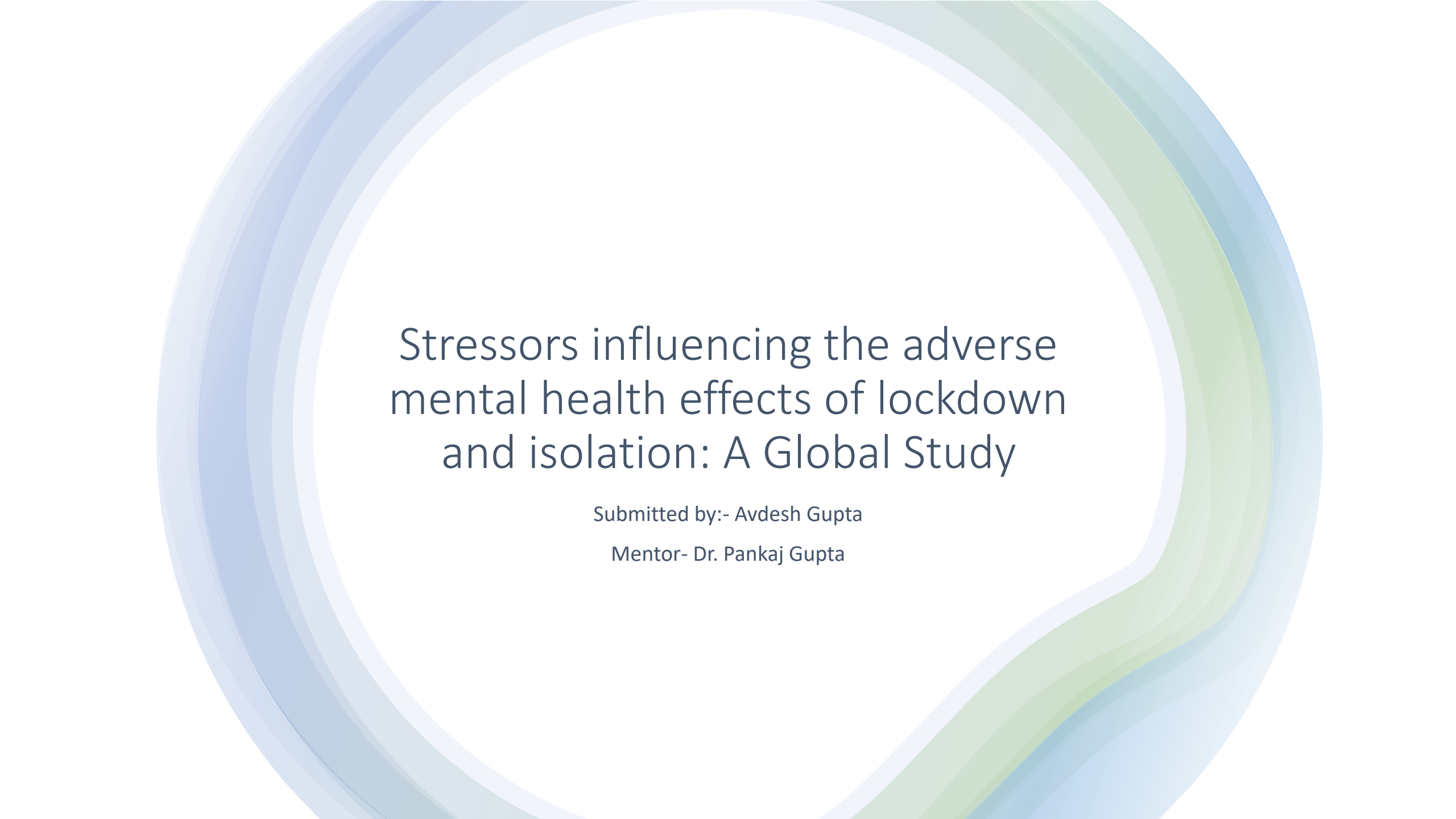




Stressors influencing the adverse mental health effects of lockdown and isolation: A Global Study

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Abstract

Background: Countries are tackling the spread of the COVID-19 pandemic imposing people to social isolate through lockdowns or restriction in movement. However, this measure carries risks for people's mental health. This study evaluated the country specific stressors influencing the mental health as a repercussion of lockdown and social isolation of people in 21 different countries.

