



Analysis of the Psychological State of People During the COVID - 19 Pandemic

Chandran KM^{1, *}, Naveena K² and Valsan T³

¹*Social Researcher and President, WEDO (NGO), Kozhikode, Kerala, India*

²*Statistician and Researcher, Kozhikode, India*

³*Sociologist and Vice-President, WEDO (NGO), Kozhikode, India*

*Corresponding author: Chandran KM, Social Researcher and President, WEDO (NGO), Kozhikode, Kerala, India

Abstract

The COVID-19 pandemic could have affected people not only physically, but also psychologically. It is in this background that this study was undertaken by WEDO (NGO), Kozhikode, Kerala, India. Data was collected on-line using a questionnaire containing 15 psychological traits and their level of experience, and the characteristics of respondents such as age, sex, education etc. from a sample of 300 respondents from India using the snow ball sampling technique. The total score of the traits was worked out as the psychological state score. The data was analyzed as proportion / score and through statistical tests. The COVID-19 pandemic has influenced the psychology of the respondents negatively. The influence of existing tension of people in creating more tension during the pandemic period is evident from the study. Random Forest technique results show that Enthusiasm, Satisfaction, Loving nature and Peacefulness are the main psychological traits, which influence the personality state score. The characteristics of respondents such as age, education, pre COVID tension and pre COVID tension affecting the tension during the pandemic period are found to influence the personality score statistically through Chi-square test. Odds ratio test shows that respondents with PG qualification have about 4.62 times more chance of maintaining a better psychological state during the pandemic period than less educated people. Males have 1.16 times more chance of maintaining a better psychological state than females. The study has revealed the negative effect of the COVID-19 pandemic on the psychological state of people, with majority attributing this to the pandemic itself.

Keywords: Psychological conditions; Depression; Sadness

Introduction

COVID-19 is an infectious disease caused by the SARS-CoV-2 virus. In addition to the physical medical effects through contracting the disease, the psychological or mental impact of the pandemic could be significant, even in people who have not got the disease. Factors such as loss of job / income, separation from family, isolation, fear of the disease etc. can lead to negative psychological conditions. It was in this background that the study reported in this paper was carried out to analyse the psychological state of people during the pandemic period.

Hypothesis

The COVID-19 pandemic will contribute to a negative mental state for majority of people, which will also be influenced by some of their characteristics.

Literature Review

Kontoangelos K, et al. opined that extensive stressors will emerge or become worsened due to the COVID-19 pandemic [1]. AL-Omiri MK, et al. reported that COVID-19 was associated with feelings of stress, depression, sadness, and loneliness [2]. Elements such as separation from loved ones, loss of freedom, uncertainty about the advancement of the disease, and the feeling of helplessness due to the pandemic affect people more [3,4].

Methodology

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The study was undertaken by WEDO (NGO), Kozhikode, Kerala, India using an on-line questionnaire among a sample of 300 respondents from various parts of India using the snow ball sampling technique. 15 psychological traits were considered to analyse the psychological state of the respondents during the COVID-19 pandemic period (Table 1). The responses to the level of experience of the traits (on an average during the pandemic period) were: Felt very strongly, felt strongly, felt moderately, felt slightly, did not feel with scores of 1, 2, 3, 4 and 5 respectively. The sum of scores of the traits was considered as the psychological state score of the respondents during the pandemic period. A higher score indicates a more positive psychological state and vice versa. The data was analysed as proportion / score and through statistical techniques such as Random Forest technique, Chi-square test and Odds Ratio.

Table 1: Experience of psychological traits during the COVID-19 pandemic.

| Psychological trait | Respondents (%) | | | | | Total (%) |
|---------------------|----------------------------------|---------------|-----------------|---------------|--------------------|-----------|
| | Level of experience of the trait | | | | | |
| | Did not feel | Felt slightly | Felt moderately | Felt strongly | Felt very strongly | |
| Happiness | 30 | 40 | 10 | 20 | - | 100 |
| Caring for others | - | - | 90 | 10 | - | 100 |
| Lively | 50 | - | 40 | 10 | - | 100 |
| Satisfied | 50 | 10 | 40 | - | - | 100 |
| Energetic | 30 | 20 | 30 | 20 | - | 100 |
| Loving nature | 10 | 30 | 30 | 30 | - | 100 |
| Enthusiastic | 30 | 20 | 40 | 10 | - | 100 |
| Peaceful | 40 | 20 | 40 | - | - | 100 |
| Sad | - | 10 | 70 | 10 | 10 | 100 |
| Tired | - | 30 | 50 | 10 | 10 | 100 |
| Drowsy | - | 50 | 40 | - | 10 | 100 |
| Angry | - | 20 | 70 | 10 | - | 100 |
| Uneasy | - | 50 | 50 | - | - | 100 |
| Fed up | - | 30 | 40 | 20 | 10 | 100 |
| No rest | - | 40 | 40 | 20 | - | 100 |

Results

Table 1 shows the proportion of respondents reporting the experience of various psychological traits during the COVID-19 pandemic period.

Table 2 gives details of respondents attributing the experience of psychological traits to the pandemic.

