

## Research Article

# Recurrent COVID-19 Waves and Lockdown: Impact on Daily Life and Mental Health of People in Nepal

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**Background.** Lockdown is recognized as an effective measure in limiting the spread of coronavirus (COVID-19) throughout the world. However, recurrent COVID-19 infection and the extension of lockdown have threatened the livelihoods of people, mainly socioeconomic and mental health dimensions. **Objective.** The present study is aimed at identifying the impact of COVID-19 lockdown on the daily life and mental health of the general population of Nepal. Furthermore, the study identified the predictors of the mental health status of the people during COVID-19 lockdown. **Methods.** The study was conducted among 354 Nepalese people specifically the breadwinner of the family. Respondents completed the questionnaires related to the sociodemographic characteristics, COVID-19, and its impact on various aspects of life, including mental health via Depression, Anxiety, and Stress Scale-21 items (DASS-21). Data was collected through the web-based method, Google Forms questionnaire. Respondents were contacted through email and social networks (Facebook, Messenger, WhatsApp, and Viber) following a snowball approach. Data was analyzed using descriptive and inferential statistics. Logistic regression analysis was done to identify significant demographic, COVID-related, and socioeconomic factors associated with mental health outcomes. **Results.** Based on DASS-21 scores, the prevalence of depression, anxiety, and stress was 46.6% (mild: 22.3%, moderate: 16.7%, severe: 6.5%, and extremely severe: 1.1), 42.1% (mild: 10.2%, moderate: 18.6%, severe: 11.6%, and extremely severe: 1.7%), and 39% (mild: 16.7%, moderate: 12.7%, and severe: 9.6%), respectively. Various factors associated with COVID-19, its lockdown measures, and sociodemographic characteristics of the people were identified as the significant predictors of depression, anxiety, and stress among the general population of Nepal. **Conclusion.** The impact of COVID-19 lockdown on individuals' work, income, education, living standard, lifestyle, and consequently mental health is significant. The study findings warrant the importance of understanding the impact of the COVID-19 pandemic on individuals' all aspects of life and timely monitoring and appropriate intervention on risk groups to reduce the severity and chronicity of mental health problems.

## 1. Introduction

Coronavirus disease 2019 (COVID-19) was first identified in December 2019 in Wuhan City, China [1, 2]. The outbreak of COVID-19 continued to spread affecting many countries; therefore, the World Health Organization (WHO) declared it a pandemic on March 11, 2020 [3]. To combat the pandemic, most nations across the world along with the Government of Nepal enacted complete lockdown measures such as restriction of unnecessary movement of people out-

side the house, prohibition of public and private transportation, and suspension of domestic as well as international flights followed by a country-wide full lockdown on March 23, 2020 [4, 5]. Without delay, educational institutions were closed, all nonessential productions and commercial activities were suspended, and various containment measures such as strict social distancing, quarantine, and isolation were applied [5]. Along with the reduction in new cases in August 2020, the restrictive measures were eased while the lockdown was extended time and again. In late April 2021,

Nepal again went to complete lockdown with new-onset COVID-19 incidents [6]. To some extent, these measures helped to mitigate the spread of infection. However, extended lockdown negatively impacted the socioeconomic condition and the quality of life of the people, leading to psychological problems such as stress, anxiety, depression, frustration, boredom, and even suicidal ideas and attempts [4, 6, 7].

COVID-19 lockdown, along with social distancing, self-isolation, and travel restrictions, caused many jobs to be lost and had a huge economic impact pushing vulnerable groups further into poverty [8, 9]. People already living in poverty, persons with disabilities, migrant laborers, and the daily-wage earner faced severe issues [10]. The pandemic resulted in mass unemployment, inequality, discrimination, homelessness, an increase in gender-based violence, alcoholism, and hunger [11, 12], leading to mental instability among individuals. Recent systematic reviews reported a high rate of psychological problems among the general population during the pandemic [13, 14]. Though the severity of mental illness varied between countries [15, 16], the high-risk group frequently reported were females, migrant workers, unemployed, and individuals with chronic illness [7, 13, 14]. In addition, with the closure of schools and colleges and the introduction of online classes, students and parents were also hit hard by the pandemic. Parents were worried about their children's education and future. Although the Government of Nepal introduced a digital education system, it has added the burden of internet fees as well as digital resources among people with lower socioeconomic status [8, 17].

Evidence also suggests that the COVID-19 containment measures are more likely to increase disharmonious family relationships and domestic violence [18, 19]. In Nepal, financial strain, increased domestic workload, and decreased access to support and resources during the pandemic have led to a massive rise in the case of domestic and gender-based violence [20]. United Nations Population Fund (UNFPA) estimated that if the lockdown continued for next six months, there will be up to 31 million new cases of gender-based violence [21]. The Women's Rehabilitation Center (WOREC) in Nepal reported 465 cases of violence against women and girls from different districts during the two months of lockdown between 24 March and 22 May 2020 [22]. This situation brought by the pandemic will potentially lead to fear, social stigma, and mental stress which will have a long-term impact on the psychological and mental wellbeing of people [23]. In addition, overwhelming negative news regarding COVID-19 on social media has aggravated mental health problems among those who spend most of their time searching for pandemic information on the internet and social media [14, 15, 24].

The COVID-19 pandemic and its impact on social and economic activity have also influenced individuals' smoking and drinking habits in many ways [25, 26]. In the UK, sales in alcohol stores increased by 31.4% in volume term, in March 2020 [27]. However, it is not yet clearly known how overall smoking and alcohol consumption have changed throughout this period warranting more research.