Materials and methods: A cross-sectional survey design was adopted to assess the factors responsible for psychological response due to isolation by using an online questionnaire. A snowballing technique was used to recruit the general public in various countries during the Covid-19 pandemic.

Results: 234 responses were received from 21 different countries, spending more than 18 hours per day at home, for more than 10 days due to the lockdown imposed by their government or due to the recommendation of the concerned authorities. The findings from this study suggests that the general public suffered from highly negative psychological impacts due to isolation and lockdown. Respondents in Upper/Lower-Middle Income (U/LMICs) countries suffered from high psychological distress and anxiety as they were concerned about the scarcity of resources in their countries.

Also residents from U/LMICs with moderate Covid-19 cases and highly stringent lockdown experienced more anxiety. Isolated residents of High-Income Countries (HIC) with moderately stringent lockdown and high Covid cases were more prone to have negative mental health outcomes due to mass awareness of the disease and the steps taken by their government. Migrants were more likely to have high distress. Further, migrants residing in countries with high disease burden and less stringent lockdown had high distress as they considered to have been in a better condition and received social support in their native countries.

Conclusion: The results outlined the country specific stressors that included - economic condition of the country of residence, rate of spread of disease, and the stringency of lockdown conditions to be positively associated with the levels of distress, anxiety and depressive symptoms in the respondents experiencing social-isolation due to lockdown, as a protective measure to control the spread of the disease. As the COVID-19 pandemic continues to spread, the findings of this study will provide vital guidance for the development of a psychological support strategy and areas to prioritize globally.

Keywords: lockdown, global, psychological distress, anxiety, depression, mental health, pandemic, High Income Countries (HICs), Upper/Lower- Middle Income Countries (U/LMICs), Covid-19 cases, stringent measures of lockdown

Introduction

- The COVID-19, a novel coronavirus first reported in Wuhan, China, in late 2019, has rapidly spread across the globe becoming a pandemic. Modern quarantine strategies for general public have been imposed globally in an attempt to curtail the spread of the COVID-19 infection including short- to medium-term lockdowns, voluntary home curfew, restriction on the assembly of groups of people, cancellation of planned social and public events, closure of mass transit systems and other travel restrictions.
- Besides the closure of all the non-essential activities and public gatherings, the governments have prohibited people from leaving their houses unless for proven necessity, otherwise meeting harsh sanctions (e.g., fines and imprisonment).
- Isolation has always been known to have negative impact on the psychological well-being of people.
- The need for social support is greatest in times of adverse situations and events such as the current pandemic; hence, severing social support as part of an imposed quarantine or isolation strategy can threaten an individual's sense of connected- ness and may take a considerable toll on mental health.
- If forced isolation effectively slows down the viral spread, the concurrent effects of this massive isolation - unprecedented in recent history - on people's mental health are yet to be uncovered.

Literature Review

- The emergence of the 2019-nCoV pneumonia has parallels with the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS).
- The mode of transmission of Covid-19 has been identified to be respiratory droplets and contact routes.(1) As the infection started spreading globally, on 30 January 2020, the World Health Organisation declared the spread of Covid-19 as a Public Health Emergency of International Concern (PHEIC). Moreover, as the spread increased 13 folds, the WHO declared it as a pandemic on 11 March 2020.
- Due to the increase in number of Covid-19 positive cases in various countries and fear of community spread, governments worldwide were forced to take extreme measures to curb the transmission of the disease within the community. Globally, governments started implementing a vast number of non-pharmacological interventions, which restricted the movement of residents and resulting in increased social-isolation, such as stay-at-home orders in the U.S, strict self-isolation measures and mass lockdown for the entire population in countries like China, India, South Korea, etc., and home and facility quarantining of infected individuals in almost every country.
- These restrictions imposed because of the COVID-19 outbreak, have caused significant disruption globally, and to individuals, families, communities and whole countries. They have affected much (if not all) of the world's population; drastically altering what is familiar, and complicating aspects of daily life that were previously simple and uncomplicated. For many people, daily life is changed dramatically, and the “normal” ways of life as we know them are suspended indefinitely.(2)

