

Impact of COVID-19 on mental health of ambiverts and extroverts

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ABSTRACT

COVID-19 has led to people globally being quarantined in their houses either alone, with friends or family. Such a situation and phenomenon can have adverse effects on a person's mental health. This study was conducted in May 2020 and the data is according to the statistics at that time. This study was done to see if such a situation elicits depressive and anxiety symptoms in the general population. The study further aimed to see whether these symptoms changed with the living situation of the people (alone, with friends, with nuclear family and with joint family); whether the symptoms were influenced by two personality types which are introversion and extraversion; and whether age (16-30 and 31-65) had any effect on the depression and anxiety scores. The scales used were Ryff's PHQ-9 Depression scale to measure depressive symptoms and the GAD-7 scale to measure anxiety symptoms. Introversion Scale developed by McCroskey was used to study the extraversion and ambiversion personalities of the participants. An online survey was used to collect responses from participants. Convenience sampling was used and data was gathered from 203 participants. Descriptive statistics were used like graphs, tables, t-test and ANOVA to calculate the results and interpret them. The results indicated that a higher percentage of the general population had depression and anxiety symptoms. It was also found that there was a significant difference between the depression and anxiety scores of people below the age of 30 years and people above the age of 30 years. Living situation and personality factors however, did not show any significant differences in the anxiety and depression scores.

Keywords: *Depression, Anxiety, Age difference, Personality, Extraversion, Ambiversion, COVID-19*

The World Health Organisation declared the latest Coronavirus outbreak as a pandemic on 11th March 2020. From then countries globally have taken strict measures such as travel bans and lockdowns to prevent the spread of the virus. Unfortunately, all of this was quite sudden in most countries and people have had to live in uncertainty. Schools, colleges, workplaces, restaurants, public parks, religious worship places, public transport, international transport all of these facilities have been put on hold. Even delivery services and international trade has come to its lowest. The lockdown has

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severely restricted the movement of people and it has also had adverse effects on the economy of families as well as countries. People like daily wage laborers are out of work, migrants are out of work, many in private firms and companies have been fired leading to people not having adequate amounts of money to support their families. The GDP's of countries like USA, China, India, UK have been severely hit. The entire future of most countries is quite uncertain, be it in the field of education, job, trade, travel or even a small fact like when will a neighbourhood market open up. Leaders of the world have stated that Covid- 19 is an infection that has worse effects on people than World War 2. Such an unprecedented time filled with uncertainty, certainly has effects on a person's mental health. Even the general population is affected by the lockdown and may have some mental health problems or symptoms.

Since the study is being done with the Indian population from various states, some Indian statistics of the disease is currently at 78,000 and counting infected cases along with 2400 deaths due to the coronavirus. There are about 586 hospitals and over 1 lakh beds for coronavirus cases throughout the country. Many trains are also being set up to be used as isolation wards for cases. The lockdown has impacted about 40 million internal migrants in India, 27 million youth (age group between 20-30) lost their jobs in April, within a month, unemployment rose from 6.7% on 15 March to 26% on 19 April, major companies in India such as Larsen & Toubro, Bharat Forge, UltraTech Cement, Grasim Industries, Aditya Birla Group, BHEL and Tata Motors have temporarily suspended or significantly reduced operations. Young startups have been impacted as funding has fallen, fast-moving consumer goods companies in the country have significantly reduced operations and are focusing on essentials and even some defense deals have been affected/delayed due to the pandemic, such as the delivery of Dassault Rafale fighter jets. Stock markets in India posted their worst losses in history on 23 March 2020. Apart from such large-scale problems people are also facing many hassles in daily life like low availability of food and other necessary resources, high tensions in going out to get some important resources, work at home has increased specially for women who now have to do their jobs from home as well as do the entire housework, students have to spend longer time on laptops or phones due to online classes leading to too much screen time, all these problems have profound effects on a person's mental health.

The Centers of Disease Control and Prevention stated that Covid-19 can be stressful for people and lead to fear and anxiety. The CDC also mentioned symptoms that people may face during the outbreak. These include:

1. Fear and worry about one's own and loved one's health
2. Changes in sleep or eating patterns
3. Difficulty sleeping or concentrating
4. Worsening of chronic health problems
5. Worsening of mental health conditions
6. Increased usage of alcohol, tobacco, or other substances

This study aimed to study some of the symptoms listed above by the CDC that come under the domain of depression and anxiety. The Lancet did a review of 24 studies exploring the effects of quarantine on mental health. The study found that about 1380 million people in India were under lockdown, 760 million in China, 297 million in the USA, 165 million people in Bangladesh and so on. The results of the study showed that people in most countries were likely to develop a wide range of symptoms of psychological stress and disorder, including insomnia, stress, low mood, anxiety, anger, irritability, emotional

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exhaustion, symptoms of depression and post-traumatic stress. Low mood and irritability specifically stand out as being very common conclusions derived from study notes. The paper also states people quarantined because of being in close contact with those who potentially have SARS reported various negative responses during the quarantine period: over 20% (230 out of 1057) reported fear, 18% (187) reported nervousness and sadness, and 10% (101) reported feelings of guilt.

