



Research Paper

Real Time Effects of Covid-19 Pandemic on Human Health

Saurabh Birla^{*1,2}, Kamal Kishor Sinha², Sameen Khan², Sumit Kumar²,
Vibhu Mitra³

¹School of Sciences, Bhabha Mission Academy, Betwan Bazar, Gola Road, Munger, Bihar, India.

²Department of Zoology, RD & DJ College, Munger University, Munger, Bihar, India.

³Homoeo Long Life Chronic Centre, Munger, Bihar, India.

Corresponding author: Saurabh Birla

ABSTRACT

Coronaviruses are a large family of RNA related viruses which cause illness in humans. COVID-19 is an infectious disease caused by the recently discovered coronavirus. It is considered as the most crucial global health calamity because; the impact is associated with greater health anxiety of the people in common. As the COVID-19 pandemic rages on, the mental health of both the infected and non-infected is a rising concern in the present scenario. The perceived impact of COVID-19 pandemic has resulted in the world-wide spread of physical, mental, psychological, depression, anxiety, economical and social problems. COVID-19 poses significant threats to our individual and collective mental health and has rapidly affected our day to day life. Higher psychological impact was predicted with younger age, female gender and old aged people. The most common symptoms of COVID-19 are headache, fever, breathing problems, tiredness, cough & cold. Other symptoms include sore throat, body pain, loss of appetite, loss of taste and smell. According to study, nervousness, fear of infection, restlessness, behaviour seeking constant reassurance, sleep disturbance, high anxiety and fear of economic depression are the main factors of depression and anxiety in people. This pandemic has affected millions of people, who are either sick or are being killed due to the spread of this disease. According to present research, seven months after the outbreak of COVID-19 pandemic, 86.51% of respondents admitted that they were still having various problems. Only 13.49% of the respondents were having no health problems of any kind and had returned to their normal life in general. Presences of psychosomatic symptoms were also seen. Therefore, a detailed collection of data and its analysis has been performed from grass root level in order to assess the real time effects of the disease on human health (physical & mental) and social well-being. Total number of positive cases, recovery and death in Munger district has also been additionally documented/ addressed together with the effects of novel COVID-19 therein during seven months from June 2020 to December 2020.

KEYWORDS: Coronavirus, Depression, Health, Nervousness, Pandemic, Restlessness.

Received 14 Feb, 2021; Revised: 25 Feb, 2021; Accepted 28 Feb, 2021 © The author(s) 2021.

Published with open access at www.questjournals.org

I. INTRODUCTION

The World Health Organization (WHO) announced on January 30, 2020 that the severe acute respiratory syndrome coronavirus (COVID- 19) was a Public Health Emergency of International Concern (Matthew *et al.*, 2020). Moreover, due to COVID-19's long incubation period, ease of transmission, high mortality rate (relative to the seasonal flu), and lack of pharmacological interventions (Linton *et al.*, 2020; Shereen *et al.*, 2020), governments have had to implement extraordinary physical distancing interventions to slow the spread of the virus.

As the COVID-19 pandemic rages on, the mental health of both the infected and non-infected is a rising concern in the present scenario. We believe that the results indicate an urgent need to prioritize the establishment and implementation of mental health and psychosocial support tailored to family, close relatives, and friends of COVID-19 patients (Yuta *et al.*, 2020). The COVID-19 pandemic is a significant threat to humanity. The pandemic is straining our physical-mental healthcare and human lifestyle in ways that are significant and obvious. The causes of mental health effects in the context of COVID-19 are multi-factorial and likely include biological, behavioural, and environmental determinants (Sarah *et al.*, 2020).

Disruption of lifestyle rhythms due to prolonged home quarantine as a countermeasure against COVID-19 may increase psychological distress which might result in the risk of developing mental illness even in healthy individuals without a medical history (*Liu et al., 2020; Qiu et al., 2020*). From a public health perspective, there is strong justification for such interventions – physically separating people is an effective strategy for preventing the spread of infectious diseases, including COVID-19 (*Flaxman et al., 2020; Thakkar et al., 2020*).