- Such mass-isolation or quarantine measures restricting the movement of general public are perceived to be adversely affecting the daily routine, financial activities and freedom of people.
- It is well documented in literature that confining people at one place for a long time causes them to feel detached from their loved ones, deprived of personal liberties and devoid of purpose of owing to altered routine and livelihood(6).
- Beyond social distancing, the restrictions confining people to stay home for several consecutive days may represent a further risk factor for mental health.
- Mass-isolation due to country wide lockdowns can contribute to frustration, distress, anxiety and depression. It is known that brief forms of social disconnections can induce negative emotions (such as anger and sadness), decrease satisfaction of basic psychological needs (e.g., self-esteem) and cognitive abilities. On the other side, prolonged experiences of social disconnection have been linked with an increased risk of depression, suicidal thoughts, and risk of early mortality (7)
- Previous research on people under quarantine showed that such experience can have significant downsides (8).
- During the SARS outbreak, many studies investigated the psychological impact on the non-infected community, revealing significant psychiatric morbidities which were found to be associated with younger age and increased self-blame(9).
- In the early phase of the SARS outbreak, a range of psychiatric morbidities due to isolation of affected, including persistent depression, anxiety, panic attacks, psychomotor excitement, psychotic symptoms, delirium, and even suicidality, were reported.(10)

- Another study assessed the mental health status of individuals who were isolated during the Middle East Respiratory Syndrome (MERS) epidemic. This study found the prevalence of anxiety symptoms and feelings of anger as 7.6% (95% confidence interval [CI], 6.3 to 8.9%) and 16.6% (95% CI, 14.8 to 18.4%), respectively (11).
- A study evaluated the mental health status of 398 parents of children who experienced disease containment and found 30% of isolated or quarantined children, and 25% of quarantined or isolated parents met the criteria for posttraumatic stress disorder (12).
- An umbrella review on isolation and quarantine suggests that the current evidence informs a high burden of different mental health problems among patients, informal caregivers, and healthcare providers. (13)
- A recent systematic review (3) revealed that quarantined people reported various psychological issues, such as acute stress symptoms, anxiety, insomnia, and emotional exhaustion. However, the review included studies with heterogeneous samples, such as individuals quarantined for being in contact with infected people, individuals only living in outbreak sites, and nurses and physicians directly involved in tackling the infection.
- A study done on 1006 Italians under lockdown due to Covid-19 suggests that restricting the mobility of people, although essential to slow the spread of the infection, can put a significant strain on people's mental health on a scale unprecedented in recent history(14)

Rationale

- Currently, there is no known information on the psychological impact and mental health of the general public across different countries, during the peak of the COVID-19 pandemic. This is especially pertinent with the uncertainty surrounding an outbreak of such unparalleled magnitude. (15) Most of the research related to this outbreak focuses on psychological impact of isolation on the people suffering from the disease or on caretakers. Moreover, major studies on the mental health implications of isolation/lockdown on general public have been conducted in a single country.
- Literature lacks global evidence of negative psychological impact of lockdown on general public in cross-cultural setting. Although, it is a well-established fact that isolation is related with negative mental health implications, however, there are no research articles examining how it differs in different countries due to various stressors like economic condition of the country, stringency of the lockdown imposed and number of cases of Covid-19 in a country and status of the residency of a person.
- The mass lockdown due to Covid-19 has made it possible to study and compare the effects of the status of a country of lockdown/isolation on general public in a global context. Therefore, this present study aims to analyse the stressors responsible for negative mental health implications of lockdown/isolation and how it differs in various countries.

Research Question

What are the various reasons for adverse mental health effects of lockdown/isolation on general public living in different countries?

Research Objectives

Compare the levels of psychological impact of isolation and lockdown on people living in different countries based on the economic condition, number of Covid-19 positive cases and stringency of lockdown in countries.

Analyse the mental health impacts of lockdown due to various stressors such as gender, residency status, employment status on the general public in different countries.

