Prithvi Academic Journal
[A Peer-Reviewed, Open Access Multidisciplinary Journal]
Indexed in NepJOL with JPPS Star Ranking
ISSN 2631-200X (Print); ISSN 2631-2352 (Online)
URL: https://ejournals.pncampus.edu.np/ejournals/paj/

Centre for Research & Innovation
Prithvi Narayan Campus
Tribhuvan University
Pokhara, Nepal
http://pncampus.edu.np/

ORIGINAL RESEARCH ARTICLE

COVID-19 Pandemic and the Impact of Quarantine on Mental Health of Adult Population

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Article History: *Submitted 27 January 2022; Reviewed 2 March 2022; Accepted 20 April 2022*
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DOI*: https://doi.org/10.3126/paj.v5i1.45041*

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ABSTRACT
A new infectious disease known as coronavirus disease (COVID-19) is posing a serious public health threat worldwide. Isolation and quarantine are two important public measures to prevent transmission of coronavirus from one person to another. A new environment, a departure from loved ones, and insecurity over disease status in quarantine can aggravate mental health problems. The study was descriptive cross-sectional that covered 305 adult populations of Rupa Rural Municipality, Kaski to determine the impact of quarantine during the COVID-19 pandemic in relation to their mental health. The researcher used the self-reporting DASS-21 to collect the data through a web-based google form questionnaire from 1 September 2020 to 1 October 2020. The study demonstrated that 60.7 percent of respondents were below 35 years of with mean age of 33.92 years with a standard deviation of 11.702 and exercise was done by 53.1 percent of respondents. The study also revealed that 95.1 percent of respondents were up to date regarding the COVID 19 trend in Nepal mostly through a social network (37.9%). Among the quarantined group, 24.9 percent, 20 percent and 1.2 percent had depression, anxiety and stress respectively whereas among non-quarantined respondents, 5.7 percent had depression, 12.9 percent had anxiety and 1.4 percent had stress. Binary logistic regression resulted in the odds for respondents with depression who did not do physical exercise are 0.27 (95% CI for OR: 0.115-0.645) and the odds for female respondents are 0.219 (95% CI for OR: 0.08-0.595) with anxiety among the quarantined group. The study concluded that the negative impact on quarantined respondents' mental health was higher than that of the non-quarantined respondents. Hence, a psychological counseling using virtual techniques should be offered especially for those under quarantine, which would comfort them and follow-up care as well as mental health services that can be provided as necessary.
KEYWORDS: COVID-19 pandemic, mental health, quarantine, adult population

INTRODUCTION

Quarantine refers to the parting and limiting of movement of people who are uncovered to an infectious disease to determine if they become sick, thereby reducing the risk of them infecting others whereas isolation refers to the separation of those people who have been diagnosed with an infectious disease from people who are not ill (Centers for Disease Control and Prevention, 2020). The primary case of COVID-19 was described on 13 January 2020. The Government of Nepal enforced a full lock-down in the country including all travels prohibition, constraints the movement inside the country and focused on quarantine measures to prevent the transmission of COVID-19 to the community people on 24 March 2020 (Nepal Emergency Operation Center, 2020). Local authorities also established quarantine sites. However, the susceptibility of increasing infection in Nepal rises because of the open border with India and China. Many migrant workers and other people returning to Nepal from other areas were told to stay in the dedicated quarantine camps until the completion of their 14 days of quarantine (United Nations Nepal, 2020). These measures worked well to keep the disease outbreak under control a few times, on the other hand, these measures also have a detrimental effect on people's psychological health (Mattioli, Puviani, Nasi & Farinetti, 2020; Brooks et al, 2020). A review study reported the harmful mental effects of quarantine like posttraumatic stress disorder (PTSD), rage and uncertainty are increasing and ongoing (Brooks et al, 2020).