The outbreak has severely affected the socioeconomic status of people, leading to additional mental health problems [28, 29]. Considering huge societal and economic consequences, there is a critical need to recognize the magnitude of the impact of the COVID-19 pandemic. However, there is a gap in the literature regarding the impact of COVID-19 pandemic on the economic, personal, social, and psychological aspects of the Nepalese community and its containment measures. This knowledge is essential for guiding policies and interventions to mitigate the postpandemic socioeconomic and mental health problems. Therefore, the current study is aimed at addressing the gap in the literature by assessing the impact of recurrent waves of COVID-19 infection and lockdown on the daily life and mental health of the Nepalese population and investigating the predictors of depression, anxiety, and stress.

## 2. Materials and Methods

**2.1. Study Design, Setting, and Population.** The present study was conducted using a descriptive cross-sectional web-based survey design. Sample size was calculated using the formula  $n = z^2 pq/d^2$ . Using the prevalence of moderate to severe levels of anxiety (61%) reported in a study in Nepal [30] and keeping an allowable error of 5% at a 95% confidence interval, the estimated sample size was 365. However, only 354 respondents, who submitted the questionnaire with complete information, were included in the final analysis of the study. As per the recommendation of the Government of Nepal regarding the physical distancing, data was collected through a web-based method from 1<sup>st</sup> May to 15<sup>th</sup> June 2021. The time frame corresponds to the contagion peak in Nepal [6].

The snowball sampling technique was used to recruit participants from Gandaki Province of Nepal. The survey form was developed through online Google Forms. The front page contained an introductory paragraph describing the objectives of the study and informed consent. The link was shared among the network of the research team within the Gandaki Province through Facebook, Messenger, and WhatsApp. Individuals aged 18 years and above, who were the breadwinner of the family, were the inclusion criteria set for the study. The younger members of the family, who received the link, were requested to fill out the online survey by consulting the breadwinner of their family.

**2.2. Instruments.** The tool was developed as a self-administered questionnaire that consisted of questions related to sociodemographic information; COVID-19 infection; the impact of COVID-19 lockdown on personal and social life; the impact of COVID-19 on the financial condition of the respondents; perceived impact of COVID-19 on the education of the children; and Depression, Anxiety, and Stress Scale-21 (DASS-21). DASS-21 assesses the mental health status along the three dimensions: depression, anxiety, and stress. Each of the three DASS-21 scales contains 7 items along with 4-points Likert scale ranging from 0 to 3 [31]. The relevant 7-item score was calculated and multiplied by 2 on each scale and categorized as normal

(depression 0–9, anxiety 0–7, and stress 0–14), mild (depression 10–13, anxiety 8–9, and stress 15–18), moderate (depression 14–20, anxiety 10–14, and stress 19–25), severe (depression 21–27, anxiety 15–19, and stress 26–33), and extremely severe (depression 28+, anxiety 20+, and stress 34+).

The DASS-21 is a validated and frequently used tool in Nepal and is also available in Nepali language. A recent large-scale study conducted in middle-income countries in Asia found Cronbach's alpha for different versions of DASS-21 as 0.878–0.943 for depression scale, 0.784–0.914 for anxiety scale, and 0.839–0.934 for stress scale [16]. The internal consistency of the Nepali version tool is 0.77 for depression, 0.80 for anxiety, and 0.82 for stress [32]. The present study also found Cronbach's alpha 0.83, 0.85, and 0.85 for depression, anxiety, and stress subscale, respectively.

The tool was first developed in the English language and then translated to the Nepali Language. Consultation with bilingual experts was done for both forward and backward translation.

**2.3. Ethical Consideration.** The research obtained ethical approval from Nepal Health Research Council on 5<sup>th</sup> August 2020 (Ref. No. 292). Online informed consent was taken from the participants after clearly explaining the study objectives, their voluntariness in participation, and the confidentiality of the data through the information attached on the first page of the Google Forms.

**2.4. Data Analysis.** Descriptive as well as inferential statistics (chi-square test) was used. Logistic regression analysis was used to find out the factors associated with the mental health outcome of the respondents. Only variables that were statistically significant in the chi-square test were included in the binary logistic regression analysis. Statistical significance was defined by a 2-tailed  $p < 0.05$ .

### 3. Results

**3.1. Mental Health Status of the Respondents.** Based on DASS-21 scores, the prevalence of depression, anxiety, and stress of 354 respondents was 46.6%, 42.1%, and 39%, respectively. Among those having some form of mental health problem, more than half of the respondents (52.2%) reported moderate to severe depression, 75.8% moderate to severe anxiety, and 57.2% moderate to severe stress (Table 1).

**3.2. Background Characteristics of the Respondents.** The mean age of the respondents was  $41.7 \pm 12.2$  years. Approximately half of them were less than 40 years of age (50.8%) and male (51.4%). More than 60% of the respondents were married, 46.3% had education up to Bachelor level, 31.6% were working in a private organization, and 42.3% were having monthly income less than 50 thousand Nepalese rupees (Table 2). One out of four respondents and one out of five respondents' family members were diagnosed with COVID-19. Further, 29% of respondents and 20% of respondents' family members had stayed in quarantine. Nine out of ten used social media to get news about

TABLE 1: Level of depression, anxiety, and stress of the respondents.

Variable	Depression <i>n</i> (%)	Anxiety <i>n</i> (%)	Stress <i>n</i> (%)
Level			
Normal	189 (53.4)	205 (57.9)	216 (61.0)
Abnormal	165 (46.6)	149 (42.1)	138 (39.0)
Among abnormal			
Mild	79 (47.8)	36 (24.2)	59 (42.8)
Moderate	59 (35.8)	66 (44.3)	45 (32.6)
Severe	23 (14.0)	41 (27.5)	34 (24.6)
Extremely severe	4 (2.4)	6 (4.0)	—

COVID-19; 61% had perceived that they had little knowledge about the infection (Table 3).

