social ties and the size of one's social support also affect mental health. Lesser number of close relations and inadequacy of social support can lead to depressive symptoms. [15] Various studies revolve around the gender difference in the prevalence of mental disorders. In a study of Canadian population, which used a community health

survey, it was reported that women tend to suffer from mental distress and substance abuse. This was further heightened in the lower income groups.[16] Another study focusing on university students also found higher rates of anxiety related symptoms in women, attributable to social and psychological processes. [17] Women depend more on social support during the times of stress and face more vulnerability during the absence of the same.[18]

COVID 19 pandemic has become another risk factor for mental health. The ongoing pandemic has led to various stressors –psychological, financial and health related. In addition, it has led to quarantines and social distancing which can also have an aggravating impact on mental health. Quarantine is also negatively related to psychological distress because of feelings of frustration and boredom, loss of freedom and feelings of anger.[19] The pandemic has disproportionately affected women's mental health. It has particularly affected pregnant women, those who have experienced abortion and intimate partner violence or domestic violence. The situation is worsened in cases of single mothers. Adequate social support acts as a protective factor. [20] A study in Tunisia found that the domestic violence against women showed a jump from 4.4% to 14.8%. These included psychological violence most commonly along with virtual, physical and economic violence. The higher instances of violence was associated with increased level of anxiety and depressive symptoms.[21] A study in China showed higher levels of post-traumatic stress symptoms (PTSS) in women, associated with negative consequences in mood.[22]

A study comparing the mental health of young individuals during COVID 19 between China and UK, showed lower levels of mental health and loneliness in China. In China, 46.7% loneliness was reported as opposed to 57.1% in UK. This was attributed to the culture of collectivism in China. Whereas, UK leans more towards the culture of individualism, and thus, faced increased percentage of loneliness. Loneliness and psychological distress have been shown to have a positive correlation.[23]

A separate study conducted in USA, also showed increased levels of psychological distress in young adults with 43% individuals facing depression and 45% individuals facing anxiety. Loneliness and low family support was also reported in the study. The study also revealed higher levels of mental distress faced by Whites in comparison to Asian and Africans.[24]

In an online survey conducted in India, it was reported that nearly 2/5 of citizens faced higher levels of problems of anxiety and depression and poor mental well being during the time of COVID 19. [25]

There are many styles of coping listed in the literature. They range from problem based coping to emotion based coping. It has been shown that women tend to use emotion based coping and opt for distraction more times than their male counterpart. Women also seek more help from their social circles, whereas men tend to use substances such as alcohol and drugs.[26] A study focusing on coping mechanism of women, conducted in Uttarakhand, showed that women use various mechanisms of coping. These can range from "taking care of children, praying and talking to friends".[27]

S. No.	Author	Year	Study Design	Objective	Indicator	Conclusion
1	Suryavanshi .N et al	2020	Cross – sectional online survey	"To assess mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India"	• Depression: PHQ-9 $\geq$ 10 • Anxiety: GAD-7 $\geq$ 10	Percentage of female participants with • Depression: 23% • Anxiety: 32%
1	Grover S et al	2020	Cross-sectional study with online	"To evaluate the psychological impact of lockdown due to COVID-19 pandemic on the	• Depression: PHQ-9 $\geq$ 10 • Anxiety: GAD-7 $\geq$ 10	Percentage of participants with • Depression: 10.5%

			survey form	general public with an objective to assess the prevalence of depression, anxiety, perceived stress, well-being, and other psychological issues."		• Anxiety: 38.2%
2	Liu, C. H et al	2020	Cross-sectional online study	"To identify factors associated with depression, anxiety, and PTSD symptomatology in U.S. young adults (18-30 years) during the COVID-19 pandemic"	• Depression: PHQ-8 scores ≥ 10 • Anxiety: GAD-7 scores ≥ 10 • PTSD: PCL-C scores ≥ 45	Percentage of participants with • Depression: 43.3% • Anxiety: 45.4% • PTSD: 31.8%
3	Shamim A.S.	2021	Cross-sectional online study	"To assess the impact of COVID-19 on the mental health of women in Karachi, Pakistan and investigate the possible risk factors"	• Depression: PHQ-9 Anxiety: GAD-7	Percentage of participants with • Severe Depression: 17.8% • Severe Anxiety: 21.9%

Research Question

- What is the mental health status and coping strategies of women aged 15 to 60, during the COVID 19 pandemic in India and USA?

Specific Objectives

- To know the mental health status in terms of levels of anxiety and depression, of women aged 15 to 60, during the COVID 19 in India in the last 2 weeks
- To know the mental health status in terms of levels of anxiety and depression, of women aged 15 to 60, during the COVID 19 in USA in the last 2 weeks
- To know the most common coping mechanism used by women aged 15-60 to deal with mental stress and suggest recommendation based on that.

Section 2 – Methods and Materials

Research Design

This is cross-sectional study, which was undertaken in an effort to understand the levels of anxiety and depression in women of age 15-60, in India and USA. It made use of an online survey form, to comprehend the mental health status within the past 2 weeks. The study was conducted from 24th June 2021 to 27th June 2021, by using the WhatsApp platform.

Sample Size

India

A total of 222 women were approached for the survey. Out of these, 220 consented to participate. The sample consisted of women in the age group of 15 to 60. All women primarily belonged to families where either parent, husband or the women themselves were government officials. The families of participants were either upper middle income to upper income families. The financial status of all women was well enough to take care of their families as well as their own needs. All the participants were educated and the majority were postgraduates.

USA

A total of 28 women participated in the survey after informed consent. The women were aged between 15 to 60 years. The sample consisted of women with different ethnicity;

however, the majority were Indian. They belonged to financially stable families. All women were educated and the majority of the women were graduates.

Sampling technique

The sampling technique used was non-random sampling. The participants were recruited using convenience sampling technique. The form was floated on the WhatsApp groups of the society of the researcher, in India. The society houses government officials of various ranks, and is a well-known residential area in Delhi. Approximately, 500 individuals reside in the particular society. To reach participants in USA, the form was circulated among the known relatives and acquaintances of the researcher.