A study done in China highlighted the incidence of sadness and worry is considerably more among the quarantined group of respondents than that of non-quarantined respondents (Tang et al, 2020). Another study done to assess the psychological impact of quarantine in India showed that 23.2 percent of individuals were confronted a minor level of depression, then 11.9 percent faced with a mild level of anxiety and 30.3 percent of participants faced a severe level of stress respectively (Upadhyaya, Sweta, Singh, & Singh, 2020). Likewise, a study conducted by Varshney (2020) among the Indian community revealed that 66.8 percent of respondents had a minimal psychological effect on the COVID-19 pandemic, followed by 15 percent a trivial mental effect, 5.5 percent a modest level of psychological effect and 12.7 percent severe mental effect. Similarly, a study was done by Devkota et al. (2020) among ordinary people who attended the fever clinic revealed that 14 percent of the participants had anxiety, 7 percent had depression, and 5 percent had stress symptoms. Moreover, 61 percent of respondents presented with moderate to severe levels of anxiety, 50 percent presented with depression and 48 percent of respondents presented with stress. Another study done by Sigdel (2020) found that 34 percent of respondents faced depression and 31 percent of respondents faced anxiety in the ordinary people in Nepal. Additionally, females staying alone and spending time in COVID-19 news were more likely to develop depression and anxiety. Hence, this study aimed to determine the effect of quarantine during the COVID-19 pandemic on the psychological health of people.

METHODS AND MATERIALS

The descriptive cross-sectional research design was adopted to find out the quarantine effect during the COVID-19 pandemic on the mental health of the adult population of Rupa Rural Municipality, Kaski. The study population was the ordinary people who were not quarantined and resided in the municipality and the people who came from outside the country with a travel history and stayed in quarantine of the municipality during the COVID 19 pandemic. The sample size was calculated on the basis of prevalence of anxiety among general population of Nepal i.e. 31 percent (Sigdel et al, 2020) by using Cochran's formula as given: n=z2pq/e2 where n=sample size z=

confidence level- 1.96 p= proportion of sample 0.3 q= (1-p=0.7) e= margin of error- 0.05 n=322.56=323. The non-response rate of 10 percent was added i.e.32. So the estimated sample size was 355. While collecting the data, 165 responses were from quarantined, and 140 responses were further non-quarantined population (305), so the response rate was 85.91 percent. To get these samples, a non-probability purposive sampling technique was used. The inclusion criteria in this study were: the people who came from outside the country during COVID 19 pandemic and stayed at least 14 days in allotted quarantine by the municipality; the people who had not visited the infected area and were staying in Rupa Rural Municipality from Chaitra 1, 2076; and the people who were above eighteen years and ready to take part. Furthermore, the people with confirmed COVID 19 positive were excluded from the study. For the selection of the quarantined population, at first, all the quarantined people from the municipality were identified including their phone numbers with the help of the health coordinator and chief of the municipality. Then, each of the respondents was contacted through phone calls and asked their Viber id, messenger id, or emo id. After that, a Google form questionnaire was sent to respondents individually. Similarly, to select the general people who were not quarantined, at first two staff nurses were contacted who were working in the Rupa health center and Sidda health center of the municipality and they identified the required general people with their phone number residing in the municipality. Then, respondents were contacted through telephone and their social network, who responded to the questionnaire through google form.

The research instruments were developed to provide the answer to the research objectives as well as research questions. Part I consisted of socio-demographic information such as age, gender, marital status, education, occupation and income of respondents. Part II consisted of personal and COVID 19 related questions such as the utilization of leisure time, involvement in activity/exercise, use of social networks, reason for returning home town, worry about financial loss, duration of the quarantine, etc. Part III was the DASS-21 which is a three self-report scale designed to assess the mental health outcome of the respondents. In this scale, each of the sub-scale contained seven similar items to assess the depression, anxiety and stress of respondents. It is four points Likert Scale where 0 denotes “Did not apply to me at all”, 1 denotes “Applied to me to some degree, or some of the time”, 2 denotes “Applied to me to a considerable degree or a good part of the time” and 3 denotes “Applied to me very much or most of the time”. To obtain the conventional severities, the relevant seven items score is calculated and multiplied by two on each scale where depression level is categorized as: normal (0-9), mild (10-113), moderate (14-20), severe (21-27) and extremely severe (28+). However, anxiety is categorized as normal (0-7), mild (8-9), moderate (10-14), severe (15-19) and extremely severe (20+), and stress is categorized as normal (0-14), mild (15-18), moderate (19-25), severe (26-33) and extremely severe (34+) as suggested by the tool itself.