Table 3 shows the responses reading the effect of pre-COVID tension on post COVID tension.

In order to identify the psychological traits, which influence the psychological state score, the Random Forest technique based on Inc Node purity values was attempted. The results are presented in Table 4.

Table 5 shows the distribution of psychological state score into low, medium and high groups based on quartile method.

Table 6 shows the results of the Chi square test of psychological state score with respect to the score of various characteristics of the respondents such as age, gender, qualification etc.

Table 7 shows the psychological state score under various categories of the characteristics of respondents, which was worked out based on the quartile method.

Odds ratio comparing high and low categories of the psychological state score was attempted. The ratios shown in

Table 8 indicate the chance of exposure of an individual to a high score, implying a better psychological state of the respondents during the pandemic period.

Discussion

It can be made out from Table 1 that 50 % and more of the respondents have not at all experienced and experienced only slightly the positive traits such as happiness, feeling lively, satisfied, energetic, enthusiastic and peaceful during the COVID-19 pandemic period. Similarly, more than 50 % and more of the respondents have experienced the negative personality traits, namely, sadness, tiredness, anger and uneasiness moderately during the pandemic period (Table 1). These results indicate that the pandemic has influenced the psychology of the respondents in a negative manner. It can be observed from Table 2 that respondents in the range of 60 to 80 % attribute less experience (indicating the responses, namely, did not feel at all, and felt slightly only) of six out of the seven positive psychological traits to the COVID-19 pandemic. Similarly, 66.7 to 100 % respondents have attributed more experience (indicating the responses, namely, felt strongly, and felt very strongly) of five out of six negative psychological traits to the occurrence of the pandemic (Table 2).

Table 2: Respondents attributing the experience of psychological traits to COVID-19 pandemic.

| Psychological trait | Respondents (%) attributing less / more experience* of the traits to COVID-19 pandemic | | Total |
|------------------------|--|-------------------------|-------|
| | Due to the pandemic | Not due to the pandemic | |
| <i>Positive traits</i> | | | |
| Happiness | 80 | 20 | 100 |
| Lively | 80 | 20 | 100 |
| Satisfied | 66.7 | 33.3 | 100 |
| Energetic | 75 | 25 | 100 |
| Loving nature | 40 | 60 | 100 |
| Enthusiastic | 80 | 20 | 100 |
| Peaceful | 60 | 40 | 100 |
| <i>Negative traits</i> | | | |
| Sad | 50 | 50 | 100 |
| Tired | 100 | - | 100 |
| Drowsy | 70 | 30 | 100 |
| Angry | - | 100 | 100 |
| Fed up | 66.7 | 33.3 | 100 |
| No rest | - | 100 | 100 |

*Indicating the responses, namely, did not feel the positive traits at all / felt them slightly only; felt the negative traits strongly / very strongly

These results also indicate the negative influence of the pandemic on the psychology of the respondents. 60 % of the respondents reported that pre-COVID tension has affected the tension experienced by them after the pandemic (Table 3). It can also be made out from Table 3 that a comparatively higher proportion of people having moderate and high pre-COVID tension mention that it has affected their post COVID tension, when compared to those who reported less and very less pre-COVID tension. These results indicate the influence of existing tension of people in creating more tension during the pandemic period. The pandemic

induced uncertainty, individual health threat and quarantine measures may exacerbate pre-existing conditions such as depression, anxiety etc. Inc Node purity values above 300 obtained through random Forest technique only were considered for analysis. Accordingly, as per Table 4, the traits, namely, Enthusiasm, Satisfaction, Loving nature and Peacefulness are the main ones, which influence the personality state score. These traits can be considered to contribute to a positive mental state for people under the conditions such as fear of contracting the disease, isolation, loss of job/income etc. existing during the COVID-19 pandemic. All the other traits showed Inc Node purity values in the range of 12.6 to 271.8 only.

Table 3: Effect of pre-COVID tension on post COVID tension.

| Detail | Respondents (%) | | Total (%) |
|---|-----------------------------|---------------------------------|-----------|
| | Yes | No | |
| Pre-COVID tension affected the tension experienced after COVID pandemic | 60 | 40 | 100 |
| | Respondents (%) | | |
| Level of pre-COVID tension experienced | Affected post COVID tension | Not affected post COVID tension | |
| Very less | - | 100 | 100 |
| Less | 33.3 | 66.7 | 100 |
| Moderate | 50 | 50 | 100 |
| High | 100 | - | 100 |

Table 4: Results of Random Forest Technique of traits influencing psychological state score.

| Sl. No. | Psychological trait | Inc Node purity value |
|---------|---------------------|-----------------------|
| 1 | Enthusiasm | 856.4 |
| 2 | Satisfaction | 463.1 |
| 3 | Loving nature | 436.5 |
| 4 | Peacefulness | 308.1 |

Table 5: Percentage distribution of psychological state score.

| Psychological state score | Respondents (%) |
|---------------------------|-----------------|
| High | 32 |
| Medium | 34 |
| Low | 34 |

More or less equal proportion of respondents are there under the high, medium and low personality state groups, implying that the more respondents were not able to maintain a better level of psychological status due to the pandemic (Table 5). Except sex, the other characteristics of the respondents, namely, age, qualifications, level of pre COVID tension and pre COVID tension affecting post COVID tension are influencing the psychological state score significantly through Chi square test (Table 6). As per data shown in Table 7, 52 % of the middle-aged respondents and 14 % in the young age group fall in the high and medium psychological state categories together, while nobody in the old age group falls under these two categories. While 46 % of males fall in the high plus medium psychological state groups, the figure is only 20 % for females, implying that males were able to

maintain a better psychological state than females during the pandemic period. None of the respondents with Degree and PG qualifications have low psychological state score, when compared to 22 % and 12 % respectively under the up to 10th and plus two educational categories (Table 7).