Mode of data collection

Data collection was done using an online Google survey form. The form was in English only. The form was floated on the WhatsApp platform on 24th June 2021. Participants were informed regarding the topic of study and proper consent was taken prior to commencement of data collection. The form was designed to collect the basic socio-demographic information about the participants like age, level of qualification, marital status, whether the participants had children, occupation. It also included questions to assess whether the participants experienced any form of domestic violence. The form also intended to collect information regarding the participant's perception of the presence and absence of social support in their lives. Questions on the favoured type of coping mechanism were also included.

Anxiety and depression were measured using standardised tests like GAD-7 and PHQ-9 respectively.

Generalised Anxiety Disorder Scale (GAD-7)

It is a self-administered test, which is commonly used for anxiety. It consists of 7 items to measure the severity of anxiety. It can also be used as a screening tool for PTSD, social anxiety and panic. It has been reported to have good reliability and validity. Each item is scored from 0 to 3, where 0 is for "not at all", 1 is for "several days", 2 is for "more than

half the days" and 3 is for "nearly every day". The total scores range from 1 to 21. Higher scores are interpreted as increased severity of anxiety.

Patient Health Questionnaire (PHQ-9)

It is also a self-administered test and it is a part of the PRIME-MD test for commonly occurring mental disorders. It targets the identification of depression and is a 9-item instrument. It is reported to have 88% sensitivity and specificity. Each item is scored from 0 to 3, where 0 is for "not at all", 1 is for "several days", 2 is for "more than half the days" and 3 is for "nearly every day". The total scores range from 1 to 27.

Methods of Coping/Coping Mechanism

General questions were asked regarding the preferred methods of coping and whether the participants planned to solve the problem or distracted themselves in the face of stressful situations. Standardized tests for coping methods such as "COPE" and "Brief COPE" were not used in an effort to contain the length of the questionnaire.

Analysis used for Collected Data

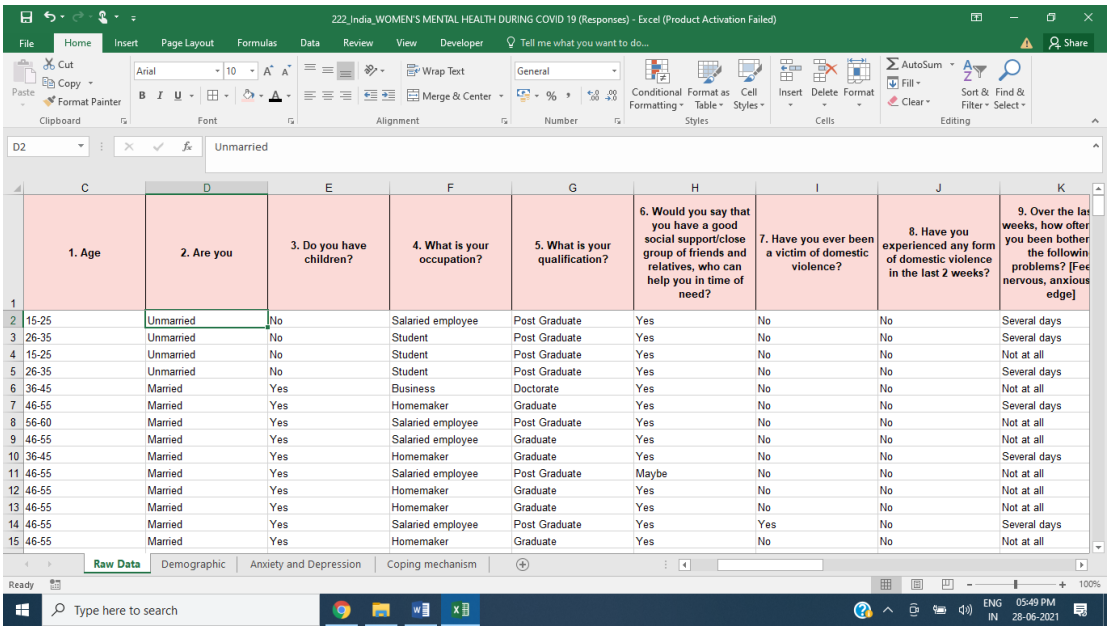
Excel software was used for data analysis. Analysis was done using various functions in excel. These included SUM, COINTIF, COUNT, FILTER, use of charts and graphs among others.

Section 3 – Analysis and Interpretation

Data Compilation and Analysis

A total of 220 responses from India and 28 responses from USA were gathered with the help of an online google survey form. From this, 28 entries from India and 4 entries from USA were removed. This was because these entries were considered erroneous/biased as the results of their GAD 7 and PHQ 9 that were '0', which is not included in the scoring of the tests. Thus, the total sample size considered was 192 for India and 24 for USA. The

data was screened to make sure they were no missed entries and finally compiled in excel software as shown below. After compilation, analysis was carried out.



222_India_WOMEN'S MENTAL HEALTH DURING COVID 19 (Responses) - Excel (Product Activation Failed)

	1. Age	2. Are you	3. Do you have children?	4. What is your occupation?	5. What is your qualification?	6. Would you say that you have a good social support/close group of friends and relatives, who can help you in time of need?	7. Have you ever been a victim of domestic violence?	8. Have you experienced any form of domestic violence in the last 2 weeks?	9. Over the las weeks, how often you been bother the followin problems? [Fee nervous, anxious edge]
2	15-25	Unmarried	No	Salaried employee	Post Graduate	Yes	No	No	Several days
3	26-35	Unmarried	No	Student	Post Graduate	Yes	No	No	Several days
4	15-25	Unmarried	No	Student	Post Graduate	Yes	No	No	Not at all
5	26-35	Unmarried	No	Student	Post Graduate	Yes	No	No	Several days
6	36-45	Married	Yes	Business	Doctorate	Yes	No	No	Not at all
7	46-55	Married	Yes	Homemaker	Graduate	Yes	No	No	Several days
8	56-60	Married	Yes	Salaried employee	Post Graduate	Yes	No	No	Not at all
9	46-55	Married	Yes	Salaried employee	Graduate	Yes	No	No	Not at all
10	36-45	Married	Yes	Homemaker	Graduate	Yes	No	No	Several days
11	46-55	Married	Yes	Salaried employee	Post Graduate	Maybe	No	No	Not at all
12	46-55	Married	Yes	Homemaker	Graduate	Yes	No	No	Not at all
13	46-55	Married	Yes	Homemaker	Graduate	Yes	No	No	Not at all
14	46-55	Married	Yes	Salaried employee	Post Graduate	Yes	Yes	No	Several days
15	46-55	Married	Yes	Homemaker	Graduate	Yes	No	No	Not at all