More than half were bored being locked at home (53.6%), had disturbed sleeping patterns (58.2%), had decreased physical activity (50.3%), and were worried due to reduced social activities (57.1%). Moreover, 12% of respondents had increased smoking/alcoholism behavior and 14% had disturbed family relationships (Table 4). The impact of COVID-19 on financial conditions revealed that 26% of respondents were getting reduced income, and 13% had lost their jobs. One in ten was unable to meet basic needs such as food, water, and home rent (Table 5). In addition, 21% and 19% of respondents reported that they had no gadgets for online classes so virtual classes created more economic burden and online classes have created more stress on children, respectively (Table 6).

**3.3. Associations of Background Variables with Depression, Anxiety, and Stress.** Depressed respondents were significantly more likely than nondepressed respondents to be in the age less than 40 years ( $\chi^2 = 6.652$ ,  $p = 0.010$ ), female ( $\chi^2 = 5.330$ ,  $p = 0.021$ ), unmarried ( $\chi^2 = 6.199$ ,  $p = 0.045$ ), working in a private organization ( $\chi^2 = 14.510$ ,  $p = 0.002$ ), positive with COVID-19 ( $\chi^2 = 15.634$ ,  $p \leq 0.001$ ), in family diagnosed with positive for COVID-19 ( $\chi^2 = 3.890$ ,  $p = 0.049$ ), and in family who stayed in quarantine ( $\chi^2 = 16.704$ ,  $p \leq 0.001$ ). Respondents who perceived that they had little knowledge about COVID-19 ( $\chi^2 = 7.246$ ,  $p = 0.007$ ) had disturbed sleeping pattern ( $\chi^2 = 10.475$ ,  $p = 0.001$ ), had disturbed family relationship ( $\chi^2 = 15.083$ ,  $p \leq 0.001$ ), were unable to go for shopping and lacking essential items at home due to lockdown ( $\chi^2 = 15.849$ ,  $p = 0.001$ ), perceived that online classes cause problems in education ( $\chi^2 = 5.130$ ,  $p = 0.024$ ), lost job due to COVID-19 ( $\chi^2 = 12.043$ ,  $p = 0.002$ ), and were significantly more likely to be depressed than their counterparts ( $\chi^2 = 35.041$ ,  $p \leq 0.001$ ) (Tables 2–6).

Anxious respondents were significantly more likely than nonanxious respondents to be in the age less than 40 years ( $\chi^2 = 4.860$ ,  $p = 0.027$ ), female ( $\chi^2 = 12.792$ ,  $p \leq 0.001$ ), widowed/divorced/separated ( $\chi^2 = 11.343$ ,  $p = 0.003$ ), and positive with COVID-19 ( $\chi^2 = 8.777$ ,  $p = 0.003$ ). Respondents with increased smoking/alcoholism behavior

TABLE 2: Demographic variables and their association with mental health outcomes among the respondents.

Variables	n (%)	Depression (present) n = 150			Anxiety (present) n = 126			Stress (present) n = 98		
		n (%)	$\chi^2$	p value	n (%)	$\chi^2$	p value	n (%)	$\chi^2$	p value
Age (years)										
<40 years	180 (50.8)	96 (53.3)	6.652	0.010*	86 (47.8)	4.860	0.027*	71 (39.4)	0.033	0.856
≥40 years	174 (49.2)	69 (39.7)			63 (36.2)			67 (38.5)		
Sex										
Male	182 (51.4)	74 (40.7)	5.330	0.021*	60 (33.0)	12.792	≤0.001*	50 (27.5)	20.865	≤0.001*
Female	172 (49.2)	91 (52.9)			89 (51.7)			88 (51.2)		
Marital status										
Married	220 (62.1)	94 (42.7)	6.199	0.045*	81 (36.8)	11.343	0.003*	71 (32.3)	11.561	0.003*
Unmarried	126 (35.6)	69 (54.8)			61 (48.4)			62 (49.2)		
Widowed/divorced/separated	8 (2.3)	2 (25.0)			7 (87.5)			5 (62.5)		
Education										
Up to secondary level	66 (18.6)	30 (45.5)	2.933	0.231	22 (33.3)	4.427	0.109	22 (33.3)	5.852	0.054
Bachelor level	164 (46.3)	84 (51.2)			78 (47.6)			75 (45.7)		
Masters and above	124 (35.0)	51 (41.1)			49 (39.5)			41 (33.1)		
Occupation										
Governmental organization	92 (26.0)	34 (37.0)	14.510	0.002*	33 (35.9)	4.743	0.192	15 (16.3)	27.094	≤0.001*
Private organization	112 (31.6)	62 (55.4)			55 (49.1)			51 (45.5)		
Self-employed/daily wages	84 (23.7)	47 (56.0)			37 (44.0)			41 (48.8)		
Unemployed	66 (18.6)	22 (33.3)			24 (36.4)			31 (47.0)		
Monthly income										
50 thousand and below	150 (42.3)	90 (60.0)	9.592	0.035	80 (53.3)	5.482	0.039	66 (44.0)	2.719	0.257
50–80 thousand	156 (44.1)	62 (39.7)			58 (37.1)			57 (36.5)		
Above 80 thousand	48 (13.6)	13 (27.0)			11 (22.9)			15 (31.3)		