Methodology

- It is a descriptive primary study, with an aim to test the relationship between the impact of mass quarantine, self-isolation and social- distancing on individual's mental health in different countries. The focus was majorly on the mental health outcomes such as Psychological distress, Anxiety and Depression that the previous studies (at the time of MERS and SARS) has linked with prolonged exclusion and isolation experiences. It was tested whether the negative mental health outcomes due to isolation were related to the country of residence of the respondents based on economic status of the country, stringency of the lockdown measures and the number of cases of Covid-19.

Procedure

The survey was set up using google forms. The study was sent to various contacts in different countries using different social media platforms with a brief post explaining the general aim (i.e., investigate habits and psychological well-being during the COVID-19 pandemic), providing the link to the online survey. Once clicked on the link, participants were initially presented with the information sheet and consent form. Data was collected after the enactment of the mass or localized lockdown by the various governments in the world from 20th April to 10th May 2020.

Sample

The survey was sent to the people in different countries between the age of 20- 30 years, spending more than 18 hours confined at home for more than past 10 days, either due to the orders of the national/local government or due to the recommendations of the concerned authorities.

Setting and Participants

- A cross-sectional survey design was adopted to assess the factors responsible for psychological response due to isolation by using an online questionnaire. A snowballing technique was used to recruit the general public in various countries during the Covid-19 pandemic.
- Previous surveys on psychological impact during SARS and MERS were reviewed. A structured questionnaire was developed, consisting questions that covered several areas like demographic data, status of residence- migrant/ native to that place, hours spent at home/isolation, psychological impact of the isolation, mental health status, impact on life due to Covid-19.
- Under the psychological impact- Psychological distress, Anxiety and Depression was measured using different standardized tests.
 - **Psychological distress** was assessed using The Kessler psychological distress scale (Cronbach's alpha 0.93) which is a scale developed in 1992 for mental health screening in population surveys
 - **Anxiety** was measured using The 7-item Generalized Anxiety Disorder Scale (GAD-7), which is one of the most widely used instruments for the detection and screening of anxiety disorders
 - **Depression** was estimated using Patient Health Questionnaire-2 (PHQ-2), which is a brief multipurpose measure for detecting/screening of depression

Analysis

- Data was analyzed using SPSS software. Descriptive statistics were calculated for socio-demographic factors, respondents were categorized based on the country of residence. The scores of K-10, GAD and PHQ-2 were calculated as per the standardized method. Chi-square test was used to explore the significant associations between the sample characteristics and the level of psychological distress, anxiety and depression due to isolation during Covid-19 pandemic. Statistically significant variables ($p < 0.05$, at 95% CI) were screened and further analyzed by a Post-Hoc test (residual adjustments).

Results

- 250 responses were received from 21 countries i.e.- Australia, Bangladesh, Brazil, Canada, Colombia, France, India, Indonesia, Ireland, Japan, Mexico, Namibia, Netherlands, Norway, Pakistan, Saudi Arabia, Sudan, Thailand, United Arab Emirates, United Kingdom and United States of America with an average of 10 responses from each country.

Based on the country of residence, the respondents were divided into different categories:-

Classification of the countries based on economic condition (World Bank)

Countries	Number of Responses
HIC (11)	108
Australia	10
Canada	8
France	10
Ireland	10
Japan	10
Netherlands	10
Norway	10
Saudi Arab	10
UAE	10
UK	10
USA	10
U/LMIC (10)	126
Bangladesh	12
Brazil	12
Colombia	10
India	16
Indonesia	10
Mexico	16
Namibia	10
Pakistan	12
Sudan	12
Thailand	16
Grand Total	234

Classification of the countries based on COVID-19: Government Response Stringency Index (as of 25th April,2020)-

Catergory	Countries	Number of Responses
Less Stringent Lockdown (Stringency Index<70)	Japan	10
	Norway	10
	Indonesia	10
	Australia	10
	Canada	8
	USA	10
	Namibia	10
	Total	68
Moderately Stringent Lockdown (Stringency Index 70-90)	Brazil	12
	UK	10
	Netherlands	10
	Thailand	12
	Sudan	12
	Mexico	16
	Colombia	10
	Total	86
Highly Stringent Lockdown (Stringency Index >90)	UAE	10
	Pakistan	12
	France	10
	Ireland	10
	Saudi Arabia	10
	Bangladesh	12
	India	16
	Total	80
Total		234