Depression is classified as a mood disorder. It may be described as feelings of sadness, loss, or anger that interfere with a person's everyday activities and it is fairly common. People experience depression in different ways. It may interfere with a person's daily work, resulting in lost time and lower productivity. It can furthermore influence relationships and help in development of chronic health conditions. Although according to the DSM 5, a person can only be said to have a depressive disorder if they experience depressive symptoms for 6 months at least. In this study, the aim was not to diagnose the participants of a depressive disorder but merely see if they are showing some symptoms due to the lockdown and social distancing. Some of the symptoms being studied include: overeating/under eating, sleeplessness, loss of pleasure in activities, feeling tired, trouble concentrating on things, moving or speaking slowly or too fast.

Anxiety is your body's natural response to stress. It's a feeling of fear or apprehension generally about the future. It is normal to feel anxious about moving to a new place, starting a new job, taking a test or starting a family. This type of anxiety is ordinary and it even motivates a person to work harder. Ordinary anxiety is a feeling that comes and goes, but does not interfere with everyday life of a person. In the case of an anxiety disorder or severe anxiety, the feeling of fear may be with a person all the time. It is intense and sometimes debilitating. There are many types of anxiety disorders like panic disorder, phobia, social anxiety disorder, obsessive compulsive disorder but the most common is generalised anxiety disorder. Generalized Anxiety Disorder (GAD) is characterized by persistent and excessive worry about many different things in their life. People with GAD may anticipate disaster and may be overly concerned about money, health, family, work, education or other issues. Individuals with GAD find it very hard to control their worry. Although once again the aim of the paper was not to diagnose the participants of an anxiety disorder but merely see if the participants are showing some of the symptoms due to the ongoing situation. Some of the symptoms being studied include: excessive worry, restlessness, trouble relaxing, feeling afraid as if something awful might happen, feeling nervous or on edge.

Extraversion and introversion were popularised by Swiss psychoanalyst Carl Jung (1875-1961) in 1921. In *Psychological Types*, Jung described that extraverts engage with external stimuli and direct their energy outwards i.e. towards other people and gain energy from such encounters. Abernethy (1938) defined an extrovert as "one who enters with interest and confidence into social activities of the direct type and has little liking for planning or detailed observation." Extraversion is characterized by a preference to focus on the world outside the self and extraverts are energized by social gatherings, parties and group activities. They are usually enthusiastic, gregarious, animated and they enjoy the limelight. Their communication style is verbal and assertive.

Introverts, on the other hand, focus their energy inwards, towards more solitary, thoughtful activities. Abernethy (1938) described introverts as "below the general average in social inclination and above the average in liking for thought." Introversion is characterized by a preference to focus on the inside world. Introverts are energized by spending time alone or

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with a very small group. They find large group gatherings draining because they seek depth in relationships instead of breadth. Introverts process information internally. They are great listeners and thinkers.

In the middle of the two personality types are ambiverts that fall in between the extraversion and extroversion spectrum. Heidbreder (1926) suggested that pronounced extroversion and pronounced introversion are merely extremes of behaviour that is connected by continuous gradations or in other words a continuum. This points to a single, mixed type rather than to two sharply separated classes. Conklin (1923) posited the existence of ambiverts who were in the middle of the spectrum and considered them to be the most 'normal' as they showed flexibility between the two extremes. Ambiverts are characterised by wanting social time but also some alone time, ambiverts can adjust in many different kinds of situations, they have a good sense of trust, are often indecisive, work well alone and in groups and are usually good communicators. In this study it was judged whether the participants are extroverts or ambiverts.

METHODOLOGY

The aim of the study was to conduct a quantitative inquiry to understand the impact of Covid- 19 on the well-being of individuals residing in India. The study aimed to delve deeper into the psychological impact of the pandemic on the residents of India. Depression, and Anxiety were two key domains where the individuals were accessed on, in regards to their personality trait of extroversion and ambiversion.

The objectives of the study were:

1. To study whether there are depressive and anxiety symptoms in the general population of the people residing in India.
2. To study the difference of anxiety and depression symptoms in people with differing personalities of extraversion and ambiversion.
3. To study the difference in symptoms of people of different age groups.
4. To study whether the living situation of people had any differing impact on the symptoms.