The content validity of Part I and Part II of the instrument were established through extensive literature review and consultation with the subject experts. The research tool was firstly translated into Nepali language and then, it was back-translated into an English version to ensure the equivalence of the instruments. The DASS-21 is a validated and widely used tool all over the world including Nepal. The scale is available in the Nepali version which is easily accessible on the website. Pre-testing of the instrument was conducted in Madi Rural Municipality among 16 quarantined samples who came from outside the municipality during the COVID 19 pandemic and 16 samples residing in the same locality. For ethical considerations, a written administrative permission was taken from the Institute of Medicine (IOM), Pokhara Nursing Campus to

the conduct study. Then, ethical clearance was obtained from Nepal Health Research Council (Ref. 460/2020). Likewise, permission was taken from the authority of Rupa Rural Municipality, Kaski, and web-based consent was taken prior to data collection from each of the respondents. Data collection was done from 1 September 2020 to 1 October 2020 through the google form questionnaire. A web page was formulated in such a way that re-sampling could be avoided. The response was not accepted after 1 October 2020 on the google drive. The information received from the respondents was used for study purposes only and no email address or any other identity was asked in the google form. The respondents were allowed to refuse to participate in the study at any time as they wished. Data were checked and organized for completeness and consistency. Then, it was coded and transferred from excel to statistical package for social science version 16. The data analysis by using descriptive statistics such as frequency, percentage, mean and standard deviation, and inferential statistics chi-square test was used to assess the relationship between the quarantine and mental health outcome of the respondents. Furthermore, a binary logistic regression analysis was applied to find out the factors associated with depression and anxiety of the respondents.

RESULTS

Table 1
Socio-demographic Characteristics of Respondents
n=305

Variables	Number	Percent
Age of the Respondents		
18 - 34 Years	185	60.7
35-60 Years	120	39.3
Mean age with SD = (33.92±11.702)		
Sex of the Participants		
Male	206	67.5
Female	99	32.5
Marital Status		
Currently Married	206	67.5
Unmarried	89	29.2
Widow/Widower	7	2.3
Divorced/Separated	3	1.0
Educational Qualification		
Up to 10 Class	138	45.2
Up to 12 Class	105	34.4
Up to Bachelor Level	40	13.1
Master Level and Above	22	7.2
Occupational Status		
Job loss due to COVID-19	136	44.6
Currently Employed	90	29.5
Involved in Agriculture	43	14.1
Unemployed	21	6.9
Student	15	4.9

Table 1 shows that 60.7 percent of respondents were below 35 years with a mean age of 33.92 years with a standard deviation of 11.702 whereas the male respondents

were 67.5 percent and the same percent were married. The respondents having educational qualification up to 10 class were 45.2 percent and 44.6 percent had lost their job due to COVID-19.

Table 2
Respondents' COVID-19 related Variables

n=305

Variables	Number	Percent
Utilization of Leisure Time(Multiple Response)		
Doing Household Activities	172	56.4
Doing Agricultural works	163	53.4
Watching the Internet and playing games only	152	49.8
Doing Yoga and being involved in recreational activities	65	21.3
Doing Creative activities like painting, writing, handicraft	60	19.7
Nothing special	43	14.1
Exercise		
Done	162	53.1
Not Done	143	46.9
Regularity of Exercise (n=162)		
Daily	49	30.2
Sometimes	113	69.8
Busy in Social Network during COVID-19		
Yes	218	71.5
No	87	28.5
Mostly involved activity in Social networks (n=218)		
Just seen the Facebook wall and uploaded posts	35	16.1
Messaging and video calling with friends and relatives	66	30.3
Reading the online news related to COVID-19	87	39.9
Watching movies and other comedy type materials on youtube	30	13.8
Worried about financial loss due to COVID-19		
Of course, yes	184	60.3
Not much	104	34.1
No worry at all	17	5.6

Table 2 depicts that more than 50 percent (56.4%) of respondents had utilized their leisure time during the lockdown in the household activities and agricultural activities, followed by being busy on internet, playing games on mobile (49.8%), doing yoga as well as involved in recreational activities (21.3%) and some of them (19.7%) did creative art, painting, poem writing, etc., but 14.1 percent of respondents did nothing special in their free time. The exercise was done by 53.1 percent of respondents, but only 30.2 percent did it regularly. The majority of respondents (71.5%) used to be busy in social networks during the COVID 19 pandemic whereas the maximum percent of respondents (39.9%) used it just for seeing the online news related to COVID 19. Among the respondents, 60.3 percent were worried about the financial loss due to the pandemic recently (Table 2).