Given the recent and sudden emergence of COVID-19, research in this area is understandably limited. However, several studies from China during the initial COVID-19 outbreak revealed associations of COVID-19 with increased anxiety, depression, and stress (*Cao et al., 2020; Wang et al., 2020; Zhang et al., 2020*). Infections caused by these viruses are an enormous global health threat. They are a major cause of death and have adverse socio-economic effects that are continually exacerbated (*Kumar et al., 2020*).

In this viewpoint, we argue that research on the physical and mental health consequences of COVID-19 should be sensitive to the universally experienced insults to our basic human motivations. The research community could benefit from considering these issues as we begin to study the real time effects of COVID-19 pandemic on human health and well-being.

II. SUBJECTS AND METHODS

Participants included a Munger district community sample of 786 adults in the state of Bihar. Among the various districts in Bihar, Munger district in particular claim our attention and the population has been picked up as a case study. At the same time the authors of this manuscript also belong to this district. Thus, it was easier to find the subjects. Individuals of both gender were selected who recovered from COVID-19 or returned from quarantine centre or both and their family members, close relatives and neighbourhood. They were formed the experimental subjects. This cross sectional study was conducted for a period of seven months from June 2020 to December 2020. The subjects were given a questionnaire sheet. Respondents were asked about demographic and epidemiological information, emotions and thoughts caused by the COVID-19 outbreak, anxiety status during the COVID-19 outbreak, fear of exposure to COVID-19 outbreak, etc.

The data was collected by making door to door survey and also consented through mobile phone calls and was recorded on a questionnaire sheet. The instrument for this study was a semi structured questionnaire. The items of the questionnaire sheet are given in the Appendix – 1. Participants completed questionnaires assessing psychological outcomes and COVID-19's impact on their health. Out of the 1000 questionnaires distributed, 786 were returned and completed well enough to be included in this study. The response rate was therefore 78.6%.

A demographic questionnaire assessed age, sex, employment status, household composition, Presence of any disease and racial background. COVID-19 related experiences and stressors were assessed via a measure developed for this study. Participants were asked about a variety of relevant experiences associated with the COVID-19 pandemic such as depression, nervousness, restlessness, anxiety, body pain, difficulty in breathing, fear of death, etc. The questionnaire also asks if anyone close to them (i.e. family members, colleagues or friends: hereinafter referred to as someone in a close setting) had received a positive diagnosis of the COVID-19 and need for hospitalization. Based on the answers, users are directed to consultation services and receive information aimed to prevent infections.

III. RESULTS AND DISCUSSION

Our study is the first study till date that demonstrates the physical & mental health related data and behavioural results during the COVID-19 outbreak in Munger district (Bihar). According to research, seven months after the outbreak of COVID-19 pandemic, 86.51% (680) of respondents admitted that they were having various problems. 26.97% (212) were suffering from breathing problems, 19.72% (155) had joints/muscle pain and 23.79% (187) had chest pain/heaviness. Loss of appetite, taste and smell were reported 10.94% (86), 12.98% (102) and 16.62% (133) respectively. Only 13.49% (106) of the respondents were having no health problems of any kind and had returned to their normal life in general. The results say that the pandemic has caused panic among people in general. This panic often takes the form of mental issues called the depression. It even takes some people to the brink of suicide. According to study, nervousness, fear of infection, restlessness, behaviour seeking constant reassurance, sleep disturbance, high anxiety and fear of economic depression are the main factors of depression and anxiety in people.

Infections caused by these viruses are an enormous global health threat. They are a major cause of death and have adverse socio-economic effects that are continually exacerbated. Therefore, potential treatment initiatives and approaches need to be developed (*Kumar et al., 2020*). The behaviour of the participants has changed in predictable ways during the COVID-19 outbreak. Respondents were more fearful of their relatives catching the coronavirus disease than they were of themselves catching it (*Akdeniz et al., 2020*). Higher psychological impact was predicted with younger age, female gender, old aged people and co-morbid physical

illness. Since these findings pertain to the initial period of pandemic in India, a larger longitudinal study should be conducted in the current time to guide policy makers in understanding the psychological impact (Varshney et al., 2020).