Table 6: Chi square test of psychological state score with characteristics of the respondents.

| Characteristic | Chi square value | Asymp. Sig. (2-sided) |
|--|------------------|-----------------------|
| Age | 31.889 | 2.02E-06 |
| Sex | 4.473 | 0.10683 |
| Qualification | 42.286 | 1.2E-06 |
| Pre-Covid tension | 44.596 | 4.39E-07 |
| Pre-Covid tension affecting post-COVID tension | 22.191 | 1.52E-05 |

Table 7: Psychological state score under various categories of the characteristics of respondents.

| Characteristic Category* | Respondents (%) | | | Total (%) |
|--|---------------------------------|--------|-----|-----------|
| | Psychological state score group | | | |
| | High | Medium | Low | |
| Age | | | | |
| Old | Nil | Nil | 18 | 18 |
| Middle | 32 | 20 | 8 | 60 |
| Young | Nil | 14 | 8 | 22 |
| Total | | | | 100 |
| Sex | | | | |
| Male | 20 | 26 | 14 | 60 |
| Female | 12 | 8 | 20 | 40 |
| Total | | | | 100 |
| Education | | | | |
| Up to 10 th | 4 | 16 | 22 | 42 |
| Plus Two | 8 | Nil | 12 | 20 |
| Degree | 20 | 6 | Nil | 26 |
| PG | Nil | 12 | Nil | 12 |
| Total | | | | 100 |
| Pre-COVID tension | | | | |
| Nil | Nil | Nil | 8 | 8 |
| Slight | 8 | 4 | Nil | 12 |
| Moderate | 4 | 18 | Nil | 22 |
| High | 8 | 12 | 20 | 40 |
| Very high | Nil | Nil | 18 | 18 |
| Total | | | | 100 |
| Pre COVID tension affected post COVID tension | | | | |
| Yes | Nil | 22 | 26 | 48 |
| No | 32 | 12 | 8 | 52 |
| Total | | | | 100 |

*Based on the quartile method

Table 8: Odds ratios of personal characteristics with high personality state score.

| Character | Class | Odds ratio |
|-----------|-----------------------|------------|
| Education | Higher Education (PG) | 4.62 |
| Gender | Male | 1.16 |



This indicates that people with higher education were able to maintain a comparatively better psychological state during the pandemic period. While 20 % and 18 % respondents having high and very high pre COVID tension respectively fall in the low psychological state category, none of the respondents reporting low and middle levels of pre COVID tension are there in the low category, indicating the influence of higher tension before the COVID pandemic period in reducing the psychological state of the respondents during the pandemic period. This trend is again confirmed from the fact that, while only 8 % of the respondents who mention that pre COVID tension has not affected their post COVID tension get a low post COVID psychological state score, 26 % respondents who report that pre COVID tension has affected their post COVID tension get a low psychological state score after the pandemic started (Table 7). From the odds ratio data presented in Table 8, it can be inferred that respondents with PG qualification have 4.62 times more chance of getting a higher psychological state score than those with lesser qualification, indicating a better psychological condition for more educated respondents during the pandemic period. Similarly, males have 1.16 times more chance of maintaining a better psychological state than females during the pandemic period (Table 8). This confirms the already observed result shown in Table 7 that male respondents maintain a better psychological state than females during the pandemic period.

Conclusion

The results of the study prove the hypothesis that the pandemic has influenced the psychology of the respondents in a negative manner, and that the characteristics of people will influence their psychological state during the COVID-19 pandemic period. Less experience of positive psychological traits and more experience of negative traits have been attributed to the COVID-19 pandemic by 60 % and more of the respondents. The influence of existing tension of people in creating more tension during the pandemic period is evident from the study. Random Forest technique results show that Enthusiasm, Satisfaction, Loving nature and Peacefulness are the main psychological traits, which influence the personality state score. These traits could contribute to a positive mental state for people under the conditions such as fear of contracting the disease, isolation, loss of job/income etc. existing during the COVID-19 pandemic. The characteristics of the respondents such as age, education, pre COVID tension and pre COVID tension affecting the tension during the pandemic period are found to influence the personality score statistically through Chi-square test. Odds ratio test shows that respondents with PG qualification have about 4.62 times more chance of getting a higher psychological state score than those with lesser qualification, indicating a better psychological condition for more educated respondents during the pandemic period. Similarly,

males are found to have 1.16 times more chance of maintaining a better psychological state than females during the pandemic period.

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