Classification of the countries based on number of covid-19 positive cases as of 25th April,2020 in these countries from the WHO database-

Catergory	Countries	Number of Responses
Less Number of Covid-19 cases (<7000)	Namibia	10
	Sudan	12
	Thailand	16
	Colombia	10
	Bangladesh	12
	Australia	10
	Total	70
Moderate Number of Covid-19 cases (7000-20000)	Norway	10
	Indonesia	10
	UAE	10
	Mexico	16
	Pakistan	12
	japan	10
	Saudi Arabia	10
	Ireland	10
	Total	88
High Number of Covid-19 cases (>20000)	India	16
	Netherlands	10
	Canada	8
	Brazil	12
	France	10
	UK	10
	USA	10
	Total	76
Total		234

Demographic Characteristics

- Total 250 responses were received, out of which 16 responses were excluded from the study as they did not meet the inclusion criteria of either being in the age group of 20-30 years and/or spending more than 18 hours at home/isolation for more than 10 days. Therefore, the total sample size comprised of 234 Responses from 21 countries.
- Among the sample of 234, 132 (56.4%) were females, 102 (43.6%) were males. 102 (43%) of the respondents were employed, either full time or part time, indicating financial stability, 132 (56%) were unemployed as they were studying or finding work. 156 (66.7%) respondents were the native citizens of the country of their current residence whereas, 78 (33.3%) were migrants who were either studying or working abroad.
- 162 (70%) of people had no prior history of mental health illness, whereas 72 (30%) were clinically diagnosed with at least one of the psychological factor under study i.e. stress, anxiety or depression.
- Among 234 respondents, 108 (46%) belonged to a high income country, whereas 126 (54%) belonged to an Upper/Lower Middle Income Country.
- Similarly, out of 234 respondents, 76 (32.4%) were from countries with high number of Covid-19 cases, 88 (37.6%) and 70 (29.9%) were from countries with moderate and low number of Covid-19 cases respectively.
- Of all respondents, 80 (34.1%) respondents were from countries implementing highly stringent lockdown, 86 (36.7%) and 68 (30%) respondents were from countries with moderately stringent and less stringent lockdown respectively.

Psychological impact of Isolation



THE PSYCHOLOGICAL DISTRESS, MEASURED USING THE K-10 SCALE, REVEALED A SAMPLE MEAN SCORE OF 21 (SD=6.5). OF THE 234 RESPONDENTS, ABOUT 46 (19.7%) HAD LOW SYMPTOMS OF DISTRESS, WHEREAS THE PROPORTIONS OF RESPONDENTS WITH MODERATE, HIGH, AND SEVERE DISTRESS WERE 62 (26.5%), 96 (41%), AND 30 (12.8%), RESPECTIVELY.



GAD-7, MEASURING THE ANXIETY OF THE SAMPLE POPULATION HAD A SAMPLE MEAN SCORE OF 6.7 (SD= 4.5). 88 (37.6%) WERE CONSIDERED TO HAVE NO ANXIETY, 88 (37.6%) RESPONDENTS HAD MILD ANXIETY, WHEREAS 42 (17.9%) AND 16 (6.8%) HAD MODERATE AND SEVERE ANXIETY RESPECTIVELY.



DEPRESSION MEASURED USING THE PHQ-2 SCALE, HAD A SAMPLE MEAN SCORE OF 2 (SD=1.62). 72 (31%) RESPONDENTS SCREENED POSITIVE FOR A DEPRESSIVE DISORDER AND 162 (69%) SCREENED NEGATIVE FOR DEPRESSION.