Physical symptoms and its association with impact on psychological health: As far as physical symptoms were concerned, 141 (17.9%) respondents had reported the presence of cough and 133 (16.9%) respondents reported presence of cold. Whereas headache was among 235 (29.9%) which was more frequently reported compared to other physical symptoms. Interestingly, sore throat and body pain, both were present in 155(19.7%) respondents. The symptoms of fever was 86 (10.9%) and that of breathing difficulty 212 (26.9%).

As the COVID-19 pandemic rages on, the mental health of both the infected and non-infected is a rising concern in the present scenario. It is considered as the most crucial global health calamity because; the impact is associated with greater health anxiety of the people in common. COVID-19 poses significant threats to our individual and collective mental health and has rapidly affected our day to day life. This pandemic has affected millions of people, who are either sick or are being killed due to the spread of this disease (Birla S, 2020).

Figure 1 includes responses to the question ‘What are your emotions and thoughts about the coronavirus?’ Out of total respondents, more than 50% of them stated that they were worried about the new coronavirus. 80 to 90 % of them were scared and depressed due to novel coronavirus disease. In addition, less than 10% of the respondents’ perceived this virus as temporary.

Figure 2 reveals the frequency distribution of perceived COVID-19 risk and fear for respondents. Respondents had to moderate fear of catching constituted 40% while 10% stated that they did not have this fear.

Figure 3 shows the distribution of physical & mental health status during the COVID-19 outbreak. ‘‘Serious’’ and ‘‘Extremely’’ options were high among the responses given to ‘scared’, ‘frustration’, ‘depression’, ‘restlessness’, ‘sleep problem’ and ‘difficulty in breathing’. In addition, the ‘‘Moderate’’ option was high in response to the questions about ‘uncertainty’, ‘anxiety’, ‘loneliness’ and ‘fear’.

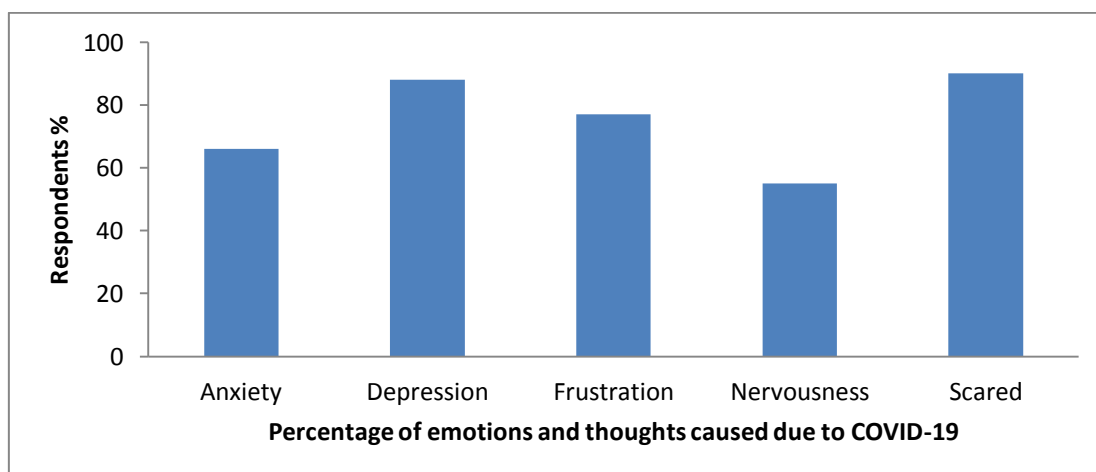


Figure 1: frequency distribution of emotional status about covid-19 by respondents