Design

The present study was quantitative in nature. Quantitative study is used to understand people's beliefs, experiences, attitudes, behaviors and interaction through generation of numerical data. In order to capture the psychological impact of people residing in India during the pandemic, an online survey was administered. The online survey consisted of Ryff's PHQ- 9 Depression scale which was used to measure depressive symptoms and the GAD-7 scale which was used to measure anxiety symptoms. Introversion Scale developed by McCroskey to study the extraversion, introversion and ambiversion personalities of the participants was also used.

Sample

The sample comprised 209 Participants out of which 56.5% were Males and 43.1% were Females, along with 0.5% others. The age of the participants were above 18 years. Due to which we had to eliminate 6 responses, as 4 of the participants failed to meet the age criteria selected for the study i.e. minimum 18 years of age and 2 participants were residing outside India, that failed to meet the selection criteria selected for the study i.e. all the participants should be residing in India. Thus, the total participants considered were 203.

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All the participants were selected through the convenience, snowball sampling technique. This is a non-probability sampling technique. In this technique people that are easy to reach out to are contacted.

The tools used for the data collection of the study were

- 1. Socio-Demographic Sheet:** The Socio-Demographic Sheet consisted of the following details and questions: Name, Age, Gender, Contact details, Place of residing, who are you residing with, and if they were aware of anyone diagnosed with Coronavirus. However, due to respect of participants rights, Name and contact details were not mandatory information to be filled.
- 2. Ryff's PHQ-9 Depression scale:** The PHQ is a nine item depression scale directly based on the nine diagnostic criteria of major depressive disorder. It is one of the most clinically validated tools for diagnosis and monitoring treatment response to depression. Advantages of the tool range from being shorter, quicker, and accurate than other depression scales. It could be administered in person by clinician, or via telephone, or self-administered. The scale provides an assessment of symptoms severity and could be administered to adolescents as young as 12 years, which makes it accessible to a greater population. PHQ-9 is also validated and documented well in a variety of populations, thus reported as a reliable and valid tool.
- 3. GAD-7 scale:** The GAD-7 scale, developed by Spitzer, is a seven items anxiety scale generally used to measure in outpatient settings. The symptom severity of the scale measures four anxiety disorders namely, Generalised anxiety disorder, Social Phobia, Panic disorder, and Posttraumatic stress disorder. GAD-7 is one of the most clinically validated tools in primary care and mental health settings. It is used to objectively determine the severity of initial symptoms and to monitor symptom changes or the effect of treatment over time. As per research, GAD-7 scale has good reliability, factorial and concurrent validity.
- 4. Introversion Scale developed by McCroskey:** The Introversion scale, is an 18 items introversion scale, used to be distinct from communication apprehension measures. The construction of the scale was drawn from the work of Eysenck, which allows assessment of introversion and communication apprehension as the key predictors of communication behaviors independent to each other. The scale has alpha reliability estimates above 0.80. However, items that measure neuroticism are filtered out and not considered for final scoring of introversion.

Procedure

The procedure included making an online survey (google form) which included all the questions of the socio demographic sheet and the scales that are used. The questionnaire was then distributed and snowball technique was used to get the surveys filled by a large number of people. Once the surveys were filled, scoring of each scale i.e. depression, anxiety and personality scales was done. Once the scores were calculated and checked, the final results and analysis was done.

Data Analysis

Data analysis is done to see whether the hypotheses of the study are accepted or rejected. This study has 6 hypotheses and 2 different types of analysis were used.

For hypothesis 1 and 2 which states that there will be some symptoms of depression and anxiety during Covid-19 lockdown in the general population, simple percentages were calculated. The percentages were calculated for each domain under depression and anxiety

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which included from nil, minimal, mild, moderate, moderately severe and severe in order to see which domains were the highest.

For hypothesis 3,4, 5 and 6 which states there will be a significant difference in the anxiety and depression symptoms of people below 30 and over 30 years of age and the differences in the scores of ambiverts and extroverts, t-independent test was used. The formulas in the excel sheet was to calculate means, t scores and p values.

For hypothesis 7 and 8 which states there will be a significant difference in the anxiety and depression in people living alone and people living with someone, ANOVA was used where means of the 4 groups were calculated and compared.

Rationale

The researchers chose to do the study as Covid-19 is said to be an extremely unprecedented situation with the entire globe under a lockdown for months now. Such a situation has led to a lot of uncertainties and it was understood that people would be in a state of distress which would lead to some symptoms of anxiety or depression as they are the most common type of mental health disorders/distresses.

The similar has also been suggested by CDC and WHO which stated that in the situation of a pandemic, people may experience increased stress and some of the symptoms like problems in eating, problems in sleeping, worsening of chronic health problems or mental health problems due to the lockdown. Thus, keeping this in mind, similar symptoms were studied in the current research.

Researches in the past done on Ebola and SARS have also provided evidence of increase in various symptoms, the most common being feeling sad, boredom, frustration, fear, anger. Most studies found that people in such challenging times are most vulnerable to depression and anxiety and thus these two particular disorders were chosen in the current study.