Table 3
COVID-19 and Quarantine Related Variables of Respondents

n=305

Variables	Number	Percent
Came from Foreign Country		
Yes	165	54.1
No	140	45.9
Main Cause of Returning Home(n=165)		
Due to loss of job/business	85	51.5
Long vacation given by the Institute/Company	38	23.0
Fear of infection to self	28	17.0
Due to family pressure	14	8.5
Stayed in Quarantine		
Stayed in Quarantine	165	54.1
Not Stayed in Quarantine	140	45.9
Total days stayed in Quarantine(n=165)		
Only 14 days	132	80.0
More than 14 days	33	20.0
Satisfaction with Quarantine Management(n=165)		
Satisfied	160	97.0
Dissatisfied	5	3.0

This table illustrates that 54.1 percent of respondents had come from outside the country and the main cause of returning hometown was job loss (51.5%) and vacation given by the institution or company (23%). The respondents who came from outside the country (54.1%) had stayed in the quarantine of Rupa Rural Municipality and 80 percent of them were kept only 14 days and sent home. Almost all of them (97%) were satisfied with the management of quarantine running by the municipality (Table 3).

Table 4
Depression, Anxiety, and Stress among Quarantine and Non-Quarantined Population

(n=305)

Variables	Quarantined (n=165)			Non-quarantined (n=140)		
Levels	**Depression No. (%)**	**Anxiety No. (%)**	**Stress No. (%)**	**Depression No. (%)**	**Anxiety No. (%)**	**Stress No. (%)**
Normal	124 (75.2)	132 (80)	163 (98.8)	132 (94.3)	122 (87.1)	138 (98.6)
Abnormal	41(24.8)	33(20)	2(1.2)	8(5.7)	18(12.9)	2(1.4)
Among Abnormal						
Mild	26 (15.8%)	16 (9.7)	2 (1.2)	3 (2.1)	4 (2.9)	1 (0.7)
Moderate	15 (9.1)	169 (9.7)	-	4 (2.9)	11 (7.9)	1(0.7)
Severe	-	1 (0.6)	-	1 (0.7)	1 (0.7)	-
Extremely Severe	-	-	-	-	2 (1.4)	-

The above table results that there was no depression among 75.2 percent of quarantined respondents whereas depression was prevalent in 24.9 percent of quarantined respondents in which 15.8 percent had mild depression and 9.1 percent had moderate depression. But 5.7 percent of non-quarantined respondents had depression where 2.1 percent had mild depression, 2.9 percent had a moderate level of depression and 0.7 percent had a severe level of depression. Similarly, 20 percent of quarantined respondents had anxiety; among them, 9.7 percent had a mild level, 9.7 percent had moderate level and 0.6 percent had a severe level of anxiety, but 12.9 percent of non-

quarantined respondents had anxiety where 2.9 percent had a mild level, followed by 7.9 percent had a moderate level, 0.7 percent had severe level and 1.4 percent had an extremely severe level of anxiety. The stress was found among 1.2 percent of quarantined respondents and 1.4 percent had stress among non-quarantined respondents (Table 4).

Table 5

Association between Quarantine Status and Mental Health Outcome of Respondents

Variables	Depression		Anxiety		Stress	
	Absent No. (%)	Present No. (%)	Absent No. (%)	Present No. (%)	Absent No. (%)	Present No. (%)
Quarantined	124(75.2)	41(24.8)	132(80.0)	33(20.0)	163(98.8)	2(1.2)
Not-Quarantined	132 (94.3)	8 (5.7)	122(87.1)	18(12.9)	138(98.6)	2(1.4)
Chi-Square (P-value)	20.563 (p<0.001)*		2.775 (0.123)		0.027 (1.000)	

*statistically significant ≤0.05

Table 5 shows that there was a statistically significant association between the depression level and the status of quarantine respondents (p<0.001).

Table 6

Binary Logistic Regression of Factor Associated with Background Variables and Depression and Anxiety among Quarantined Respondents

Variables		B	SE	*P-value*	OR	95%CI For OR	
Depression						**Lower**	**Upper**
Sex	Female	-0.562	0.55	0.305	0.57	0.195	1.667
	Male (R)	-	-	-	-	-	-
Occupational status	Unemployed	-0.708	0.61	0.244	0.49	0.15	1.62
	Employed (R)	-	-	-	-	-	-
Physical Exercise	Not Done	-1.302	0.44	0.003*	0.27	0.115	0.645
	Done(R)	-	-	-	-	-	-
Social network (Busy)	Yes	-0.519	0.47	0.269	0.6	0.237	1.493
	No. (R)	-	-	-	-	-	-
	Constant	0.509	0.58	0.38	1.66		
Anxiety							
Sex	Female	-1.521	0.511	0.003*	0.219	0.08	0.595
	Male (R)						
	Constant	-0.105	0.459	0.819	0.9		