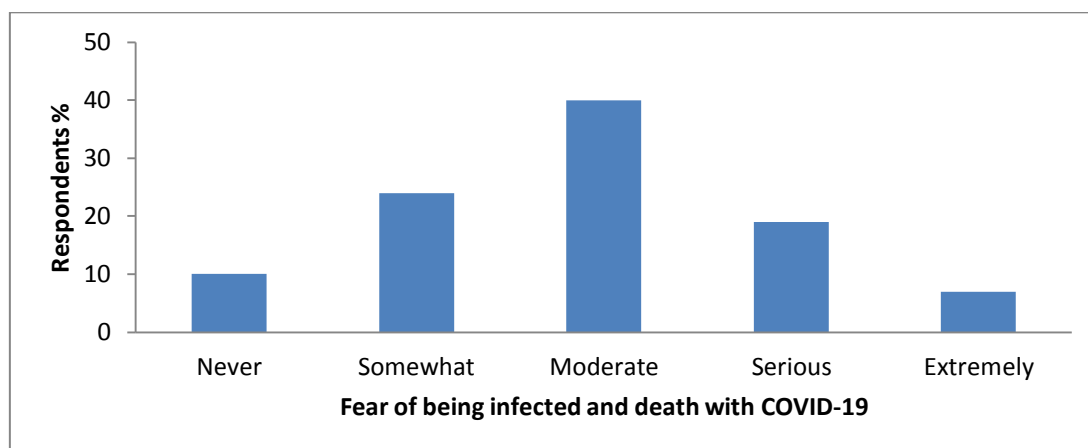


Figure 2: frequency distribution of fear of covid-19

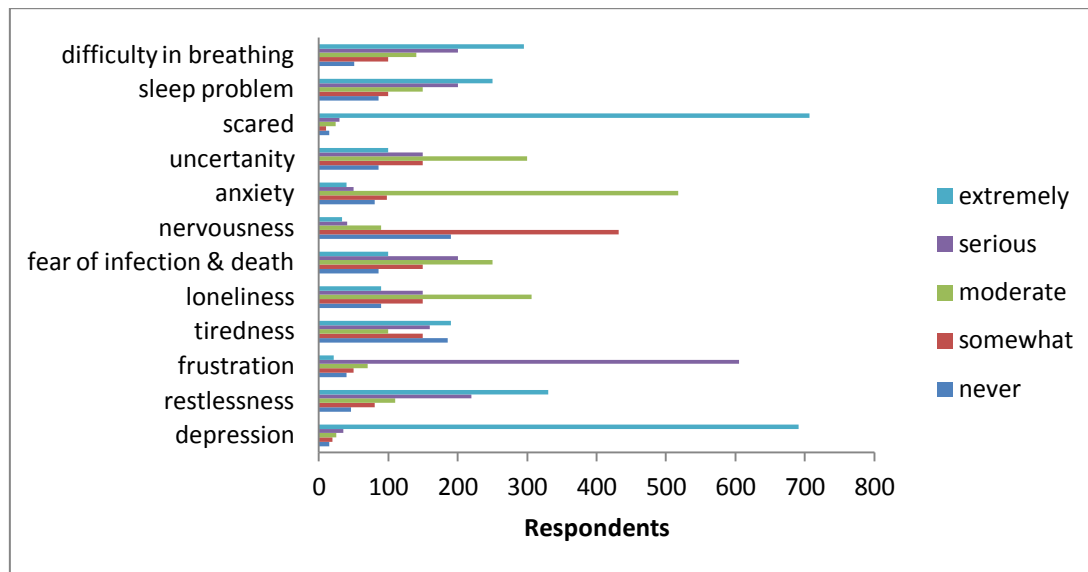


Figure 3: distribution of physical & mental health status during covid-19

Good mental health supports the capability of individuals to display healthy behaviour that keeps themselves and others safe and healthy during the pandemic. The COVID-19 pandemic has resulted in the world-wide spread of physical, mental, psychological, depression and anxiety among people. Nervousness, fear of infection, restlessness, behaviour seeking constant reassurance, sleep disturbance and fear of economic depression are the main factors of depression and anxiety in people during pandemic. Governments and communities can ensure that mental health and psychosocial well-being are protected (Birla et al., 2021).