( $\chi^2 = 7.676$ ,  $p = 0.006$ ), disturbed sleeping pattern ( $\chi^2 = 15.942$ ,  $p \leq 0.001$ ), decreased physical activity ( $\chi^2 = 7.930$ ,  $p = 0.005$ ), disturbed family relationship ( $\chi^2 = 30.803$ ,  $p \leq 0.001$ ), lack of gadgets for online classes, perception that it has created economic burden in family ( $\chi^2 = 4.206$ ,  $p = 0.040$ ), perceived that online classes created more stress in children ( $\chi^2 = 6.594$ ,  $p = 0.010$ ), who lost job due to COVID-19 ( $\chi^2 = 6.786$ ,  $p = 0.034$ ), and were unable to meet basic needs of the family ( $\chi^2 = 14.663$ ,  $p = 0.005$ ) were significantly more likely to be anxious than their counterparts (Tables 2–6).

Stress was significantly higher among those respondents who were widowed/divorced/separated ( $\chi^2 = 11.561$ ,  $p = 0.003$ ), self-employed or daily wages ( $\chi^2 = 27.094$ ,  $p \leq 0.001$ ), positive with COVID-19 ( $\chi^2 = 4.637$ ,  $p = 0.031$ ), had disturbed sleeping pattern ( $\chi^2 = 12.024$ ,  $p = 0.001$ ), disturbed family relationship ( $\chi^2 = 17.867$ ,  $p \leq 0.001$ ), perceived that online classes causes problems in education ( $\chi^2 = 5.778$ ,  $p = 0.016$ ), and thought that they could not survive if the lockdown continue further ( $\chi^2 = 15.144$ ,  $p = 0.004$ ) (Tables 2–6).

**3.4. Regression Analysis.** The predictors of depression, anxiety, and stress are shown in Table 7. The independent vari-

ables significant with each mental health outcome in univariate analysis were entered as covariates and the model explained 44%, 38%, and 39% (Nagelkerke  $R^2$ ) of variance in depression, anxiety, and stress, respectively.

Respondents less than 40 years (OR = 2.41, 95% CI: 1.27–4.57;  $p = 0.007$ ), who were female (OR = 2.91, 95% CI: 1.42–5.96;  $p = 0.003$ ), who worked in private organization (OR = 3.87, 95% CI: 1.56–9.55;  $p = 0.003$ ), and who perceived that they had little knowledge on COVID-19 (OR = 2.09, 95% CI: 1.02–3.73;  $p = 0.028$ ) were 2.41, 2.91, 3.87, and 2.09 times more likely to exhibit depression than their counterparts, respectively. Furthermore, respondents diagnosed with COVID-19 (OR = 3.01, 95% CI: 1.35–6.60;  $p = 0.006$ ) and those whose family had stayed in quarantine (OR = 2.55, 95% CI: 1.17–5.57;  $p = 0.018$ ) were 3.01 and 2.55 times more likely to have depression. Respondents who were unable to meet the basic needs of the family such as food, water, and home rent due to reduced income (OR = 7.52, 95% CI: 1.96–33.4;  $p = 0.006$ ) were 7.52 times more likely to have depression, compared to those who have perceived no change on living standard as a result of COVID-19. Similarly, respondents who were unable to bring essential things at home due to lockdown (OR = 3.36, 95% CI: 0.95–8.77;  $p = 0.044$ ) and were feeling bored being locked at home (OR = 3.25, 95% CI: 1.18–6.79;  $p = 0.006$ ) were 3.36 and 3.25



TABLE 3: COVID-19-related information and their association with mental health outcome among the respondents.

Variables	<i>n</i> (%)	Depression (present)			Anxiety (present)			Stress (present)		
		<i>n</i> = 150			<i>n</i> = 126			<i>n</i> = 98		
		<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value
COVID-19-positive status										
Yes	86 (24.3)	56 (65.1)	15.634	≤0.001*	48 (55.8)	8.777	0.003*	42 (48.8)	4.637	0.031*
No	268 (75.7)	109 (40.7)			101 (37.7)			96 (35.8)		
Family diagnosed with COVID-19 positive										
Yes	70 (19.8)	40 (57.1)	3.890	0.049*	31 (44.3)	0.173	0.678	31 (44.3)	1.031	0.310
No	284 (80.2)	125 (44.0)			118 (41.5)			107 (37.7)		
Stayed in quarantine/isolation										
Yes	102 (28.8)	54 (52.9)	2.308	0.129	40 (39.2)	0.486	0.486	37 (36.3)	0.442	0.506
No	252 (71.2)	111 (44.0)			109 (43.3)			101 (40.1)		
Family stayed in quarantine										
Yes	72 (20.3)	49 (68.1)	16.704	≤0.001*	38 (52.8)	4.235	0.040*	29 (40.3)	0.064	0.801
No	282 (79.7)	116 (41.1)			111 (39.4)			109 (38.7)		
Use of social media to get news about COVID-19										
Yes	320 (90.4)	146 (45.6)	1.320	0.251	137 (42.8)	0.336	0.562	125 (39.1)	0.30	0.863
No	31 (9.6)	18 (56.3)			12 (37.5)			12 (37.5)		
Perceived knowledge regarding COVID-19										
Enough knowledge	138 (39.0)	52 (37.7)	7.246	0.007*	52 (37.7)	1.804	0.179	51 (37.0)	0.390	0.532
Little knowledge	216 (61.0)	113 (52.3)			97 (44.9)			87 (40.3)		

times more likely to have depressive symptoms than those who enjoyed the lockdown as they were having more time with family members (Table 7).