(R) = Reference variable

The above Fitted model shows that the odds for "People who didn't do Physical Exercise" is 0.27 (95% C.I. for OR = 0.115 – 0.645). This implies that depression among quarantined people is 73% less likely in those who did not do physical exercise as compared to those who did exercise. Similarly, anxiety among quarantined females is 78.1% less likely as compared to male. It is statistically significant at a 5% level of significance (p<0.05). All other variables like [sex, occupational status, and social

network (busy)] are not statistically significant but are also important factors in this study (Table 6).

DISCUSSION

The study was conducted to find out the mental health of the adult population during the COVID-19 pandemic in Rupa Rural Municipality, Kaski and the sample size was 305. The study revealed that 60.7 percent of respondents were below 35 years with a mean age of 33.92 years. In this study, depression was prevalent in 24.9 percent of quarantined respondents in which 15.8 percent had mild depression and 9.1 percent had moderate depression. But in the study of BC (2020), the incidence of depression among the quarantined respondents was 13.6 percent in which 9.1 percent were having mild depression, 3.4 percent had moderate depression and 1.1 percent had severe depression in Nepal whereas Wang (2021) found the prevalence of depression in 13.6 percent among quarantined respondents in China. Similarly, Banna et al. (2020) identified depression among 57.7 percent of respondents, comprising 14.5 percent mild, 21.2 percent moderate and 13.2 percent severe level depression in Bangladesh. In this study, 5.7 percent of non-quarantined respondents had depression where 2.1 percent had mild depression, 2.9 percent had a moderate level of depression and 0.7 percent had a severe level of depression but Shahriarirad et al. (2021) found an overall 15.1 percent depression among the general population in Iran. Regarding anxiety, 20 percent of quarantined respondents had anxiety; among them, 9.7 percent had a mild level, 9.7 percent had a moderate level and 0.6 percent had a severe level of anxiety in the current study. The similar findings were found in the study of BC (2020), Nepal where overall 20.9 percent had anxiety including 16.1 percent had mild anxiety, 4.1 percent had moderate anxiety and 0.7 percent had severe anxiety among the quarantined respondents. In contrast with the finding of current research, Khanal et al. (2020) resulted that 41.9 percent were having symptoms of anxiety among the respondents. The study of Wang et al. (2021) identified 13.3 percent anxiety in the quarantined respondents in China. The study of Banna et al. (2020) highlighted that the anxiety symptoms were seen among 7 percent of respondents; in this, the moderate symptoms were seen in 11.6 percent and extreme anxiety symptoms were seen in the same (11.6%) percent of non-quarantined respondents. Likewise, 12.9 percent of non-quarantined respondents had anxiety where 2.9 percent had a mild level, followed by 7.9 percent had a moderate level, 0.7 percent had severe level and 1.4 percent had an extremely severe level of anxiety, but overall anxiety was found to be 20.2 percent among the general population in Iran (Shahriarirad et al., 2021). The study finding of Devkota et al. (2020) is similar with the finding of the current study in which 14 percent of participants had anxiety; among them, 5 percent had mild level of anxiety, 6 percent had a moderate level of anxiety and 3 percent had severe anxiety in Nepal.

In this study, the stress was identified among 1.2 percent of quarantined respondents and 1.4 percent had stress among the non-quarantined respondents. In contrast with this result, 28.6 percent of quarantined participants had stress in the study of Wang et al. (2021) in China whereas 5 percent of non-quarantined respondents had stress; among them, 3 percent had mild stress, 1.1 percent had moderate stress and 1.3 percent had severe stress in the findings of Devkota et al. (2020), Nepal. The contrast result was found in the study of Banna et al. (2020) in Bangladesh where 59.7 percent of non-quarantined respondents suffered from the stress symptoms; however, Paudel, Gautam,, Adhikari, and Yadav (2020) found that 24.1 percent of stress among the participants of Pokhara, Nepal where 11.7 percent had mild stress, 7.9 percent had moderate stress and 4.5 percent had severe stress. The study conducted by Wang et al.