Extroverts are considered to be more socially active and are said to actively seek social events and being with people unlike introverts who like to be alone and stay indoors more often. Keeping this contrast of personalities in mind a comparison in their mental health during a lockdown was sought as a difference is expected.

REVIEW OF LITERATURE

A review of literature was done to understand the existing literature on lockdown and mental health. Themes on personality and quarantine as well as living alone and quarantine were also explored.

Nyanfor S, and Xiao S (2020) conducted a retrospective cohort study to assess the psychological impact of the Ebola epidemic among survivors of Liberia. West Africa Ebola epidemic has resulted in the outbreak of an unprecedented number of survivors, who had shown physical and mental sequelae consisting of stigma, physical violence, diminished quality of life, ostracism, along with isolation. The key objective of the study was to evaluate the relationship between Ebola virus and its long term psychological problems among the survivors in Liberia. Methodology of the study obtained involved quantitative data from 232 respondents via structured face to face interviews. For measuring PTSD, Davidson Trauma Scale (DTS) was used, and to assess depression, Patient Health Questionnaire (PHQ-9) was used. Generalised Anxiety Disorder Scale (GAD 7) was used to

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assess anxiety, and to assess suicidality of both the survivors and their controls, the Suicide Behavior Questionnaire-Revised (SBQ-R) was used. Chi-square, t-tests, and Linear regression analysis, was done to determine the prevalence of Ebola Virus infection, and its factors associated with long term psychological problems among its survivors and non-survivors. Findings suggested that out of 116 survivors, 66% recorded posttraumatic stress disorder, 53% depression, 37% anxiety, and 34% attempted suicide. Related to the Ebola survivors, the non survivors had a drastically significant levels of posttraumatic stress disorder, 6% faced depression, 4% faced anxiety, and 2% attempted suicide reported three years after the outbreak. The researchers concluded that Ebola virus survivors still had persistently high levels of posttraumatic stress disorder, depression, anxiety, and suicide attempt. Thus, the study suggested that long term psychological implications of infectious diseases should not be ignored.

Another similar study conducted by Jalloh, and Redd (2015) on the impact of Ebola experiences and risk perception on mental health in Sierra Leone. The study was a cross-sectional survey with a national sample of 3564 participants. Anxiety and depression symptoms were studied using the Patient Health Questionnaire-4 and PTSD symptoms were measured by 6 items from the Impact of Events Scale-revised. Results indicated prevalence rate of 48% anxiety-depression symptoms, and 76% posttraumatic stress disorder symptoms which is similar to the result yielded by Nyanfor S, and Xiao S (2020). In addition, it was also found that 6% met the criteria for clinical cut-off for anxiety and depression and 27% met the clinical cut off for PTSD.

Thus, the above two studies were based on the Ebola epidemic and its psychological impact, which could be seen as similar to the current global pandemic, the Covid-19. Resulting in providing a framework to the current study.

Venkatesh (2020), did a study on the implications of social distancing on mental health. The study was done in UK. The paper was a secondary research-based paper on existing data and statistics. The results of the paper indicate that the strict measures taken by the government of social distancing and more severe ones like quarantine and isolation have led to anxiety and depressive symptoms in the people. Some symptoms like frustration, boredom, low mood, and potentially depression and anxiety arising from fear of contagion and inadequate clarity around social distancing guidelines, often made worse by less reliable media sources heightening confusion and fear mongering; some suggestions were also made in the paper to reduce the negative psychological effect of social distancing on people. These suggestions include daily routine including a healthy lifestyle for the public, hobbies, virtual social interactions and mindfulness were recommended. It was also suggested that government, media and health workers provide clear and accurate public health guidelines.

Brooks et al (2020), conducted a literature review of 24 papers to study the psychological impact of quarantine. The study reviewed 11 countries including USA, Canada, China, Liberia, Sweden, Australia, Taiwan, Hong Kong, South Korea, Senegal and Sierra Leone. most of the studies reviewed included interviews, focused group discussions, study specific survey and some scales like the GAD-7, IES-R, STAXI-2, GHQ-30, SRQ-20 and a few more scales. The studies were done during the times of MERS and SARS which had similar situations as can be seen during Covid-19. The review literature found that most reviewed studies reported negative psychological effects including post-traumatic stress symptoms, confusion, and anger. Stressors during the quarantine time included longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information,

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financial loss, and stigma. Some researchers also suggested long-lasting effects. Suggestions to reduce negative psychological impact include, officials should quarantine individuals for no longer than required, provide clear rationale for quarantine and information about protocols, and ensure sufficient supplies are provided. Thus, the study shows that during times of quarantine there are negative psychological impacts which could be long lasting as well and has suggested some ways to reduce such negative effects.