Similarly, the significant predictors of anxiety were those who were less than 40 years (OR = 2.07, 95% CI: 1.12–3.82;  $p = 0.019$ ), female (OR = 4.52, 95% CI: 2.32–8.79;  $p = \leq 0.001$ ), divorced/separated (OR = 7.53, 95% CI: 1.49–10.12;  $p = 0.045$ ), diagnosed with COVID-19 (OR = 1.83, 95% CI: 1.09–5.32;  $p = 0.040$ ), lost job due to effect of COVID-19 (OR = 5.05, 95% CI: 1.45–17.7;  $p = 0.012$ ), were unable to meet basic needs (OR = 2.29, 95% CI: 1.08–7.85;  $p = 0.042$ ), had no gadgets for online classes so perceived economic burden (OR = 1.32, 95% CI: 1.56–3.46;  $p = 0.041$ ), thought online classes have created more stress on children (OR = 1.58, 95% CI: 1.09–6.56;  $p = 0.031$ ), had changed sleeping pattern (OR = 3.36, 95% CI: 1.09–6.22;  $p = 0.030$ ), and had disturbed family relation due to COVID-19 lockdown (OR = 1.97, 95% CI: 1.01–8.52;  $p = 0.042$ ) (Table 7).

Furthermore, being female (OR = 5.00, 95% CI: 2.69–9.77;  $p = \leq 0.001$ ), working in private organization (OR = 7.35, 95% CI: 2.82–19.0;  $p \leq 0.001$ ), self-employed or daily wages (OR = 5.95, 95% CI: 2.14–16.7;  $p = 0.001$ ), unemployed (OR = 9.53, 95% CI: 3.33–24.5;  $p = \leq 0.001$ ), unable to meet basic needs (OR = 5.78, 95% CI: 1.68–19.8;  $p = 0.005$ ), having perception that the family cannot survive if COVID-19 lockdown continues (OR = 3.45, 95% CI: 0.81–19.6;  $p = 0.043$ ), having disturbed sleeping pattern (OR = 2.33, 95% CI: 1.17–4.58;  $p = 0.016$ ), and having disturbed family relation due to COVID-19 condition (OR = 3.96, 95% CI: 1.53–10.2;  $p = 0.004$ ) were significant predictors of stress among the respondents (Table 7).

#### 4. Discussion

The emergence of COVID-19 and lockdown measures to combat its spread has exacerbated depression, anxiety, and stress in people globally, leading to mental health disorders. Based on DASS-21 scores, the prevalence of depression, anxiety, and stress was 46.6%, 42.1%, and 39%, respectively. Similar to our study findings, a study conducted in Bangladesh during the COVID-19 pandemic also reported depression 38% and anxiety 64% [33]. Another study conducted in China also reported depression and anxiety 58.6% and 41.2%, respectively [34]. However, a slightly lower prevalence was found in a systematic review and meta-analysis conducted during COVID-19 pandemic [35]. Other review articles have also reported similar findings concerning the prevalence of depression, anxiety, and stress [36, 37]. The higher prevalence observed in the present study might be attributed to the timing of data collection, which was the peak phase of the second wave of the COVID-19 pandemic in Nepal. In contrast, the above-mentioned studies were conducted during the initial phase of the pandemic. Furthermore, the differences observed between countries might be multifactorial such as overall healthcare systems, government response systems, exposure to negative media, and perceived lack of preparedness [15].

The current study also identified an increased percentage of people with moderate to severe levels of mental health problems. In contrast to our findings, a study from Nepal found a low prevalence of mental health problems during COVID-19. The study identified 93.2% (no), 3.4% (mild), 2.8% (moderate), and 0.6% (severe) respondents with the

TABLE 4: Impact of COVID-19 lockdown on personal and social life and their association with mental health outcome among the respondents.

Variables	n (%)	Depression (present)			Anxiety (present)			Stress (present)		
		n (%)	$\chi^2$	p value	n (%)	$\chi^2$	p value	n (%)	$\chi^2$	p value
Perceived impact of lockdown										
Having more time with family, so enjoying	106 (29.9)	35 (33.0)	15.849	0.001*	36 (34.0)	4.175	0.243	33 (31.1)	4.581	0.205
Feeling lonely, missing family members	28 (7.9)	10 (35.7)			13 (46.4)			11 (39.3)		
Unable to go for shopping, lacking essential items at home	30 (8.5)	19 (63.3)			13 (43.3)			11 (36.7)		
Feeling bored, worried being locked at home	190 (53.6)	101 (53.2)			87 (45.8)			83 (43.7)		
Increased smoking/alcoholism behavior										
Yes	42 (11.9)	21 (50.0)	0.220	0.639	26 (61.9)	7.676	0.006*	19 (45.2)	0.784	0.376
No	312 (88.1)	144 (46.2)			123 (39.4)			119 (38.1)		
Disturbed sleeping pattern										
Yes	206 (58.2)	111 (53.9)	10.475	0.001*	105 (51.0)	15.942	≤0.001*	96 (46.6)	12.024	0.001*
No	148 (41.8)	54 (36.5)			44 (29.7)			42 (28.4)		
Decreased physical activity										
Yes	178 (50.3)	92 (51.7)	3.706	0.065	88 (49.4)	7.930	0.005*	78 (43.8)	3.522	0.061
No	176 (49.7)	73 (41.5)			61 (34.7)			60 (34.1)		
Disturbed family relationship										
Yes	50 (14.1)	36 (72.0)	15.083	≤0.001*	39 (78.0)	30.803	≤0.001*	33 (66.0)	17.867	≤0.001*
No	304 (85.9)	129 (42.4)			110 (36.2)			105 (34.5)		
Worried about unable to do social activities										
Yes	202 (57.1)	94 (46.5)	0.001	0.974	88 (43.6)	0.419	0.517	86 (42.6)	2.551	0.110
No	152 (42.9)	71 (46.7)			61 (40.1)			52 (34.2)		