SOCIODEMOGRAPHIC CHARACTERISTICS

INDIA

The maximum respondents were in the age group of 46-55 (29.1%) and the least in the age group of 36-45 (15.9%). Majority of the participants were married (67.3%) and a small proportion was divorced (2.7%), the rest of the sample were unmarried. 62.3% women had children and 1 participant was pregnant. The qualification of majority of the participants was above undergraduate with 25.5% graduate, 60% postgraduates and 7.3% doctorates. Majority of the women (81.4%) perceived that they had good social support versus 4.5% women who believed that they had no social support. 12.7% women had been a victim of domestic violence in their life with 2.3% of women having faced domestic violence in the last 2 weeks.

USA

Half of the women belonged to the age group of 46 to 55 years. 75% of the women were married and the rest were unmarried. There was no pregnant woman in the sample and and 67.9% of the women had children. Majority of the women were graduates, with minimal percentage of women being doctorate. 82.1% of women believed they had good social support whereas the rest responded as 'maybe'. However, no women felt that she had no social support. None of the participants had been a victim of domestic violence.

ANXIETY USING GAD 7

The answers were substituted with their respective scores as follows:

- "0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day"

The complete scores were calculated by totalizing the scores given for each item. According to the total scores, the severity of anxiety can be categorised as follows:

- "1-4: minimal symptoms, 5-9: mild symptoms, 10-14: moderate symptoms, 5-21: severe symptoms"

At the cut-off point of 10, GAD 7 shows high specificity and sensitivity. The scores range from 1 to 21; with increasing scores denoting increasing severity.

The total number of participants with the summed up GAD 7 score $\geq$ 10 was calculated and the percentage from the total sample size was found.

DEPRESSION USING PHQ-9

The answers were substituted with their respective scores as follows:

- "0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day"

The complete scores were calculated by totalizing the scores given for each item. According to the total scores, the severity of anxiety can be categorised as follows:

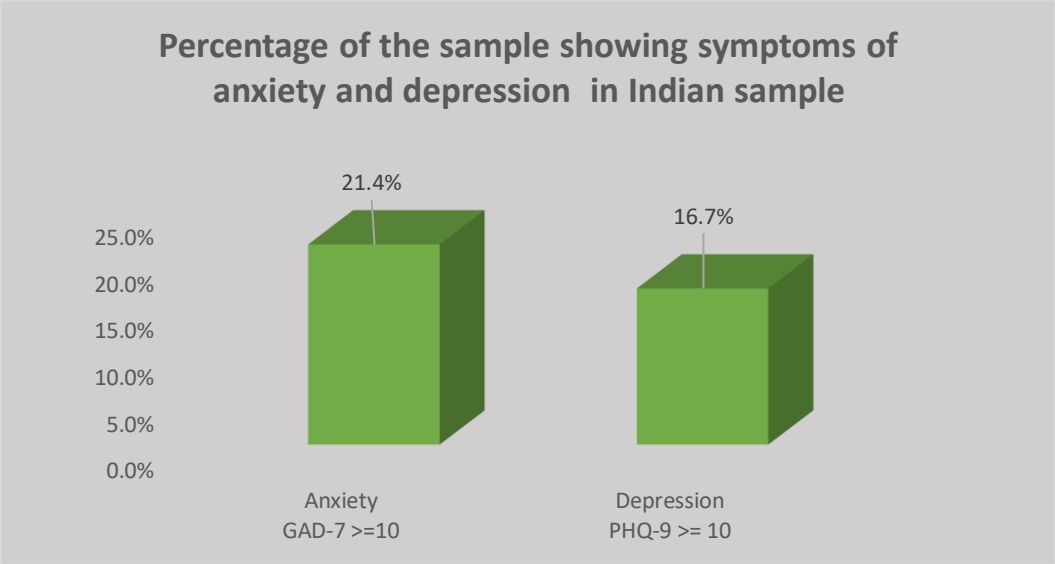
- "1-4: minimal depression, 5-9: mild depression, 10-14: moderate depression, 15-19: moderately severe depression, 20-27: severe depression"

The cut-off point was taken as the score 10. The scores range from 1 to 27; with increasing scores denoting increased severity. The total number of participants with the summed up PHQ 9 score $\geq$ 10 was calculated and the percentage from the total sample size was found.

INDIA

- The following results were obtained from the total sample from India.

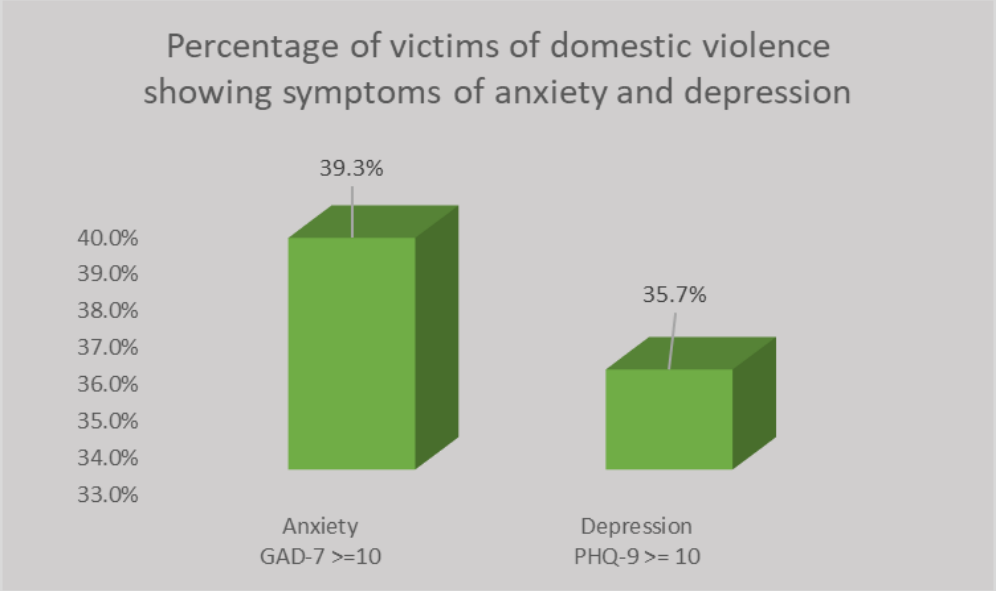
	Anxiety GAD-7 >=10	**Depression PHQ-9 >= 10**
Number of participants with total scores of >= 10	41	32
Percentage	21.4%	16.7%