Sociodemographic variables and psychological impact

- Among 102 males, 12 (12 %) had severe psychological distress, 48 (47.1%) had high distress and 26 (25%) had moderate distress. Only 16 (6.8%) males had low or no distress. Further, 6 (5.9%) males were considered to have severe anxiety, 16 (15.7%) and 42 (41.2%) had moderate and mild anxiety respectively, whereas 38 (37.3%) had no symptoms of anxiety. 36 (35.6%) males were screened positive for a depressive disorder.
- Similarly, among 132 females, 18 (13.6 %) had severe psychological distress, 48 (36.4%) had high distress and 36 (27.3%) had moderate distress. Only 30 (12.8%) females had low or no distress. Further, 10 (7.6%) females were considered to have severe anxiety, 26 (20%) and 46 (35%) had moderate and mild anxiety respectively, whereas 50 (40%) had no symptoms of anxiety. 36 (27.3%) females were screened positive for a depressive disorder.

Stressors of isolation/lockdown influencing the samples' psychological well-being

❖ Economic condition of the country of residence

- Economic condition of the country where the respondents were living had a significant effect on the levels of psychological distress ($P < .05$) and anxiety ($P < .05$) due to isolation, although it had no significant impact on depression ($P > .05$).
- People living in U/LMIC (Upper/lower- Middle Income Countries) suffered severe psychological distress ($P < .05$) and high anxiety ($P < .05$) which was significantly associated with their perception on resource constraint in their country.

❖ Stringency of the lockdown measures

- Respondents in countries with Less stringent lockdown were significantly associated with high psychological distress ($P < .05$).

❖ Number of Covid-19 cases

- Respondents living in HICs with high to moderate number of Covid-19 cases were significantly associated with higher psychological distress .
- Moreover, respondents from U/LMIC's with moderate number of covid-19 cases and highly stringent lockdown were more likely to be anxious ($P < .05$)

Residency status (Migrant/Native)

- Living in a country with a migrant status, during the lockdown or in isolation, had a significant impact on psychological distress experienced by a person ($P < .05$). Migrants were more likely to experience moderate psychological distress ($P < .05$) when living in isolation.
- People living with a migrant status in countries with high to moderate number of Covid-19 cases with less to moderately stringent lockdowns, significantly experienced high psychological distress ($P < .05$). Furthermore, 60% migrants considered that they would have been in a better condition if they were in their native countries at the time of the pandemic, also the migrants were majorly concerned about their financial situation ($P < .05$).
- Whereas, natives of a countries, where the lockdown was less stringent, were more likely to experience psychological distress ($P < .05$), as permanent residents of a country were significantly concerned about their health ($P < .05$).

Employment Status

- Employment status was significantly associated with the psychological distress among the sample, where employed people were more likely to experience high psychological distress ($P < .05$). Employed people from High Income Countries, with high Covid-19 case burden and less stringent lockdown were significantly associated with high distress ($P < .05$). Further, respondents employed abroad/ employed migrant significantly suffered from high psychological distress ($P < .05$)

Discussion

- In this study, the respondents from 21 different countries, spent more than 18 hours per day at home, as they were quarantined at their residence for more than 10 days due to the lockdown imposed by their government or due to the recommendation of the concerned authorities as a preventive measure to control the spread of Covid-19.
- The findings from this study suggests that the psychological impact of isolation and lockdown due to the pandemic, was much higher on the general public. 80% of the respondents screened positive for some kind of psychological distress (severe, high, or moderate), 62% of total respondents suffered from anxiety and 31% screened positive for depressive disorder.
- This high burden of psychological impact of isolation and lockdown can be attributed to various cross-cultural stressors which were experienced by the respondents in various different countries.
- Respondents in Upper/Lower-Middle income countries such as Bangladesh, Indonesia, Pakistan, Sudan, India, Brazil, Colombia, Mexico, Namibia, Thailand experienced high psychological distress and high anxiety as they were significantly concerned about the resource crunch in their countries such as lack of medical and mental health support. Moreover, being from a U/LMIC with moderately high Covid-19 cases and highly stringent lockdown such as Pakistan was negatively associated with mental health of a person due to high restriction in movement and closure of financial activities in-spite of having low cases.