(2021) illustrated that 34.1 percent of quarantined respondents faced at least one mental problem, compared to 27.3 percent of non-quarantined respondents. In the binary logistic regression model for depression among the quarantined group, the odds for people who didn't do physical exercise is 0.27 (95% C.I. for OR = 0.115 – 0.645) in this study. This implies that depression among the quarantined people is 73% less likely in those, who did not do physical exercise as compared to those who did exercise, this might be because the respondents who were quarantined do not like to do exercise during that period. But in the study of Plemecka et al. (2020), daily exercise predicted fewer psychological symptoms in respondents. In the study of Shahriarirad et al. (2021), logistic regression showed that age and staying single were considerably linked with depression. Moreover, in the study of Devkota et al. (2020), lower odds were found among those respondents who had secondary level education. Regarding anxiety among the quarantined group, the current study showed the odds for females that is 0.219 (95% C.I. for OR = 0.08– 0.595). This implies that anxiety among quarantined females is 78.1% less likely as compared to males. But in the study of Ahmed et al. (2020), the predictors of anxiety were gender, religion, occupation as business, marital status, family type and health status of respondents. Another study by Kolodziejczyk (2021) in Poland depicted that the quarantined groups showed the presence of relevant anxiety (higher than non-quarantined groups). Similarly, the female participants (p=0.004) experienced significantly more psychological distress in the study of Kafle et al. (2021), Nepal. The study was cross-sectional that was limited to Rupa Rural Municipality, Kaski only so generalization is limited and thus, the study prevents establishing the causal relationship between the variables. The study was a web-based survey, so the people who had no social network could not be included in this study. The study finding has relied on the response of the respondents from a self-administered questionnaire, which may be influenced by under-reporting of information and subjective to respondents' response.

CONCLUSION

The COVID-19 pandemic and the quarantine caused a detrimental impact on mental health. The findings indicate higher levels of psychological impact (i.e. depression and anxiety) among the quarantined respondents as compared to the non-quarantined respondents. Among the quarantined group, sex, occupational status, physical exercise and engagement in social networks were associated with depression and the sex of the respondents was associated with anxiety. Moreover, the quarantined respondents who did not do physical exercise had less likely to develop depression than those who did the exercise. The female gender had less likely to have anxiety than the male gender among the quarantined group. Hence, it is concluded that a considerable number of quarantined populations are at high risk of having mental health problems due to quarantine during the pandemic.

RECOMMENDATIONS

Psychological interventions targeting the people with heavy psychological burdens are in urgent need of some kind of treatment. Based on the findings, it is necessary to give proper psychological attention to the population under quarantine. The counseling can be offered through virtual techniques and direct phone calls. They can be kept in touch with their loved ones through social media to share their feelings and feel comfortable. Further, the follow-up studies can be done to identify the consequences of the mental impact of quarantine and evaluate the effectiveness of psychological interventions.

ACKNOWLEDGMENTS

I would like to express my profound sense of gratitude to Research Management Cell, Pokhara Nursing Campus for providing a financial support to conduct this study. Similarly, I'm very grateful to Mr. Nabraj Ojha, Chief of Rupa Rural Municipality for permitting me to collect data. I'm also very grateful to Manisha Shrestha and Kripa Thakuri for their contribution to data collection. I would also like to thank Mr. Suraj K.C, Head Office Assistant (Technical) for his technical support while making a google form questionnaire.

REFERENCES

Asim, M., Van T. E. & Sathian, B. (2020). Coronavirus disease (COVID-19) and the risk of post-traumatic stress disorder: A mental health concern in Nepal. *Nepal Journal of Epidemiology*. *10*(2), 841-844. https://doi.org/10.3126/nje.v10i2.29761

Bai, Y., Lin, C. C., Lin, C. Y., Chen, J. Y., Chue, C. M., & Chou, P. (2004). Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatric Services*, *55*(9), 1055-1057. https://doi.org/10.1176/appi.ps.55.9.1055

Barbisch, D., Koenig, K. L., & Shih, F. Y. (2015). Is there a case for quarantine? Perspectives from SARS to Ebola. *Disaster medicine and public health preparedness*, *9*(5), 547-553. https://doi.org/10.1017/dmp.2015.38

BC, U. B., Pokharel, S., Munikar, S., Wagle, C. N., Adhikary, P., Shahi, B. B., Thapa, C., Bhandari, R. P., Adhikari, B., & Thapa, K. (2021). Anxiety and depression among people living in quarantine centers during COVID-19 pandemic: A mixed-method study from western Nepal. *PLOS ONE*, *16*(7), Article e0254126. https://doi.org/10.1371/journal.pone.0254126