- The following results were obtained from the sub sample of women who been a victim of domestic violence in their lives

No. of victims of domestic violence: 28	**Anxiety GAD-7 >=10**	**Depression PHQ-9 >= 10**
Number of participants with total scores of >= 10	11	10

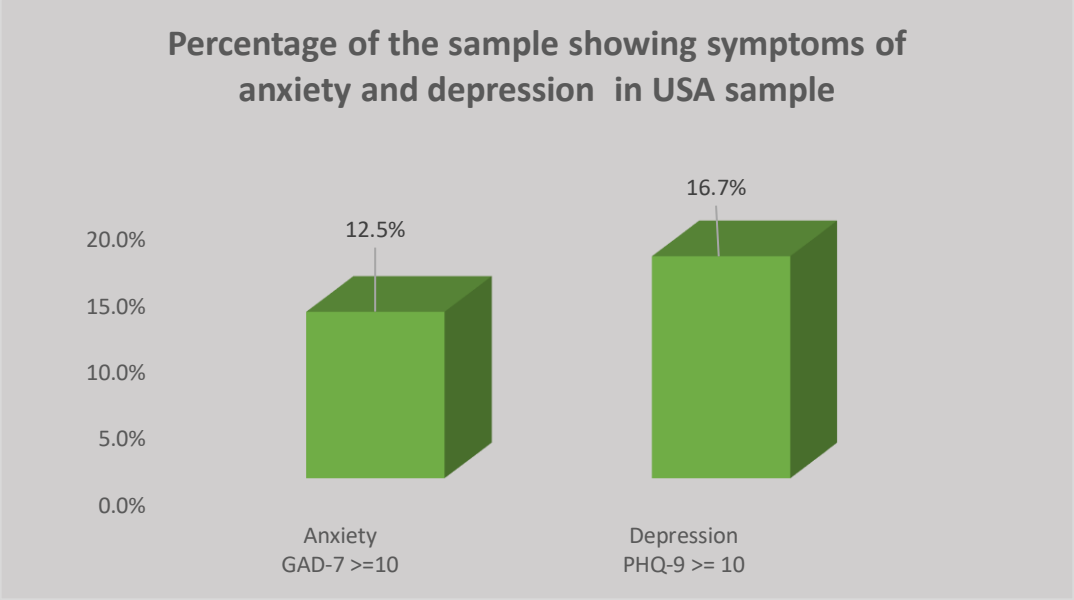
Percentage	39.3%	35.7%



USA

- The following results were obtained from the sample collected from USA.

	Anxiety GAD-7 >=10	**Depression PHQ-9 >= 10**
Number of participants with total scores of >= 10	3	4
Percentage	12.5%	16.7%