Carvalho, Pianowski and Goncalves (2020) conducted a study on extraversion and conscientiousness personality traits associated with engagement with containment measures. The study included 2 containment measures which were social distancing and hand washing. The sample included 715 Brazillian adults from ages 18-78 years. Two scales were used, the Big Five Inventory-2 short and the Dimensional Clinical Personality Inventory-2. The results of the study showed that higher scores on extroversion were related to lower means for social distancing and the result was significant at $p= 0.05$. The study also found that higher scores for conscientiousness was associated with higher means for social distancing and handwashing. The study has important implications for Covid-19 where different personalities lead to differential behaviours.

Jacob, Haro, and Koyanagi (2019) conducted a secondary study on the relationship between living alone and common mental disorders in the 1993, 2000 and 2007 National Psychiatric Morbidity Surveys. The rationale behind the study was to examine the association between living alone and common mental disorders, and to identify the potential mediating factors between the association of the two. The data was drawn through 1993, 2000, and 2007 surveys, and the common mental disorders were accessed using the Clinical Interview Schedule- Revised (CIS-R), pertaining a questionnaire focusing on past week neurotic symptoms. Analysis of association between the common mental disorders and living alone, along with the identification of mediators, was carried out through multivariable logistic regression and mediation analyses. The findings of the study indicated the prevalence of common mental disorders were higher in individuals living alone than in those not living alone in all the survey years (1993, 2000, and 2007).

Thus, the study emphasised the prevalence of the positive correlation of living alone and common mental disorders, which lead to analysis of whether the prevalence of positive correlation, was observed in the present study, during the stressful time of COVID-19.

RESULTS

Analysis was done to get the frequency of the number of people who have anxiety and depression symptoms, to see the difference in the anxiety and depression symptoms of those living alone and those living with others, to get the difference between anxiety and depression of those below 30 years of age and those above 30 years of age and to get the difference in the anxiety and depression scores of ambiverts and extroverts.

Table 1 Table representing frequency of different depression types in all participants

| Depression Type | Frequency |
|-------------------|-----------|
| Nil | 37 |
| Mild | 57 |
| Minimal | 66 |
| Moderate | 28 |
| Moderately Severe | 11 |
| Severe | 4 |
| Total | 203 |

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Table 1 represents the frequency of people experiencing depressive symptoms. Maximum participants came in the category of minimal depressive symptoms (66) followed by 57 participants in the mild category and 37 participants in the nil category. 28 participants came in the moderate category, 11 in the moderately severe category and 4 in the severe category, showing that a larger percentage (81%) of the population does have depressive symptoms. This proves hypothesis 1 of the study which stated that a higher percentage of participants will have some depressive symptoms.

Graph 1 Representing data on depressive scores.

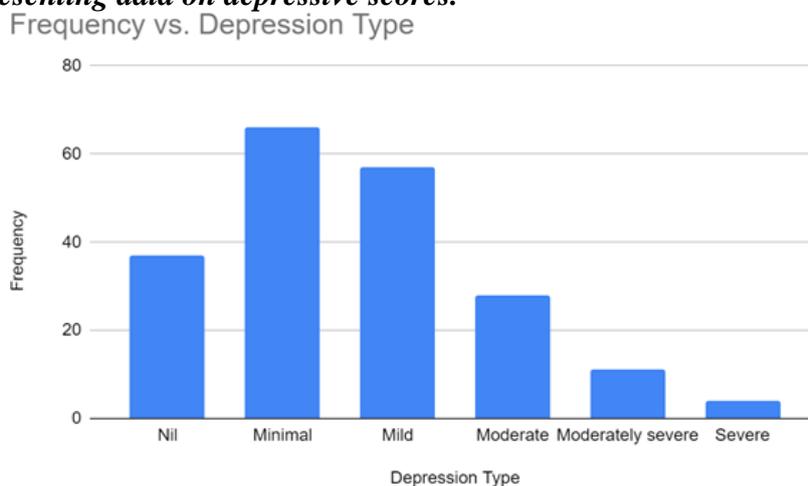
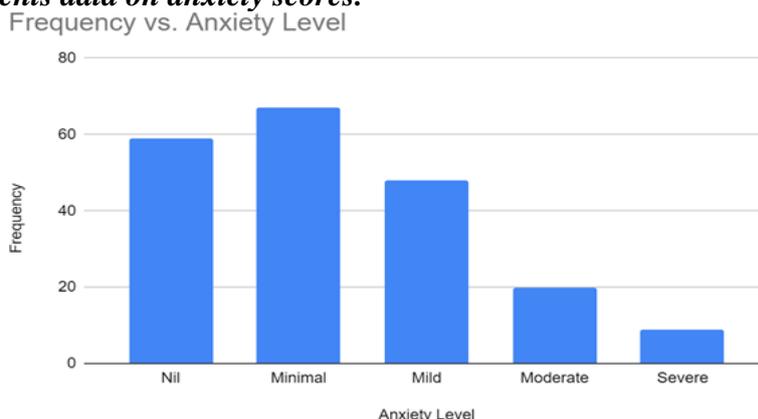