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*, *395*, 912-920. https://doi.org/10.1016/S0140-6736(20)30460-8

Canet-Juric, L., Andrés, M.L., Del Valle, M., López-Morales, H., Poó, F., Galli, JI., Yerro, M., & Urquijo, S. (2020). A longitudinal study on the emotional impact cause by the COVID-19 pandemic quarantine on general population. *Frontiers in Psychology*, *11*, 565688. https://doi.org/10.3389/fpsyg.2020.565688

Centers for Disease Control and Prevention. (2020, January 27). *About Quarantine and isolation*. https://www.cdc.gov/quarantine/quarantineisolation.html

Devkota, H.R., Sijali, T.R., Bogati, R., Ahamad, M., Shakya, K.L., & Adhikary, P. (2021). The impact of COVID-19 on mental health outcomes among hospital fever clinic attendants across Nepal: A cross-sectional study. *PLoS ONE*. *16*(3), Article e0248684. https://doi.org/10.1371/journal.pone.0248684

Hawryluck, L., Gold, W. L., Robinson, S., Pogorski, S., Galea, S., & Styra, R. (2004). SARS control and psychological effects of quarantine, Toronto, Canada. *Emerging infectious diseases*, *10*(7), 1206. http://dx.doi.org/10.3201/eid1007.030703

Health Emergency Operation Center, Health Emergency and Disaster Management Unit (HEDMU), Ministry of Health and Population, Government of Nepal. (2020). https://heoc.mohp.gov.np/update-on-novel-corona-virus-2019_ncov/

Jeong, H., Yim, H. W., Song, Y. J., Ki, M., Min, J. A., Cho, J., & Chae, J. H. (2016). Mental health status of people isolated due to middle east respiratory syndrome.

Epidemiology and health, *38*, Article e2016048. https://doi.org/10.4178/epih.e2016048

Kafle, K., Shrestha, D.B., Baniya, A., Lamichhane, S., Shahi, M., Gurung, B., Tandan, P., Ghimire, A., & Budhathoki, P. (2021). Psychological distress among health service providers during COVID-19 pandemic in Nepal. *PLoS ONE, 16*(2), Article e0246784. https://doi.org/10.1371/journal.pone.0246784

Khan, A.H., Sultana, M.S., Hossain, S., Hasan, M.T., Ahmed, H.U., & Sikder, M.T (2020). The impact of COVID-19 pandemic on mental health & wellbeing among home-quarantined Bangladeshi students: A cross-sectional pilot study. *Journal of Affective Disorders*, *277*, 121-128. https://doi.org/10.1016/j.jad.2020.07.135

Khanal, P., Devkota, N., Dahal, M., Paudel, K. &. Joshi, D. (2020). Mental health impacts among health workers during COVID-19 in a low resource setting: a cross-sectional survey from Nepal. *Global Health*, *16*, 89. https://doi.org/10.1186/s12992-020-00621-z

Kołodziejczyk, A., Misiak, B., Szcześniak, D., Maciaszek, J., Ciułkowicz, M., Łuc, D., Wieczorek, T., Fila-Witecka, K., Chladzinska-Kiejna, S., & Rymaszewska, J. (2021). Coping styles, mental health, and the COVID-19 quarantine: A nationwide survey in Poland. *Frontiers in Psychiatry*, *12*, 625355. https://doi.org/10.3389/fpsyt.2021.625355

Lovibond, S.H., & Lovibond, P.F. (1995). *Manual for the Depression Anxiety & Stress Scales* (2nd Ed.). Psychology Foundation of Australia.

Mattioli, A. V., Puviani, M. B., Nasi, M., & Farinetti, A. (2020). COVID-19 pandemic: The effects of quarantine on cardiovascular risk. *European Journal of Clinical Nutrition*, *74*, 852-855. https://doi.org/10.1038/s41430-020-0646-z

Mohamed, A.E. and Yousef, A.M. (2021). Depressive, anxiety, and post-traumatic stress symptoms affecting hospitalized and home-isolated COVID-19 patients: A comparative cross-sectional study. *Middle East Current Psychiatry 28*, 28. https://doi.org/10.1186/s43045-021-00105-9

Sankhi, S., & Marasine, M.R. (2020). Impact of COVID-19 pandemic on mental health of the general population, students, and health care workers. *Europasian Journal of Medical Sciences 2*, 64-72. https://doi.org/10.46405/ejms.v2i2.131