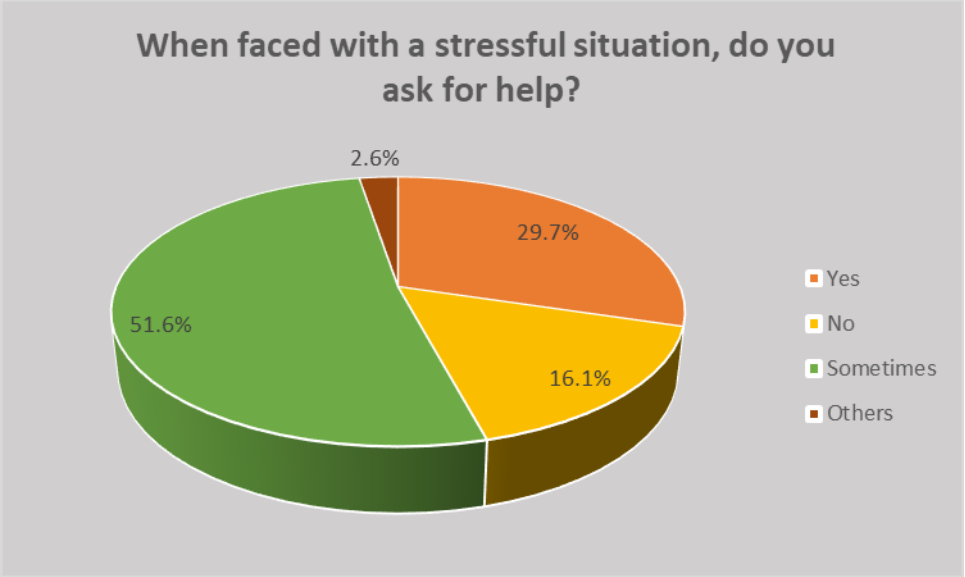


- No cases of domestic violence were reported in the sample collected from USA

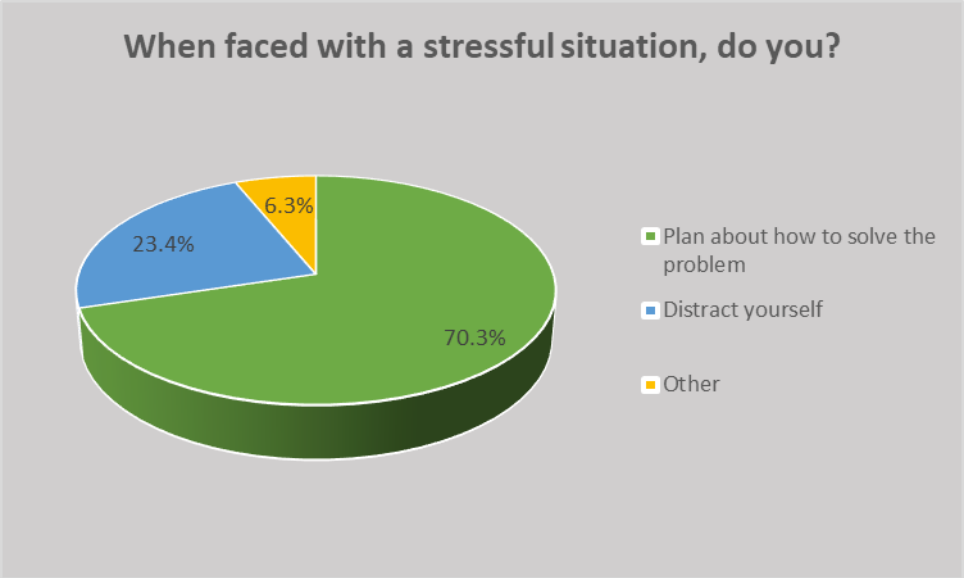
COPING MECHANISM

INDIA

Out of all the participants, 29.7% of the women responded that they asked for help in case of stressful situations. While 51.6% women only reached out for help sometimes, 16.1% never asked for help.

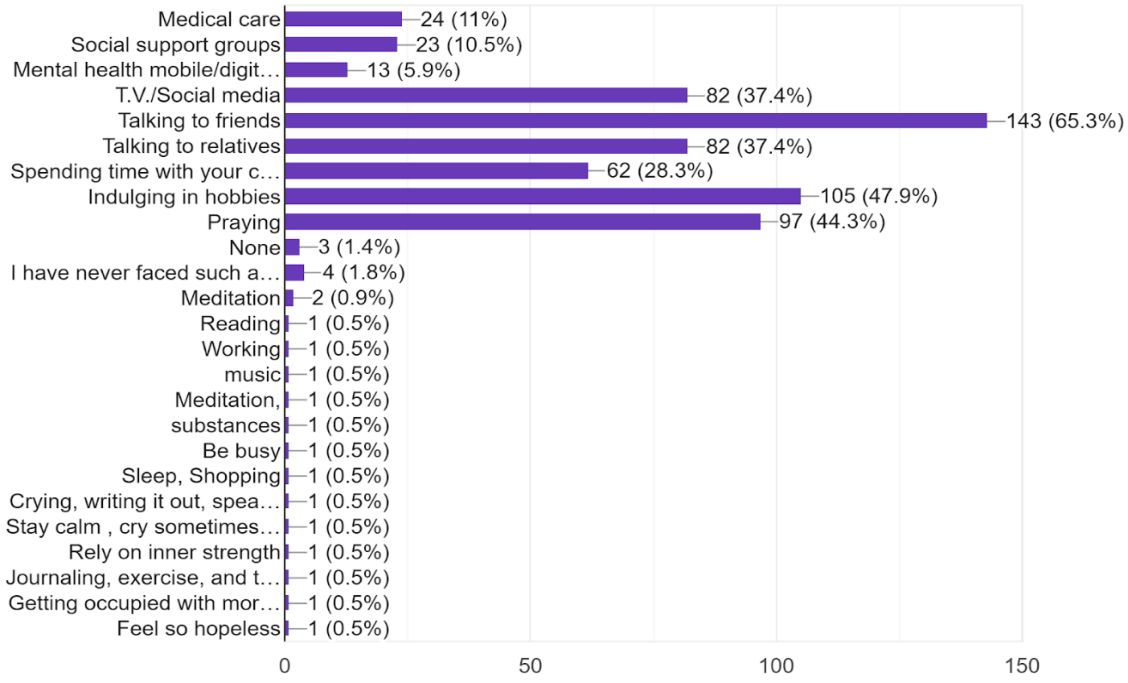


70.3% women responded that they dealt with stressful situations by planning about how to solve the problem and 23.4% said they tended to use distractions in the face of stressful situations.



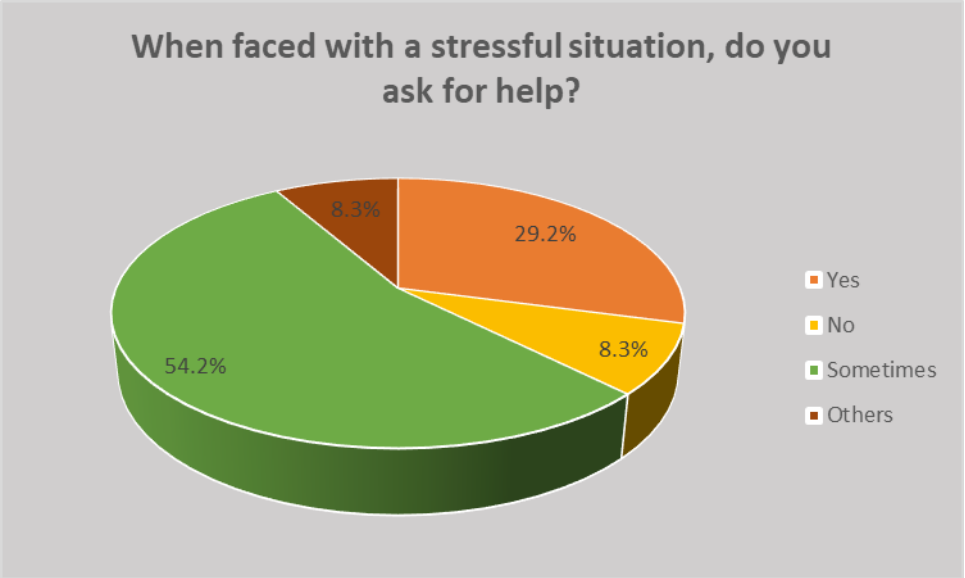
The various coping strategies used by the participants include medical care, social support groups, mental health mobile/digital applications, T.V./Social media, talking to friends, talking to relatives, spending time with your children, indulging in hobbies, praying and others. Majority of the women (65.3%) used talking with friends as their coping method, followed by indulging in hobbies (47.9%). Other common coping strategies included praying (44.3%), use of social media and TV (37.4%), talking with relatives (37.4%) and

spending time with children (28.3%). The least common methods included use of mental health/mobile health applications (5.9%), social support groups (10.5%) and use of medical care (11%). 1.4% of women reported that they do not use any coping strategies.