feature depression. Similarly, 86.2% (no), 5.3% (mild), 6.0% (moderate), and 2.4% (severe) anxiety and 95.0% (no), 2.6% (mild), 1.1% (moderate), and 1.3% (severe) stress [30]. Though the overall rate was low in that study, moderate to severe level of depression, anxiety, and stress was reported by 50%, 61%, and 48% of the respondents, respectively [30]. This was similar to our study findings which revealed 52.1%, 75.8%, and 57.2%, moderate to severe level of depression, anxiety, and stress, respectively. Another study conducted among Italian people also found 17% and 15.8% of respondents under the high and very high depression subscale, 7.2% and 11.5% under the high and very high anxiety subscale, and 14.6% and 12.6% under the high and very high stress subscale [38].

In the present study, people with younger age (less than 40 years) were more likely to have depression and anxiety

than those more than or equal to 40 years (older) age group. Consistent with our finding, other studies conducted among the general population during the COVID-19 pandemic also showed an inverse correlation between age and depression, anxiety, and stress [24, 35, 39–42]. The reason for this finding might be the nature of the younger age group. The young age groups are more active, energetic, concerned over their future, and have greater work and financial responsibilities, therefore mostly affected by lockdown measures [35, 41]. In addition, depression, anxiety, and stress were higher among female than male respondents. Previous studies conducted during pandemic have consistently reported the female gender as the significant predictor of poor mental health [33, 38–42]. Studies conducted in Nepal also found a higher prevalence of psychological distress and mental health problems among the female population [30, 43]. As

TABLE 5: Impact of COVID-19 on financial condition and their association with mental health outcomes of the respondents.

Variables	<i>n</i> (%)	Depression (present) <i>n</i> = 150			Anxiety (present) <i>n</i> = 126			Stress (present) <i>n</i> = 98		
		<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value
COVID-19 impact on income										
Work not affected	216 (61.0)	86 (39.8)			82 (38.0)			80 (37.0)		
Getting reduced amount of money	92 (26.0)	49 (53.3)	12.043	0.002*	40 (43.5)	6.786	0.034*	36 (39.1)	1.857	0.395
Lost job	46 (13.0)	30 (65.2)			27 (58.7)			22 (47.8)		
COVID-19 impact on living standard										
No change	166 (46.9)	81 (48.8)	35.041	≤0.001*	68 (41.0)	14.663	0.005*	63 (38.0)	15.144	0.004*
Used previous years' saving	120 (33.9)	37 (30.8)			40 (33.3)			41 (34.2)		
Unable to meet financial obligations such as loan and electricity	22 (6.2)	11 (50.0)			11 (50.0)			5 (22.7)		
Unable to meet basic needs such as food, water, and home rent	36 (10.2)	31 (86.1)			24 (66.7)			22 (61.1)		
My family cannot survive if the condition continues further	10 (2.8)	5 (50.0)			6 (60.0)			7 (70.0)		

TABLE 6: Perceived impact of COVID-19 on education of children and their association with mental health outcomes of the respondents.

Variables	<i>n</i> (%)	Depression (present)			Anxiety (present)			Stress (present)		
		<i>n</i> = 150			<i>n</i> = 126			<i>n</i> = 98		
		<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value	<i>n</i> (%)	$\chi^2$	<i>p</i> value
Online classes going on so no problems in education										
Yes	74 (26.1)	24 (32.4)	5.130	0.024*	27 (36.5)	0.556	0.456	20 (27.0)	5.778	0.016*
No	210 (73.9)	100 (47.6)			87 (41.4)			90 (42.9)		
No gadgets for online classes, it has created more economic burden										
Yes	60 (21.1)	25 (41.7)	0.123	0.726	31 (51.7)	4.206	0.040*	22 (36.7)	0.137	0.711
No	224 (78.9)	99 (44.2)			83 (37.1)			88 (39.3)		
Online classes created more stress on children										
Yes	54 (19.0)	29 (53.7)	2.733	0.098	30 (55.6)	6.594	0.010*	25 (46.3)	1.608	0.205
No	230 (81.0)	95 (41.3)			84 (36.5)			85 (37.0)		

explained by Kuehner, the higher prevalence of mental health problems among females might be due to the influence of sex hormones, high rate of interpersonal stressors, increased risk of violence, and abuse among females [44]. Moreover, divorced/separated people are significantly at higher risk of having the symptoms of anxiety than married people. Literature has consistently demonstrated that being married is a protective factor for mental health problems [41].

Restriction on movement and closure of the businesses and offices due to COVID-19 lockdown had a widespread impact on people's livelihoods and ability to go out to work. The present study found that people who worked in private organizations had a higher level of depression and stress than those who worked in government organizations. Simi-

larly, self-employed or daily wages and unemployed were also at a higher risk of having stress than those who worked in government organizations. Loss of income, irregular income, or a reduced amount of salary to the workers of small enterprises and private organizations placed many livelihoods at risk [10, 45]. In addition, people on daily wages and self-employed were severely affected due to the lockdown led by the pandemic [17, 45, 46]. The economic crisis caused by these conditions is significantly associated with a decrease in mental wellbeing and increased rates of several mental disorders [17, 47]. Furthermore, our study found that people who thought that their family cannot survive if the COVID-19 lockdown continued were also at risk of having stress in life. People who had difficulties to meet the basic needs of the family such as food, water, and home

TABLE 7: Binary logistic regression analysis for the predictors of DASS-21 among the respondents.