Total number of COVID positive cases, recover cases and death cases in Munger district has also been addressed therein during seven months from June 2020 to December 2020.

Table 1: Current status of recorded positive, recovered and death cases due to coronavirus disease in Munger district, Bihar, India (Month-wise)*.

Month	COVID +Ve cases	Recovered from COVID	Death due to COVID
Till 30 th Jun-20	346	294	1*
Jul-20	669	537	11
Aug-20	1320*	1258*	16*
Sep-20	647	601	9
Oct-20	597	641	8
Nov-20	394	487	2
Dec-20	187*	224	4
Total in 7 months	4160*	4042	51*

*Data source: available from Bihar Health Department and Munger District Health Society, Bihar, India.

According to the COVID-19 update released by the Bihar Health Department and Munger District Health Society, Bihar, India, the first death due to COVID-19 in Munger district was reported in the month of June 2020. The maximum positive, recovered and death cases were observed in the month of August 2020. Talking only about the month of December, a total of only 187 new people across the district have been found corona positive in this month. The number of corona positive patients & death due to COVID-19 found so far in the district has increased to 4160 and 51 respectively by the end of December 2020 (Table 1).

Study limitations were not taken into consideration. The use of cross-sectional data precludes conclusions about the nature or direction of the associations examined. We also do not know the extent with which these symptoms existed prior to COVID-19 and the implementation of social distancing orders. Likewise, self-report questionnaires may be influenced by social desirability or recall difficulties that could affect the

validity of provided data. Future studies would benefit from incorporating structured clinical interviews and/or timeline follow-back procedures to assess psychological symptoms and their temporal relation to physical distancing or COVID-19-related stressors. Given our recruitment methods and sample, results may not generalize to the larger Indian population or other countries.

IV. CONCLUSION

The perceived impact of COVID-19 pandemic has resulted in the world-wide spread of physical, mental, psychological (depression, health anxiety), economical and social problems. COVID-19 (Coronavirus) poses significant threats to our individual and collective mental health and has rapidly affected our day to day life. Higher psychological impact was predicted with younger age, female gender and old aged people. The most common symptoms of COVID-19 are headache, fever, breathing problems, tiredness, cough & cold. Other symptoms include sore throat, body pain, loss of appetite, loss of taste and smell. Various psychological problems and important consequences in terms of physical and mental health including stress, anxiety, depression, frustration, uncertainty during COVID-19 outbreak emerged progressively. In the absence of effective infection prevention efforts (e.g., vaccines) for COVID-19, large-scale public health interventions such as physical distancing or social distancing orders are necessary to reduce pandemic. This work aimed to study the current literature about the impact of COVID-19 infection on the human health in general population. We aim to inspire the development of research questions on the health implications of COVID-19.

COVID-19 pandemic has caused a lot of uncertainty in the lives of Indian public, just like their global counterparts. Our survey is one of the first health (physical & mental) related data from Munger district (Bihar) in India, during the initial phase of COVID-19 pandemic and indicated that a significant proportion of them have had a psychological impact during the crisis. There is a need for considering mental health issues by the policy makers; while planning interventions to fight the pandemic.

Presence of psychosomatic symptoms: Apart from the real physiological damage, the coronavirus wreaks upon the lung and respiratory tract. The danger from this nasty disease is also due to the violent reaction of the human defensive system which is known as cytokine storm. This is the most fatal aspect of COVID-19 infection. But we must not forget another adverse effect of COVID-19 and that is the appearance of psychosomatic symptoms. A mentally susceptible patient keeps on thinking that such & such symptoms are appearing in their body while it may not actually be so. But their psyche plays such a strong role that these symptoms actually pitch up without any physical or pathological basis. Hence, apart from the medical support, the patient may need psychiatric help also.