- The survey participants living in countries having less stringent measures of lockdown, social-isolation and quarantine like Japan, Norway, Indonesia, Australia, USA, Canada, Namibia were more likely to have high distress
- specifically, the respondents living in HIC with moderately less stringent lockdown rules such as The Netherlands and The United Kingdom were more prone to distress. This can be attributed to the fact that, when the whole world is adopting mass lockdown as a protective measure against the spread of the virus, living in a country with less restrictions on movement can instil fear of spread of the disease, moreover this can be the reason the respondents were voluntarily practicing home quarantine without the proper orders from their respective governments.
- Respondents living in quarantine in HICs with high Covid-19 cases such as Canada, France, Ireland, Japan, Netherlands, Norway, Saudi Arabia, UAE, UK, USA were associated with higher distress which can be due to excessive consumption of information due to lockdown resulting in more awareness about the mode of transmission and spread of disease in nearby areas, making them to self isolate them from the society.
- Participants living abroad due to studies or work and having a migrant status during isolation/lockdown, were more prone to psychological distress which is consistent with the WHO findings on migrants(24). Moreover, migrants employed in HIC, with high to moderate number of Covid-19 cases with less to moderately stringent lockdowns such as Canada, Japan, Netherlands, Norway, UK and USA experienced high psychological distress. They considered being in a better condition if they were in their native countries as they would have got social support. Further, they feared financial crisis.
- Whereas, permanent residents of countries with less stringent lockdown implication such as Indonesia, Japan, Australia, Canada, Namibia and Norway were more likely to experience distress as they were significantly concerned about their well-being. This can be attributed to the fact that although they were following strict isolation measures, but other residents were socialising without much restrictions, increasing the chances of the increase in the spread of the disease.

Conclusion

- As the COVID-19 pandemic continues to spread, the findings of this study will provide vital guidance for the development of a psychological support strategy and areas to prioritize globally. As the pandemic is ongoing, it is important to prepare health care systems to provide the general public with medical and psychological services. [32]
- About 80% of the respondents experienced negative psychological impact due to isolation and lockdown globally. The country specific stressors that included - economic condition of the country of residence, rate of spread of disease, and the stringency of lockdown conditions were positively associated with the levels of distress, anxiety and depressive symptoms in the respondents experiencing social-isolation due to lockdown, as a protective measure to control the spread of the disease.
- The mental health of people is significantly affected when faced with isolation and lockdown during public health emergencies, and they require attention, help, and support of the society, families, and colleges. This effect is felt greatest in more disadvantaged and marginalised populations, which should be urgently targeted for the implementation of preventive strategies. It is suggested that the government and international organizations should collaborate to resolve this problem in order to provide high-quality, timely crisis-oriented psychological services.

- Online technologies could be harnessed to provide social support networks and a sense of belonging, although there might be disparities in access to or literacy in digital resources. Interventions could simply involve more frequent telephone contact with significant others, close family and friends, voluntary organisations.
- This study has several limitations. Given the limited resources available and time-sensitivity of the COVID-19 outbreak, the snowball sampling strategy was adopted. The snowballing sampling strategy was not based on a random selection of the sample, and the study population did not reflect the actual pattern of the general population. Furthermore, it would be ideal to conduct a prospective study on the same group of participants after a period. Due to ethical requirements on anonymity and confidentiality, contact details and personal information from the respondents was not collected.
- As a result, conducting a prospective study that would provide a concrete finding to support the need for a focused public health initiative is not possible. There was an oversampling of a particular age group 20-30, leading to selection bias. As a result, the conclusion is less generalizable to the entire population, particularly the elderly. Another limitation is that self-reported levels of psychological impact, anxiety, depression and stress may not always be aligned with assessment by mental health professionals. Similarly, respondents might have provided socially desirable responses in terms of the satisfaction with the health information received and precautionary measures.
- Notwithstanding the above limitations, this study provides invaluable information on the adverse psychological impact of lockdown and isolation on people residing in different countries. Most importantly, it is the first primary study done to understand the stressors related to isolation which influence the negative mental health outcomes globally (21 countries). Moreover, the findings can help in the development of psychological interventions at a global level that can minimize psychological impact, anxiety, depression, and stress during the events of mass isolation due to the outbreak of diseases.



Thank You