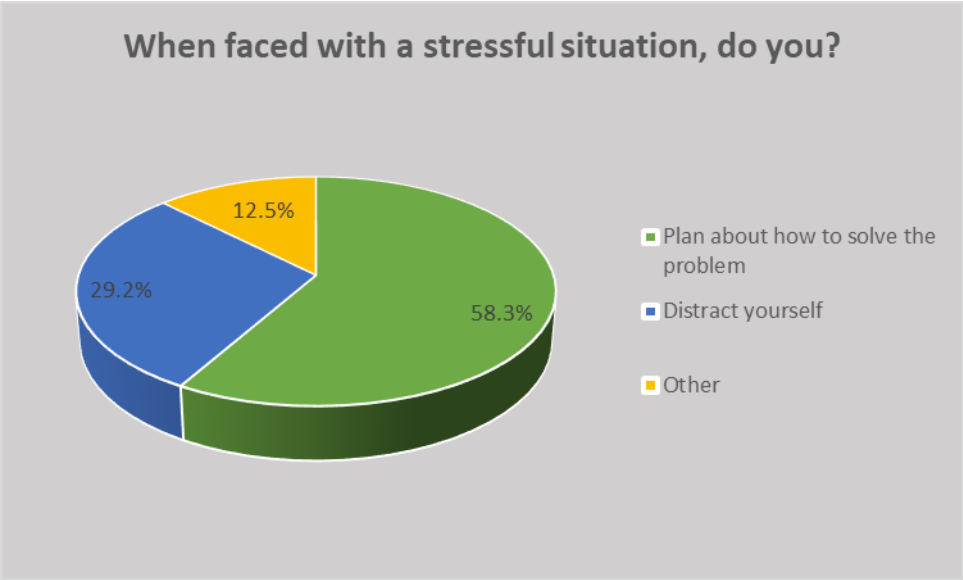


USA

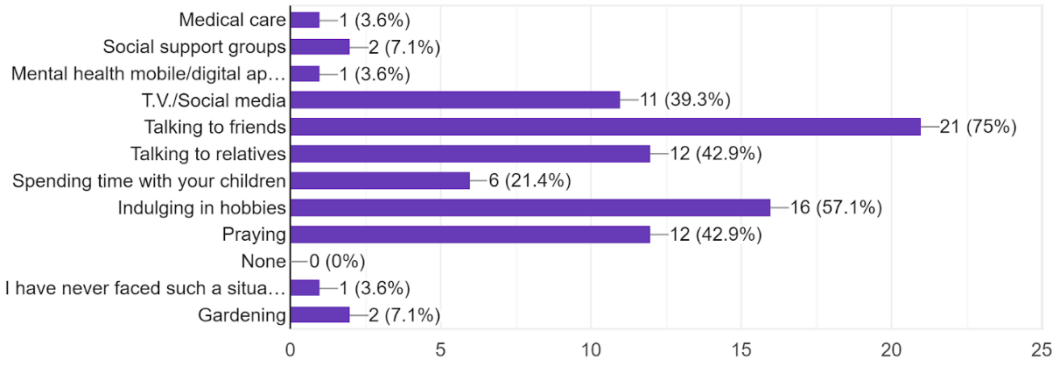
Majority of women (54.2%) felt that they would only ask for help sometimes, whereas only 29.2% of women said they would definitely ask for help



When faced with a stressful situation, the majority of the women (58.3%) said they plan to solve the problem in opposition to 29.2% women who said they distract themselves. This is in contradiction to previous studies, which say that women prefer emotion based coping rather than problem solving based coping methods.



The most common method of coping is talking to friends (75%). Other common coping mechanisms include indulging in hobbies (57.1%), praying (42.9%), talking to relatives (42.95), TV/social media (39.3%) and spending time with their children (21.4%). The least common methods include social support groups (7.1%), medical care (3.6%) and mobile mental health applications (3.6%).



Interpretation

In order to curtail the COVID 19 pandemic lockdowns and quarantines were imposed. This led to decreased socialization, along with other effects such as economic distress,

isolation, fear of infection, fear of losing loved ones amongst many more. Many studies have established the negative impact on psychological health in the times of COVID 19.

In India, in this study, 21.4% participants were shown to have symptoms of anxiety and 16.7% participants showed symptoms of depression. Majority of the women reported "worrying too much about different things in the last 2 weeks". Another common behaviour which was noticed was becoming easily annoyed or irritable. Even though, thoughts related to harming oneself were not reported commonly, majority of the women complained of feeling tired or having little energy.

In the sub sample of victims of domestic violence, it was seen that percentage of participants showing symptoms of anxiety (39.3%) and depression (35.7%) were comparatively higher than what was seen in the total sample. This aligns with studies that have been conducted hitherto, which show that women, who have a previous history of domestic violence, have higher chances of suffering from anxiety and depression.[21]

In USA, the study revealed that 12.5% participants had anxiety above or the equal to the cut-off score to 10. 16.7% showed symptoms of depression. This is in contradiction to the previous studies, which show a lower level of depression in comparison to anxiety.[24] Majority of women reported "not being able to stop or control worrying" and "trouble relaxing". Further studies are required in this regard.