Author statement

S. Birla developed and designed the study concept and also drafted the manuscript. S. Birla, S. Khan and S. Kumar collected the data. S. Birla analysed the data, with assistance from S. Khan and S. Kumar. V. Mitra, S. Khan and S. Kumar were involved in the interpretation of the data and provided critical revisions. K.K. Sinha supervised the entire study. The manuscript was reviewed and approved by all the authors for final submission.

Declaration of competing interest

All other authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. All authors contributed equally with all other contributors.

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article. We only obtained data from those who have given consent for the prefecture that administers the questionnaire to provide their response data to a third party for research use. Respondents must give their consent on the phone calls before they proceed to the questionnaire response page. Participants' response will be kept confidential and used for the academic research purpose only. Respondents had to answer a yes-no question to confirm their willingness to participate voluntarily. After confirmation of the question, the participant was directed to complete the self-report survey.

Funding

This study was not funded by any agency. The present work was supported by the corresponding author.

ACKNOWLEDGEMENT

I, Saurabh Birla (the lead author) would like to express my gratitude to all participants, who participated in this study and without their cooperation this study could not be completed. I appreciate the valuable contribution and support of the community leaders and most especially the volunteers who participated in this study. I affirm that I have listed persons who contributed significantly in this study to be named the author or acknowledged for their contribution. I am thankful to Dr. Sandeep Kumar Tata for his best wishes,

encouragement, constant help, correcting the manuscript and support which gave me a lots of moral support. I would once again like to thank all those who have directly or indirectly helped me during my research work.

REFERENCES

- [1]. Akdeniz G, Kavakci M, Gozugok M, Yalcinkaya S, Kucukay A and Sahutogullari B (2020). A Survey of Attitudes, Anxiety Status, and Protective Behaviors of the University Students during the COVID-19 Outbreak in Turkey. *Front. Psychiatry* 11:695. doi: 10.3389/fpsyt.2020.00695.
- [2]. Birla S (2020). Impact of covid-19 pandemic in human life. Abstract published in Two Days International webinar on Impact of COVID-19 on Rural Development. Bihar, India. August 7-8, p-31.
- [3]. Birla S and Khan S (2021). Mental health management during crisis. *Bharti Pub.*, New Delhi. ISBN: 978-93-90818-17-4. pp. 62-71.
- [4]. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, Zheng J (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res* 287, 112934.
- [5]. Flaxman S, Mishra S, Gandy A, Unwin HJT, Coupland H, Mellan T, Bhatt S (2020). Estimating the number of infections and impact of non-pharmaceutical interventions on COVID-19 in 11 European countries. *Imperial College COVID-19 Response Team*, London March 30. <http://dx.doi.org/10.25561/77731>.
- [6]. Kumar SU, Kumar DT, Christopher BP, Doss CGP (2020). The Rise and Impact of COVID-19 in India. *Front. Med.* 7:250. doi: 10.3389/fmed.2020.00250.
- [7]. Linton M, Kobayashi T, Yang Y, Hayashi K, Akhmetzhanov AR, Jung S, Yuan B, Kinoshita R, Nishiura H (2020). Incubation period and other epidemiological characteristics of 2019 novel coronavirus infections with right truncation: A statistical analysis of publicly available case data. *J. Clin. Med.* 9, 538.
- [8]. Liu JJ, Bao Y, Huang X, Shi J, Lu L (2020). Mental health considerations for children quarantined because of COVID-19. *Lancet Child Adolesc. Health* 4 (5), 347–349. [https://doi.org/10.1016/S2352-4642\(20\)30096-1](https://doi.org/10.1016/S2352-4642(20)30096-1).
- [9]. Matthew T. Tull, Keith A. Edmonds, Kayla M. Scamaldo, Julia R. Richmond, Jason P. Rose, Kim L. Gratz (2020). Psychological Outcomes Associated with Stay-at-Home Orders and the Perceived Impact of COVID-19 on Daily Life. *Psychiatry Res* 289, 113098.
- [10]. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen. Psychiatr.* 33 (2), e100213. <https://doi.org/10.1136/gpsych-2020-100213>.
- [11]. Sarah L. Hagerty, Leanne M. Williams (2020). The impact of COVID-19 on mental health: The interactive roles of brain biotypes and human connection. *Brain, Behavior & Immunity - Health* 5 (2020) 100078.
- [12]. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique B (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *J. Adv. Res.* 24, 91–98.
- [13]. Thakkar N, Burstein R, Hu H, Selvajar P, Klein D (2020). Social distancing and mobility reductions have reduced COVID-19 transmission in King County, WA. Report prepared by Institute for Disease Modeling. Published online March 29, 2020. Retrieved from https://covid.idmod.org/data/Social_distancing_mobility_reductions_reduced_COVID_Seattle.pdf.
- [14]. Varshney M, Parel JT, Raizada N, Sarin SK (2020). Initial psychological impact of COVID-19 and its correlates in Indian Community: An online (FEEL-COVID) survey. *PLoS ONE* 15(5): e0233874. <https://doi.org/10.1371/journal.pone.0233874>.
- [15]. Wang C, Riyu P, Wan X, Tan Y, Xu L, Ho CS, Ho RC (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int. J. Environ. Res. Public Health* 17, 1729.
- [16]. Yuta T, Shuhei N, Daisuke Y, Takayuki K, Akifumi E, Shoi S, Nahoko H, Hiroaki M (2020). Mental health of family, friends, and co-workers of COVID-19 patients in Japan. *Psychiatry Research* 291, 113067.
- [17]. Zhang SX, Wang Y, Rauch A, Wei F (2020). Unprecedented disruption of lives and work: Health, distress, and life satisfaction of working adults in China one month into the COVID-19 outbreak. *Psychiatry Res* 288, 112958.

