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Determinants of COVID-19 Anxiety in Pakistan Through Binary Logistic Regression

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Abstract

Background: This study was conducted to evaluate the determinants of anxiety among the people living in hassled environment for last few months due to outbreak of COVID-19.

Methods: 279 participants were interviewed through a questionnaire about COVID-19 anxiety on four likert scales. Data was analyzed by using statistical software IBM SPSS Statistics 21. A binary logistic regression was used to estimate relationship between anxiety and T.V news, social media news, social isolation, disturbance of sleep and decrease in daily income. Significance of these factors are tested at 5 percent level of significance ($\alpha = 0.05$).

Results: 90.33 percent of the respondents are feeling COVID-19 anxiety while 9.67 percent peoples are taking it mild. The values of test statistics for the variables listening of T.V news, social media news, social isolation, disturbance of sleep and decrease in daily income are highly significant at $p < 0.05$.

Conclusion: The existence of anxiety was found to be highly significance due to listening of T.V news, social media news, social isolation, disturbance of sleep and decrease in daily income.



Introduction

Whole of the world is suffering by an increasing affliction, since early 2020 through the outbreak of COVID-19 pandemic. The origin of Corona virus was reported on 31 December in Wuhan, China to World Health Organization, and was named as Coronavirus disease 2019 (COVID-19) on 11 February 2020 [1, 2]. Symptoms of this infectious disease appears after 2-14 days [3]. Only Infection control measure as a treatment cure for COVID-19 is applied worldwide, beside making an effective vaccine [4]. Every country in the world is trying to reduce the transmission rate of COVID-19, through social isolation and lock down of cities. Recent phenomena in the world for the treatment of COVID-19 without paying attention on the consequences of fears, worries, and anxiety in the people due to preventive measures to stop the COVID-19.

A large number of people in China are strictly isolated have serious effects on the people lives like anxiety and depression measured through a large scale survey in China [5]. In Iran 717 peoples are interviewed, based on their views seven item scale is found to be reliable for measuring the fear among the people [6]. A survey of 7236 participants on web based was conducted to identify the influence of factors on the mental health of people using logistic regression. They conclude that the young people and healthcare workers are at high risk of mental disorder [7]. Symptoms of depression and anxiety in 144 hospitalized patients was assessed using multivariate linear regression analyses and concludes that 34.27 and 28.47 COVID-19 patients had symptoms of anxiety and depression respectively, an appropriate clinical intervention is necessary for the serious patients [8]. Determinants of depression and anxiety among the Bangladeshi university students during COVID-19 pandemic, a web-based survey was conducted to collect the information from 460 students. 15% of students have mild anxiety and 18.1% are facing sever anxiety. They used binary logistic regression model to conclude that older students and students studying at private tuition center facing more anxiety [9]. Anxiety among the frontline health workers in Pakistan during COVID-19 was measured by collecting quantitative and qualitative information from physicians working in coronavirus wards and quarantine centers. They conclude that Doctors are suffering anxiety which can be reduced by Government and social support [10]. Level of anxiety among the people of Karachi during COVID-19 were analyzed by collecting the data from 450 people and conclude that COVID-19 is a stressful situation that can be controlled by proper managing and counseling of people [11].

To stop the spread of COVID -19 the only worldwide solution is social isolation and lock down of cities, but strict type of these methods create stress. Moreover, the news on T.V and social media are overwhelming the world with fear. The prevalence of this fear may create the problem of anxiety among the world population. Aim of this study is to determine the factors which are reason for occurrence of anxiety among the people, a survey of 279 persons has been conducted through questionnaire.

Methods

A survey has been conducted comprising of 279 participants from District Bahawalnagar, Punjab by the approval of Research Dean School of Business and Economics, University of Management and Technology Lahore and a questionnaire has been filled from each individual through direct interview. Questions about feeling fear due to listening of T.V news, social media news, social isolation, lock down of cities, disturbance of daily life, disturbance of sleep and decrease in daily income due to COVID-19 are interviewed on four likert scales. The response of each respondents is quantified by allotting "0" for feeling no fear, "1" for feeling fear sometimes, "2" for feeling fear many times and "3" for feeling fear almost every time in the past more than two weeks. Data was analyzed by IBM SPSS Statistics 21. A binary logistic regression model $\ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_kx_k + u_i$ was used to estimate relationship between dependent variable Anxiety and independent variables listening of T.V news, social media news, social isolation, lock down of cities, disturbance of daily life, disturbance of sleep and decrease in daily income. Where π is the probability of the occurrence of anxiety at given that $X=x$, α is the Y-intercept, and β 's are the parameters of X(independent) qualitative (categorical) variables, and Y(dependent) variable is also qualitative and binary choice variable with two possible response, respondent is in the condition of COVID-19 anxiety or not feeling COVID-19 anxiety. Significance of these variables is tested at 5 percent level of significance ($\alpha = 0.05$).