The survey also points to the high dependence of women on social support during the times of stressful situations. The women depend on their friends, relatives and children as a means of coping with stress in their lives. In confirmation with other studies, the current study also shows the method of praying as a common coping mechanism.[27] Indulging in hobbies is also a majorly used method of coping

The difference in the percentages of anxiety and depression, from previous studies may be explained by the significantly different traits of the sample. In addition, these results cannot be generalised to the general population as the sample is not a representative sample. The sample has been chosen through non-random sampling and the small sample size is a constraint. In addition, the study covers only individuals from financially stable families. Since the survey form was only in the English language, the survey could cover only literate individuals.

Section 4 – Recommendation and Conclusion

Recommendation

The study throws light on the need to focus on mental health issues faced by women. A significant proportion of women suffer from declining mental health and there is an unmet treatment needs for mental health that needs to be addressed. Even though, women use different types of coping methods, the reliance on medical/professional care is significantly low. Thus, programs should be devised to increase awareness and access to these healthcare services. There should also be efforts to provide mental support through mobile health applications. These applications have the added advantage of privacy for the women. They can also make the individual feel in control of their own mental health. Since women rely heavily on social support, opportunities should be created for bonding with others. These could be in the form of book clubs, gaming parties and others. Increase in awareness and access to assistance for victims in domestic violence is also the need of the hour.

Conclusion

This study shows that 33% of the women suffer from either anxiety or depression in the sample from India. In the sample from USA, 25% women suffer from either anxiety or depression. The most common coping strategies involve social support, whereas the least preferred methods of coping include medical care. The deteriorating status of mental health of women calls for close attention to it and to an increase awareness regarding mental illnesses and their treatments. There is also a large scope for further studies to be done about women’s mental health.

REFERENCES

1 Mohamadian, M., Chiti, H., Shoghli, A., Biglari, S., Parsamanesh, N., & Esmaeilzadeh, A. (2021). COVID-19: Virology, biology and novel laboratory diagnosis. *The journal of gene medicine, 23(2)*, e3303. https://doi.org/10.1002/jgm.3303

2 Samudrala, P. K., Kumar, P., Choudhary, K., Thakur, N., Wadekar, G. S., Dayaramani, R., Agrawal, M., & Alexander, A. (2020). Virology, pathogenesis, diagnosis and in-line treatment of COVID-19. *European journal of pharmacology, 883*, 173375. https://doi.org/10.1016/j.ejphar.2020.173375

3 Wang, Y., Wang, Y., Chen, Y., & Qin, Q. (2020). Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. *Journal of medical virology, 92(6)*, 568–576. https://doi.org/10.1002/jmv.25748

4 W.H.O. (2021, June 26*). WHO Coronavirus (COVID-19) Dashboard*. With Vaccination Data. https://covid19.who.int/

5 Lotfi, M., Hamblin, M. R., & Rezaei, N. (2020). COVID-19: Transmission, prevention, and potential therapeutic opportunities. *Clinica chimica acta; international journal of clinical chemistry, 508*, 254–266. https://doi.org/10.1016/j.cca.2020.05.044

6 Antonova, E., Schlosser, K., Pandey, R., & Kumari, V. (2021). Coping With COVID-19: Mindfulness-Based Approaches for Mitigating Mental Health Crisis. *Frontiers in psychiatry, 12*, 563417. https://doi.org/10.3389/fpsyt.2021.563417

7 *Mental health: strengthening our response*. (2018, March 30). WHO. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

8 *Mental Health - Home Page - CDC*. (n.d.). CDC. Retrieved June 29, 2021, from https://www.cdc.gov/mentalhealth/index.htm

9 *What Is Mental Illness?* (n.d.). Mental Health. Retrieved June 18, 2021, from https://www.psychiatry.org/patients-families/what-is-mental-illness

10 The Lancet Global Health, Mental health matters, *The Lancet Global Health,* Volume 8, Issue 11, 2020 Page e1352, ISSN 2214-109X, https://doi.org/10.1016/S2214-109X(20)30432-0

11 Galderisi S, Heinz A, Kastrup M, Beezhold J, Sartorius N. A proposed new definition of mental health. Psychiatr Pol. 2017 Jun 18;51(3):407-411. English, Polish. doi: 10.12740/PP/74145. Epub 2017 Jun 18. PMID: 28866712.

12 Manwell, L. A., Barbic, S. P., Roberts, K., Durisko, Z., Lee, C., Ware, E., & McKenzie, K. (2015). What is mental health? Evidence towards a new definition from a mixed methods multidisciplinary international survey. BMJ open, 5(6), e007079. https://doi.org/10.1136/bmjopen-2014-007079

13 Bernhard H Liese, Rebecca S F Gribble, Marisha N Wickremsinhe, International funding for mental health: a review of the last decade, *International Health*, Volume 11, Issue 5, September 2019, Pages 361–369, https://doi.org/10.1093/inthealth/ihz040

14 F. Chabaud aI. Benradia bR. Bouet aA. Caria b dJ.L. Roelandt b c. (2017, December 1). "Sociodemographic risk factors and mental disorders: global model and local specificities, according to the results of the general population mental health survey in 18 international sites Sociodemographic and mental health risk factors: Global and local conditions according to the Survey results Mental health in the general population in 18 international locations". ScienceDirect. https://www.sciencedirect.com/science/article/abs/pii/S0013700616301403?via%3Dihub

15 Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. Journal of urban health : *bulletin of the New York Academy of Medicine*, 78(3), 458–467. https://doi.org/10.1093/jurban/78.3.458

16 Caron J, Liu A. A descriptive study of the prevalence of psychological distress and mental disorders in the Canadian population: comparison between low-income and non-low-income populations. Chronic Dis Can. 2010 Jun;30(3):84-94. PMID: 20609292.