APPENDIX – 1

Abstract of Proforma for Collecting Data on Different Parameters of Real Time Effects of COVID-19 Pandemic on Human Health.

Questionnaire Sheet

Please provide your response to each items included in the Questionnaire Sheet.

Your response will be kept confidential and used for the academic research purpose only.

[A]. Personal details:-

- | | |
|------------------------------------|--------------------------|
| i. Name: _____ | vi. Sex: _____ |
| ii. Present Address: _____ | vii. Age: _____ |
| iii. Relationship Status: _____ | viii. Living With: _____ |
| iv. Employment Status: _____ | ix. COVID Status: _____ |
| v. Quarantine Period (days): _____ | x. Recovery Time: _____ |

[B]. Write YES or NO for following symptoms:-

- | | |
|------------------------------------|-----------------------------------|
| i. Feeling depressed: _____ | x. Feeling restless: _____ |
| ii. Feeling nervous: _____ | xi. Feeling weak/lethargic: _____ |
| iii. Feeling stressed: _____ | xii. Presence of cough: _____ |
| iv. Presence of cold: _____ | xiii. Presence of fever: _____ |
| v. Presence of sore throat: _____ | xiv. Presence of headache: _____ |
| vi. Presence of any disease: _____ | xv. Loss of smell: _____ |
| vii. Loss of appetite: _____ | xvi. Loss of taste: _____ |
| viii. Chest heaviness/pain: _____ | xvii. Muscle/joint pain: _____ |

ix. Need for hospitalization: _____

xviii. Breathing difficulty: _____

[C]. 5-Point Likert-type questions, scale ranging from 0 (never) to 4 (extremely):-

- | | |
|--------------------------|-------------------------------------|
| i. Depression: _____ | vii. Nervousness: _____ |
| ii. Restlessness: _____ | viii. Anxiety: _____ |
| iii. Frustration: _____ | ix. Uncertainty: _____ |
| iv. Tiredness: _____ | x. Scared: _____ |
| v. Loneliness: _____ | xi. Sleep problem: _____ |
| vi. Fear of death: _____ | xii. Difficulty in breathing: _____ |

(N.B.: 0-never, 1-somewhat, 2-moderate, 3-serious, 4-extremely)

[D]. Presence of psychosomatic symptoms: _____