Shahriarirad, R., Erfani, A., Ranjbar, K., Bazrafshan, A. & Mirahmadizadeh, A. (2021). The mental health impact of COVID-19 outbreak: A nationwide survey in Iran. *International Journal of Mental Health Systems 15*(19). https://doi.org/10.1186/s13033-021-00445-3

Sharma, K., Banstola, A. & Parajuli, R.R. (2021). Assessment of COVID-19 pandemic in Nepal: A lockdown scenario analysis. *Front. Public Health 9*, 599280. https://doi.org/10.3389/fpubh.2021.599280

Shrestha, D. B., Thapa, B. B., Katuwal, N., Shrestha, B., Pant, C., Basnet, B., Mandal, P., Gurung, A., Agrawal, A., & Rouniyar, R. (2020). Psychological distress in Nepalese residents during COVID-19 pandemic: A community level survey. *BMC Psychiatry*, *20*(1), 491. https://doi.org/10.1186/s12888-020-02904-6

Sigdel, A., Bista, A., Bhattarai, N., Pun, B. C., Giri, G., Marqusee, H., & Thapa, S. (2020). *Depression, anxiety and depression-anxiety comorbidity amid COVID-19 pandemic: An online survey conducted during lockdown in Nepal* [Preprint]. Public and Global Health. https://doi.org/10.1101/2020.04.30.20086926

Sprang, G., & Silman, M. (2013). Posttraumatic stress disorder in parents and youth after health-related disasters. *Disaster medicine and public health preparedness*, *7*(1), 105-110. https://doi.org/10.1017/dmp.2013.22

Neupane, A. (n.d.). *Suicide cases on the rise, mental health experts warn of a 'grim situation.'* My Republica. Retrieved January 27, 2022. http://myrepublica.nagariknetwork.com/news/94139/

Tang, F., Liang, J., Zhang, H., Kelifa, M. M., He, Q., & Wang, P. (2020). COVID-19 related depression and anxiety among quarantined respondents. *Psychology & Health, 36*(2), 164-178. https://doi.org/10.1080/08870446.2020.1782410

United Nations Nepal. (2020). *COVID-19 Nepal: Preparedness and response plan*. https://www.who.int/docs/default-source/nepal-documents/novel-coronavirus/covid-19-nepal-preparedness-and-response-plan-(nprp)-draft-april-9.pdf?sfvrsn=808a970a_2

Varshney, M., Parel, J.T., Raizada, N., & Sarin, S.K. (2020). Initial psychological impact of COVID-19 and its correlates in Indian community: An online (FEEL-COVID) survey. *PLoS ONE, 15*(5), Article e0233874. https://doi.org/10.1371/journal.pone.0233874

Wang, Y., Shi, L., Que, J., Lu, Q., Liu, L., Lu, Z., Xu, Y., Liu, J., Sun, Y., Meng, S., Yuan, K., Ran, M., Lu, L., Bao, Y., & Shi, J. (2021). The impact of quarantine on mental health status among general population in China during the COVID-19 pandemic. *Molecular Psychiatry*, *26*(9), 4813–4822. https://doi.org/10.1038/s41380-021-01019-y

World Health Organization. (2020). *Global research on coronavirus disease (COVID-19) 2020*. https://www.who.int/emergencies/diseases/novelcoronavirus-2019/global-research-on-novel-coronavirus-2019-ncov

Wu, P., Fang, Y., Guan, Z., Fan, B., Kong, J., Yao, Z., Liu, X., Fuller, C. J., Susser, E., Lu, J., & Hoven, C. W. (2009). The psychological impact of the SARS epidemic on hospital employees in China: Exposure, risk perception, and altruistic acceptance of risk. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *54*(5), 302–311. https://doi.org/10.1177/070674370905400504

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, F., Ma, X., Wang, D., Xu, W., Wu, G., Gao, G. F., & Tan, W. (2020). A novel coronavirus from patients with pneumonia in China, 2019. *New England Journal of Medicine*, *382*(8), 727–733. https://doi.org/10.1056/NEJMoa2001017

To cite this article [APA style, 7th edition]:
Ghimire, G.D., Gharti, K., & Poudel, A. (2022). COVID-19 pandemic and the impact of quarantine on mental health of adult population. *Prithvi Academic Journal, 5*, 59-70.