Variables		Depression			Anxiety			Stress		
		OR	p value	95% CI	OR	p value	95% CI	OR	p value	95% CI
Age (ref. ≥40 years)	<40 years	2.41	0.007*	1.27–4.57	2.07	0.019*	1.12–3.82			
Sex (ref. male)	Female	2.91	0.003*	1.42–5.96	4.52	≤0.001*	2.32–8.79	5.00	≤0.001*	2.69–9.77
Marital status (ref. married)	Unmarried	0.91	0.816	0.41–1.98	0.93	0.854	0.46–1.89	0.88	0.742	0.42–1.85
	Divorced/separated	0.26	0.183	0.36–1.88	7.53	0.045*	1.49–10.12	1.12	0.895	0.19–6.41
Occupation (ref. government organization)	Private organization	3.87	0.003*	1.56–9.55				7.35	≤0.001*	2.82–19.0
	Self-employed/daily wages	2.45	0.111	0.81–7.41				5.95	0.001*	2.14–16.7
	Unemployed	1.05	0.918	0.41–2.63				9.53	≤0.001*	3.33–24.5
COVID-19 infected (ref. no)	Yes	3.01	0.006*	1.35–6.60	1.83	0.040*	1.09–5.32	1.23	0.534	0.78–2.43
Family member COVID-19 infected (ref. no)	Yes	2.10	0.080	0.91–4.83						
Family stayed in quarantine (ref. no)	Yes	2.55	0.018*	1.17–5.57	1.02	0.936	0.51–2.02			
COVID-19 impact on income (ref. work not affected)	Getting reduced amount of money	1.06	0.921	0.33–2.35	1.21	0.647	0.52–2.85			
	Lost job	1.81	0.427	0.41–7.93	5.05	0.012*	1.45–17.7			
COVID-19 impact on living standard (ref. no change)	Using previous years' saving so only little change on living standard	0.36	0.011	0.16–0.79	1.17	0.688	0.54–2.52	1.01	0.96	0.52–1.98
	Unable to meet financial obligations such as loan	0.99	0.993	0.25–3.86	1.51	0.567	0.36–6.29	1.03	0.327	0.78–1.44
	Unable to meet basic needs such as food, water, and home rent	7.52	0.006*	1.96–33.4	2.29	0.042*	1.08–7.85	5.78	0.005*	1.68–19.8
	If the condition continues, my family cannot survive	1.02	0.832	0.15–6.36	1.13	0.896	0.16–7.90	3.45	0.043*	0.81–19.6
COVID-19 impact on education of children										
Online classes going on so there is no problem (ref. no)	Yes	0.66	0.840	0.40–2.20				0.90	0.794	0.40–2.27
No gadgets for online classes, created economic burden (ref. no)	Yes				1.32	0.041*	1.56–3.46			
Online classes have created more stress on children (ref. no)	Yes				1.58	0.031*	1.09–6.56			
Perceived impact of lockdown (ref. having more time with family, enjoying)	Feeling lonely, missing family members	1.70	0.412	0.39–5.54						
	Unable to go for shopping, lacking essential items	3.36	0.044*	0.95–8.77						
	Feeling bored being locked at home	3.25	0.006*	1.18–6.79						
Increase/initiation of smoking/alcoholism (ref. no)	Yes				2.86	0.042	1.03–7.87			



TABLE 7: Continued.

Variables		Depression			Anxiety			Stress		
		OR	<i>p</i> value	95% CI	OR	<i>p</i> value	95% CI	OR	<i>p</i> value	95% CI
Change in sleeping pattern (ref. no)	Yes	1.09	0.836	0.47–2.48	3.36	0.030*	1.09–6.22	2.33	0.016*	1.17–4.58
Decreased physical activity (ref. no)	Yes	1.39	0.397	0.64–3.05	1.06	0.860	0.52–2.14			
Disturbed family relation (ref. no)	Yes	1.02	0.965	0.36–2.89	1.97	0.042*	1.01–8.52	3.96	0.004*	1.53–10.2
Perceived knowledge on COVID-19 (ref. enough)	Little knowledge	2.09	0.028*	1.02–3.73						

rent compared to those who perceived no change in the living standard were also more likely to experience depression, anxiety, and stress. The previous study from Nepal also found a higher level of stress and depression among the people living in rented houses [30]. Another survey also reported that 55% of households in Nepal had lost their source of income and one-third of the population was in shortage of food, medicines, cooking fuel, soap, and toothpaste [48]. Many studies have reported associations of occupation, income, and economic conditions with mental health problems [10, 49, 50]. Emerging evidence indicates that the people with low household income have a higher prevalence of depression and anxiety [51].

Apart from the impact of the pandemic on family income and living standards, the education system of the country was adversely affected due to the closure of schools and the beginning of virtual classes. The situation did not only increase the burden on the family to buy gadgets for their children for online classes and turn their home into a learning center but also on the children to adapt to the changing teaching-learning style [8, 17, 52, 53]. Consistent with this finding, the present study showed that 21% and 19% of the respondents had no gadgets for online classes for their children so perceived an economic burden and thought that online classes have created more stress on children, respectively. These respondents had a significantly higher level of anxiety than others.