Description of the variables:

Dependent variable

Dependent variable was measured with two likert scale, 0 for no anxiety and 1 for anxiety.

Independent variables

Independent variables were measured by four likert scales.

x_1 (listening of T.V news), x_2 (Social media news),
 x_3 (Social isolation), x_4 (Lock down of the cities),

x_5 (Disturbance of daily life), x_6 (Disturbance of sleep) and x_7 (Decrease in daily income).

Results

In this section results are presented by applying binary logistic regression.

| Chi-square | Df | sig. |
|------------|----|------|
| 4.696 | 8 | .790 |

Table 1. Fitness of the Model: Hosmer and Lemeshow Test.

Adequacy of fitness of the binary logistic model was tested through Hosmer and Lemeshow Test. Which show that model is good fit for the data of COVID-19 anxiety data.

| Variables | B | S.E. | Wald | df | sig. | Exp(B) |
|---------------------------|--------|---------|-------|----|------|---------------|
| T.V News | 2.29 | .61 | 14.25 | 1 | .000 | 9.83 |
| Social media News | 3.01 | .76 | 15.78 | 1 | .000 | 20.23 |
| Social isolation | 3.27 | 1.31 | 6.24 | 1 | .012 | 26.30 |
| lock down of cities | 21.27 | 2957.13 | .000 | 1 | .994 | 1734121133.85 |
| Disturbance of daily life | -2.50 | 2.09 | 1.44 | 1 | .230 | .08 |
| Disturbance of sleep | 5.38 | 2.48 | 4.71 | 1 | .030 | 217.77 |
| Decrease in daily income | -1.59 | 0.77 | 4.25 | 1 | .039 | .20 |
| Constant | -23.64 | 2957.13 | .000 | 1 | .994 | .00 |

Table 2. Results of Binary Logistic Regression.

Estimated regression model is written as:

$$\ln\left(\frac{\pi}{1-\pi}\right) = -23.643 + 2.285x_1 + 3.007x_2 + 3.270x_3 + 21.274x_4 - 2.504x_5 + 5.383x_6 - 1.594x_7$$

From the survey 252 respondents out of 279 were feeling COVID-19 anxiety while 27 peoples are taking it mild. From the table 2 the values of test statistics for the variables listening of T.V news, social media news, social isolation, disturbance of sleep and decrease in daily income are highly significant at $p < 0.05$.

Discussion

In this section the results of different variables that are caused to increase the COVID-19 anxiety are discussed below.

Coefficient for the listening of T.V news is positive which shows the positive effect for increasing the COVID-19 anxiety. Value of test statistics for listening of T.V news has highly significant effect for the level of Anxiety. Results for the factor T.V news indicates that respondents included in this study are feeling nervous to listen the T.V news on different T.V channels. In the results social media news about COVID-19 also has positive regression coefficient and the value of test statistics has also highly significant for increasing the level of anxiety in the people. They are feeling so much fear by spread of some news on social media about COVID-19. Social media news may one of the main

reason for increasing the COVID-19 anxiety in the country. Regression coefficient for the social isolation has also positive in sign and its test statistics value has also highly significant effect for increasing the COVID-19 anxiety in the people. To prevent the spread of COVID-19 in the country social isolation of the people is necessary, but this strict type of isolation may create COVID-19 anxiety in the people of the country. Moreover lock down of cities is also a preventive measure for COVID-19, its regression coefficient is positive and its test statistics value is insignificant. Lock down of the cities increase COVID-19 anxiety and it has significant effect for increasing the Anxiety in the people.

Regression coefficient for the daily life routine is negative which shows that as the daily life activities decreases the level of COVID-19 anxiety increase among the people. While the value of test statistics for the disturbance of daily life routine has not significant effect on COVID-19 anxiety. Considering the variable decrease in sleep due to COVID-19 fear has positive regression coefficient which shows a positive relationship between COVID-19 anxiety and decrease in sleep of the respondents. Test statistics value for this variable also has significant effect on the spread of COVID-19 anxiety in the country.

Regression coefficient for daily income shows a negative relationship between Anxiety and decrease in daily income of the people. The value of test statistics for decrease in daily income of the people also has significant effect for increasing the Anxiety in the country, So COVID-19 anxiety will be increase by decrease in the daily wages of the people. The prevalence of COVID-19 anxiety was found to be occur immensely due to the listening of T.V news, social media news, social isolation, disturbance of sleep and decrease in daily income. Lock down of the cities and disturbance of sleep facing by the respondents are also reasons for creating COVID-19 anxiety.

Competing Interests

There is no conflict of interest.

Author Contributions

All authors contributed equally.

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