Table 2 Table representing frequency of different anxiety types in all participants

| Anxiety Type | Frequency |
|--------------|-----------|
| Nil | 59 |
| Mild | 48 |
| Minimal | 67 |
| Moderate | 20 |
| Severe | 9 |
| Total | 203 |

Table 2 represents the frequency of people experiencing anxiety symptoms. Maximum participants came in the category of minimal depressive symptoms (67) followed by 59 participants in the nil category and 48 participants in the mild category. 20 participants came in the moderate category, 9 in the moderately severe category and 4 in the severe category, showing that a larger percentage (70.1%) of the population does have anxiety symptoms. This proves hypothesis 2 of the study which stated that a higher percentage of participants will have some anxiety symptoms.

Graph 2 Represents data on anxiety scores.



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Table 3 Representing t-independent comparison of ambiverts and extroverts on depression scale.

| Personality | Total Score | Frequency | Mean | Square of Sum | t scores | p- value |
|-------------|-------------|-----------|-------------|---------------|-----------------|--------------|
| Ambivert | 748 | 142 | 5.267605634 | 559504 | 1.98027 2249 | 0.4963644854 |
| Extrovert | 355 | 61 | 5.819672131 | 126025 | | |

Table 3 represents the data for hypothesis 3 which states there will be a significant difference in the depression scores of ambiverts and extroverts. With a t score of 1.980272249, the difference between ambiverts and extroverts is nonsignificant at $p < 0.05$ and thus hypothesis 3 is rejected.

Table 4 Representing t-independent comparison of ambiverts and extroverts on anxiety scale.

| Personality | Total Score | Frequency | Mean | Square of Sum | t scores | p- value |
|-------------|-------------|-----------|-------------|---------------|-----------------|--------------|
| Ambivert | 557 | 141 | 3.95035461 | 310249 | 1.98027 2249 | 0.3595787508 |
| Extrovert | 276 | 61 | 4.524590165 | 76176 | | |

Table 4 represents the data for hypothesis 4 which states there will be a significant difference in the anxiety scores of ambiverts and extroverts. With a t score of 1.980272249, the difference between ambiverts and extroverts is nonsignificant at $p < 0.05$ and thus hypothesis 4 is rejected.

Table 5 Representing t-independent comparison of above 30 and below 30 on depression scale.

| Age | Total Score | Frequency | Mean | t scores | p- value |
|----------|-------------|-----------|-----------------|-------------|----------------------|
| Above 30 | 225 | 94 | 2.71276 5957 | 1.989318557 | 0.000000001120235984 |
| Below 30 | 848 | 61 | 8.34426 2295 | | |

Table 5 represents the data for hypothesis 5 which states there will be a significant difference in the depression scores of participants above 30 years and below 30 years. With a t score of 1.989318557 the difference between ambiverts and extroverts is significant at $p < 0.05$ and $p < 0.01$ and thus hypothesis 5 is accepted.

Table 6 Representing t-independent comparison of above 30 and below 30 on anxiety scale.

| Age | Total Score | Frequency | Mean | t scores | p- value |
|----------|-------------|-----------|-------------|-------------|-----------------------|
| Above 30 | 197 | 94 | 2.095744681 | 1.973612462 | 0.0000000002077357424 |
| Below 30 | 649 | 109 | 5.95412844 | | |

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Table 6 represents the data for hypothesis 6 which states there will be a significant difference in the anxiety scores of participants above 30 years and below 30 years. With a t-score of 1.973612462 the difference between ambiverts and extroverts is significant at $p < 0.05$ and $p < 0.01$ and thus hypothesis 6 is accepted.

Table 7 Living Situation Frequency

| Living Situation | Total Score | Frequency | Mean |
|------------------|-------------|-----------|-------------|
| Alone | 144 | 23 | 6.260869565 |
| With Friends | 20 | 5 | 4.524590165 |
| Nuclear Family | 726 | 141 | 5.1489 |
| Joint Family | 213 | 34 | 6.2647 |

Table 7 represents the number of people living alone or with someone else. The highest frequency is of the participants living in a nuclear family which is 141 followed by 34 participants living in a joint family, 23 living alone and 5 living with friends.