17 Tran, A. (2017, November 27). Health assessment of French university students and risk factors associated with mental health disorders. Https://Journals.Plos.Org/Plosone/Article?Id=10.1371/Journal.Pone.0188187. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0188187

18 Souto, E. P., Moreno, A. B., Chor, D., Melo, E., Barreto, S. M., Nunes, M. A., & Griep, R. H. (2021). Social Capital and Depressive Episodes: Gender Differences in the ELSA-Brasil Cohort. *Frontiers in public health*, 9, 657700. https://doi.org/10.3389/fpubh.2021.657700

19 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. *Lancet (London, England)*, 395(10227), 912–920. https://doi.org/10.1016/S0140-6736(20)30460-8

20 Almeida, M., Shrestha, A. D., Stojanac, D., & Miller, L. J. (2020). The impact of the COVID-19 pandemic on women's mental health. *Archives of women's mental health*, 23(6), 741–748. https://doi.org/10.1007/s00737-020-01092-2

21 Sediri, S., Zgueb, Y., Ouanes, S., Ouali, U., Bourgou, S., Jomli, R., & Nacef, F. (2020). Women's mental health: acute impact of COVID-19 pandemic on domestic violence. *Archives of women's mental health*, 23(6), 749–756. https://doi.org/10.1007/s00737-020-01082-4

22 Liu, N., Zhang, F., Wei, C., Jia, Y., Shang, Z., Sun, L., Wu, L., Sun, Z., Zhou, Y., Wang, Y., & Liu, W. (2020). Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry research*, 287, 112921. https://doi.org/10.1016/j.psychres.2020.112921

23 Liu MB, Dufour G, Sun ZE, Galante J, Xing CQ, Zhan JY, Wu LL. The impact of the COVID-19 pandemic on the mental health of young people: A comparison between

China and the United Kingdom. *Chin J Traumatol*. 2021 May 21:S1008-1275(21)00093-6. doi: 10.1016/j.cjtee.2021.05.005. Epub ahead of print. PMID: 34074594.

24 Liu, C. H., Zhang, E., Wong, G., Hyun, S., & Hahm, H. C. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry research*, *290*, 113172. https://doi.org/10.1016/j.psychres.2020.113172

25 Grover S, Sahoo S, Mehra A, Avasthi A, Tripathi A, Subramanyan A, Pattojoshi A, Rao G P, Saha G, Mishra K K, Chakraborty K, Rao NP, Vaishnav M, Singh OP, Dalal P K, Chadda RK, Gupta R, Gautam S, Sarkar S, Sathyanarayana Rao T S, Kumar V, Janardran Reddy Y C. Psychological impact of COVID-19 lockdown: An online survey from India. Indian J Psychiatry [serial online] 2020 [cited 2021 Jun 26];62:354-62. Available from: https://www.indianjpsychiatry.org/text.asp?2020/62/4/354/286222

26 García, F.E., Barraza-Peña, C.G., Wlodarczyk, A. *et al*. Psychometric properties of the Brief-COPE for the evaluation of coping strategies in the Chilean population. *Psicol. Refl. Crít.* **31,** 22 (2018). https://doi.org/10.1186/s41155-018-0102-3

27 Solanki, H. K., Kaur, A., Das, M., Awasthi, S., & Jain, S. (2019). Coping mechanism used by homemakers in Kumaon region (Uttarakhand, India) to deal with stress in their day-to-day life. *Journal of family medicine and primary care*, *8*(3), 1138–1144. https://doi.org/10.4103/jfmpc.jfmpc_362_18

ANNEXURES

Annexure 1 : Google Survey Form (The same form was used for India and USA, but was circulated separately)

ONLINE SURVEY FORM

WOMEN'S MENTAL HEALTH DURING COVID 19

SECTION 1

Hello.

This is Dr. Manya Mittar. I am currently a post-graduate student, pursuing MBA in Hospital and Health Management from IIHMR Jaipur.

This survey form has been created to collect information regarding women's mental health during COVID 19, as a part of my research project.

Participation is voluntary and your responses will be kept confidential, and at no point during the survey will you be asked any direct identification questions. Information collected will be used for research purposes only.

Do you give your consent to participate in the survey?

- Yes
- No

SECTION 2

1. Age
    a. 15-25
    b. 26-35
    c. 36-45
    d. 46-55
    e. 56-60

2. Are you *
    a. Unmarried
    b. Married
    c. Divorced

3. Do you have children? *
    a. Yes
    b. No
    c. Pregnant

4. What is your occupation? *
    a. Homemaker
    b. Salaried employee
    c. NGO
    d. Business
    e. Student
    f. Other:

5. What is your qualification? *
    a. Under-graduate
    b. Graduate
    c. Post Graduate
    d. Doctorate

6. Would you say that you have a good social support/close group of friends and relatives, who can help you in time of need? *
    a. Yes
    b. No
    c. Maybe

7. Have you ever been a victim of domestic violence? *
    a. Yes
    b. No
    c. Other

8. Have you experienced any form of domestic violence in the last 2 weeks? *
    a. Yes
    b. No
    c. Other:

9. “Over the last 2 weeks, how often have you been bothered by the following problems?” *

	“Not at all”	“Several days”	“More than half of the days”	“Nearly everyday”
“Feeling nervous, anxious or on edge”				

“Not being able to stop or control worrying”				
“Worrying too much about different things”				
“Trouble relaxing”				
“Being so restless that it is hard to sit still”				
“Becoming easily annoyed or irritable”				
“Feeling afraid as if something awful might happen”				

10. “Over the last two weeks, how often have you been bothered by any of the following problems?” *

	“Not at all”	“Several days”	“More than half of the days”	“Nearly everyday”
“Little interest or pleasure in doing things?”				
“Feeling down, depressed, or hopeless”				
“Trouble falling or staying asleep, or sleeping too much?”				
“Feeling tired or having little energy?”				
“Poor appetite or overeating?”				
“Feeling bad about yourself - or that you are a failure or have let yourself or your family down?”				
“Trouble concentrating on things, such as reading the newspaper or watching television?”				
“Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?”				
“Thoughts that you would be better off dead, or of hurting yourself in some way?”				

11. When faced with a stressful situation, do you ask for help?
    a. Yes
    b. No
    c. Sometimes
    d. Other (Please specify)
12. When faced with a stressful situation, do you
    a. Plan to solve the problem
    b. Distract yourself
13. What coping mechanism do you prefer in case of mental stress (select all that apply)
    a. Medical care
    b. Social support groups
    c. Talking to friends
    d. Talking to relatives
    e. Spending time with your children
    f. Indulging in hobbies
    g. Praying
    h. Other (Please specify)