Table 8 ANOVA summary of depression scores among people with different living situations.

| ANOVA SUMMARY | | | | | | |
|---------------|-----|-----------|-------------|--------|---------|--|
| Source | df | SS | Mean Square | f-stat | p-value | |
| Between Group | 4 | 60.9312 | 20.3140 | 0.7242 | 1.1821 | |
| Within Group | 199 | 5580.9371 | 28.0449 | | | |
| Total | 203 | 5641.8683 | | | | |

Table 8 represents data for hypothesis 7 which states there will be a significant difference in the depression scores of the participants living alone as compared to those living with someone. On comparing the 4 different groups i.e. those living alone, with friends, with nuclear family and with joint family using ANOVA the f stat value was found to be 0.7242. The corresponding p value is 1.1821 and thus the difference is found to be non-significant at $p < 0.05$ and the hypothesis is rejected.

Table 9 ANOVA summary of anxiety scores among people with different living situations.

| ANOVA SUMMARY | | | | | | |
|---------------|-----|-----------|-------------|--------|---------|--|
| Source | df | SS | Mean Square | f-stat | p-value | |
| Between Group | 4 | 38.8047 | 12.9349 | 0.5998 | 1.2299 | |
| Within Group | 199 | 4291.5077 | 21.5654 | | | |
| Total | 203 | 4330.3124 | | | | |

Table 9 represents data for hypothesis 8 which states there will be a significant difference in the anxiety scores of the participants living alone as compared to those living with someone. On comparing the 4 different groups i.e. those living alone, with friends, with nuclear family and with joint family using ANOVA the f stat value was found to be 0.5998. The corresponding p value is 1.2299 and thus the difference is found to be non-significant at $p < 0.05$ and the hypothesis is rejected.

DISCUSSION

The aim of the research was to study the occurrence of depressive and anxiety symptoms in the general population during the lockdown imposed by the government due to the spread of Covid-19. The research also aimed to see differences in the depression and anxiety scores of

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the participants based on their age, their personality and living situation. There were then 8 hypotheses formulated and the research was purely quantitative with results being calculated through descriptive statistics.

The hypotheses formulated were as following:

- H1: There will be a higher percentage of participants that will have some form of depressive symptoms
- H2: There will be a higher percentage of participants that will have some form of anxiety symptoms
- H3: There will be a significant difference in the depression scores of ambiverts and extroverts
- H4: There will be a significant difference in the anxiety scores of ambiverts and extroverts
- H5: There will be a significant difference in the depression scores of participants above 30 years and below 30 years.
- H6: There will be a significant difference in the anxiety scores of participants above 30 years and below 30 years.
- H7: There will be a significant difference in the depression scores of the participants living alone as compared to those living with someone.
- H8: There will be a significant difference in the anxiety scores of participants living alone and those living with someone.

The study followed a quantitative research design where participants filled in the google survey. It was an independent within group measures design. The tools used for the study consisted of Ryff's PHQ-9 Depression scale which was used to measure depressive symptoms and the GAD-7 scale which was used to measure anxiety symptoms. Introversion Scale developed by McCroskey to study the extraversion, introversion and ambiversion personalities of the participants was also used.

Hypothesis 1 states that "There will be a higher percentage of participants that will have some form of depressive symptoms".

It can be inferred from table 1 which represents the frequency of different depression types in all participants Maximum participants (66) came in the category of minimal depressive symptoms followed by mild category (57) and in the nil category (37). 28 participants came in the moderate category, 11 in the moderately severe category and 4 in the severe category, showing that a larger percentage of the population does have depressive symptoms. This proves hypothesis 1 of the study which stated that a higher percentage of participants will have some depressive symptoms. The reasons for this could be that the people in the current situation were under a lockdown which often leads to symptoms of sadness, anger, low mood (Venkatesh, 2020). This was also shown in a study by Brooks et al, 2020.

Hypothesis 2 states that "There will be a higher percentage of participants that will have some form of anxiety symptoms".

It can be inferred from table 2 which represents the frequency of people experiencing anxiety symptoms. Maximum participants (67) came in the category of minimal depressive symptoms followed by participants in the nil category (59) and the mild category (48). 20 participants came in the moderate category, 9 in the moderately severe category and 4 in the severe category, showing that a larger percentage of the population does have depressive symptoms. This proves hypothesis 2 of the study which stated that a higher percentage of participants will have some anxiety symptoms. .

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These findings are in line with numerous research findings done on the past epidemics on Ebola and SARS which have also provided evidence of increase in various symptoms, the most common being feeling sad, boredom, fear, frustration and anger. Most studies found that people in such challenging times are most vulnerable to depressive and anxiety symptoms (Jalloh and Redd., 2015). Numerous researchers concluded that Ebola virus survivors still had persistently high levels of posttraumatic stress disorder, depression, anxiety, and suicide attempt. Research suggested that long term psychological implications of infectious diseases should not be ignored (Nyanfor S and Xiao S., 2020).

Hypothesis 3 states that “There will be a significant difference in the depression scores of ambiverts and extroverts”.

It can be inferred from table 3 which represents the t-independent comparison of ambiverts and extroverts on depression scale notes a t-score of 1.980272249. The difference between ambiverts and extroverts is non-significant at $p < 0.05$ and thus hypothesis 3 is rejected.

Hypothesis 4 states that “There will be a significant difference in the anxiety scores of ambiverts and extroverts”.

It can be inferred from table 4 which represents the t-independent comparison of ambiverts and extroverts on anxiety scale notes a t-score of 1.980272249. The difference between ambiverts and extroverts is non significant at $p < 0.05$ and thus hypothesis 4 is rejected.

Research has shown that different personalities lead to differential behaviour. Negative correlation between extraversion and social distancing is found. Higher scores on extraversion were related to lower means for social distancing. Research has also found that higher scores for conscientiousness was associated with higher means for social distancing and handwashing (Carvalho, Pianowski and Goncalves (2020).

However, in the present study even though the mean scores for extroverts were seen to be higher, there was no significant difference found between extroverts and ambiverts on their depression and anxiety scores. This finding is supported in a study by Dunigan Folk, Karynna Okabe, Miyamoto, Elizabeth Dunn, and Sonja Lyubomirsky, 2020 who found that during Covid-19 extroverts did not suffer more or do worse in situations of quarantine.

Hypothesis 5 states that “There will be a significant difference in the depression scores of those below 30 years of age as compared to those above 30 years of age.”

It can be inferred from Table 5 which represents the t-independent comparison of people above 30 years and below 30 years on the depression scale, a t-score of 1.989318557. The difference was found to be significant both at $p < 0.05$ and $p < 0.01$ and thus hypothesis 5 is accepted.

Hypothesis 6 states that “There will be a significant difference in the anxiety scores of those below 30 years of age as compared to those above 30 years of age.”

It can be inferred from Table 6 which represents the t-independent comparison of people above 30 years and below 30 years on the depression scale, a t-score of 1.973612462. The difference was found to be significant both at $p < 0.05$ and $p < 0.01$ and thus hypothesis 6 is accepted.

These results have been supported in past studies. One of them found that older persons had significantly lower frequencies of any current anxiety disorder and with respect to specific anxiety disorders, older persons had significantly lower frequencies of current and lifetime

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panic disorder, current and lifetime social anxiety disorder, and current and lifetime posttraumatic stress disorder (Alaistair J et al, 2010). Another study also found that depression and depressive symptoms are less prevalent in older adults as compared to young adults (Amy Fiske, Julie Loebach Wetherell, and Margaret Gatz, 2009).

Hypothesis 7 states that “There will be a significant difference in the depression scores of those living alone as compared to those living with someone else.”

It can be inferred from Table 8 which is showing the Anova score comparison of people living alone and people living with someone else on the depression scale that the f stat value is 0.7242 and it is not significant at $p < 0.05$ resulting in hypothesis 7 being rejected.

Hypothesis 8 states that “There will be a significant difference in the anxiety scores of those living alone as compared to those living with someone else.”

It can be inferred from Table which is showing the Anova score comparison of people living alone and people living with someone else on the anxiety scale that the f stat value is 0.5998 and it is not significant at $p < 0.05$ resulting in hypothesis 8 being rejected.”

One of the reasons for this non-significant result could be the skewed number of participants we had. As can be seen from table 7, there were only 23 people living alone and 180 people living with someone else.

Future directions

1. The results of the research show how prevalent mental health problems are as a high percentage of the general population have symptoms of anxiety and depression. As everyone is going through COVID-19 globally, we could do inter country comparisons for the same.
2. We could also study gender differences globally and its subsequent impact on mental health in the current situation.
3. Study of the gender differences in the prevalence of depression and anxiety symptoms locally could also be done.
4. The research could also encompass other variables such as Stress and PTSD and see their direct impact on mental health.

Limitations

1. No pretest and posttest could be done as Covid-19 couldn't not have been anticipated and is still ongoing.
2. The Introversion Scale developed by McCroskey used for the study does not have scores for introverts rather it only helps to categories the participants into extraverts and ambiverts.
3. Data was collected online and was purely quantitative so the cause and effect relation of COVID and depression and anxiety scores cannot be verified.

CONCLUSION

The results of the research show the high prevalence of depressive and anxiety symptoms in the general population during the lockdown imposed by the government due to the spread of Covid-19. It was also found that there was a significant difference between the depression and anxiety scores of people below the age of 30 years and people above the age of 30 years. Living situation and personality factors however, did not show any significant differences in the anxiety and depression scores. Thus, it could be concluded that mental health illness/issues are highly prevalent in this time of Covid-19 and mental health awareness

should be increased and people should become sensitized towards others who may be suffering from mental health problems. This also shows the need and urgency of people working in the mental health sector and mental health services. The government at this time should increase the provision of mental health services and awareness as well as availability of such services.

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Conflict of Interest

The author declared no conflict of interest.

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