The result further indicated that individuals who felt lonely and missed family members during the pandemic were more anxious. In agreement with our findings, many studies have reported that loneliness or individuals living alone are at risk of having different mental health problems [33, 51, 54]. Studies from Nepal also highlighted that people living alone or far from their families are at risk of developing psychological distress [30, 43]. Other important findings of the current study were that people who had a change in their sleeping pattern were more anxious and those who had disturbed family relationships due to COVID-19 lockdown were highly anxious as well as stressed. More than half of the respondents (58%) had altered sleeping patterns and 14% had disturbed family relationships. The vast majority of previous research has emphasized that the stress of COVID-19 infection, loss of work, financial crisis, loneliness,

and quarantine cause insomnia [55–57]. In addition, the level of insomnia is significantly correlated with an unfavorable mental health condition [51]. In line with the present study findings, evidence suggests an increased incidence of domestic and intimate partner violence during a pandemic, which may be due to the stress of economic recession, unemployment, social isolation, disruption of daily routines, and an increase in the workload on women [18, 19, 55, 58]. The quality of family relationships including marital strain, unhealthy conflict, and marital dissolutions created stress and undermine the mental health of partners [23, 59].

Other predictors of depression in the current study were the people whose family members stayed in quarantine, who were unable to bring essential things into the home due to the closure of the market and lack of transportation, who felt bored being locked at home, and those who perceived they had little knowledge regarding COVID-19. Restriction of the movement, loss of routine social contact, social isolation, boredom, loneliness, inadequate supplies led by unprecedented lockdown measures, and quarantine are the important risk factors associated with the psychological disorders among individuals [55]. Inconsistent with our findings, recent articles have reported a greater level of psychological problem among those who stayed in quarantine compared to nonquarantined respondents [42, 55, 60]. Insufficient knowledge about the virus, preventive measures, treatment procedures, and fatality rate contributes to mental health problems [33]. Access to information and knowledge about COVID-19 infection, its clinical features, and preventive measures is associated with a lower risk of mental health problems [40, 50]. Consistent with the previous studies [50, 61], the present study also showed that individuals who reported a history of COVID-19 infection had a significantly higher level of depression and anxiety. The uncertainty about own physical condition, fear of dying, and experience of being isolated from family members can be the risk factors for the development of depression and anxiety in COVID-19-positive people [62, 63].

Recurrent waves of COVID-19 with a new variant induced the public with COVID-19 pandemic fatigue which might pose a serious threat on adherence to protective behaviors [64]. The study recommends the government to give more attention to the aforementioned vulnerable

groups of the population and implement stringent policies to lower the prevalence of clinically significant depressive symptoms [65]. The federal, provincial, and local governments need to work to safeguard the employment and economy of the country. The health authorities should offer psychological interventions to the general population who are at higher risk of developing adverse mental health. The government should increase testing and tracing capacity as well as isolation and quarantine centers. It should vaccinate its population as soon as possible and provide regular updates on the effectiveness of vaccines and treatment methods [4] as the willingness to pay for COVID-19 vaccination differs between psychiatric patients and healthy individuals [66]. Furthermore, to minimize the detrimental impact of fake news, the government must ensure the appropriate and timely dissemination of evidence-based COVID-19-related information to the public. In addition, during the pandemic, it might be beneficial to introduce online psychoeducation and psychological interventions such as cognitive behavioral therapy, digital cognitive behavioral therapy for insomnia, and mindfulness-based cognitive therapy to promote mental wellness [14, 67, 68].

## 5. Conclusion

COVID-19 pandemic, along with lockdown measures such as travel restrictions and closure of educational institutions, work place, and industries, has adversely affected the mental health of the people in our country. Compared to other studies, this study showed an increased prevalence of depression, anxiety, and stress; the reason behind it might be that this study was conducted during the second wave of the COVID-19 infection when people were already hit hard by the first wave and lockdown measures. Although lockdown, quarantine, and isolation were effective measures to halt the infection, the unpleasant experience brought by COVID-19 lockdown such as loss of job, the financial crisis resulting in the inability to meet the basic needs of the family, loneliness, loss of freedom, feeling of bored being locked at home, the economic burden of online education, and the stress of virtual classes on children has been found as the significant predictor of one or more form of mental health problem. Furthermore, people who were younger, female, divorced/separated, worked in private organizations, unemployed, self-employed or daily wages, infected with COVID-19, had family stayed in quarantine, perceived little knowledge on COVID-19, and had altered sleeping patterns and disturbed family relationships were at greater risk of having a mental health problem.

Since the nature and extent of the impact on mental health are influenced by many factors, identifying and targeting people who might be at the risk of heavy psychological burden is warranted. Furthermore, to minimize the negative impact of the pandemic on the mental health of the people, the Government of Nepal needs to address various issues affecting the individual's life along with the measures that are considered effective to combat the pandemic.

## 6. Limitations

Due to the cross-sectional nature of the study, causality cannot be determined. The study may not represent all the classes of the population such as the uneducated, elder, poor, and those who do not have access to smartphones and the internet, which may limit the generalizability of our findings. On the other hand, it is difficult to ascertain whether the sample solely represents the breadwinner of the family or not. Furthermore, the present study finding which is based on peoples' self-reported mental health symptomatology may differ from clinical assessment and functional neuroimaging by professionals as recent studies have reported that COVID-19 pandemic can cause hemodynamic changes in the brain [69, 70]. In addition, the self-report survey might have influenced the result via various biases (method bias, social desirability bias, and recall bias). Future research may use a longitudinal design to provide information regarding the impact of the pandemic in the long run. Furthermore, a larger sample size and face-to-face interviews along with psychiatric examination by the expert could add richness to the findings.

## Abbreviations

COVID-19:	Coronavirus disease 2019
DASS-21:	Depression, Anxiety, and Stress Scale-21
SARS-CoV-2:	Severe acute respiratory syndrome coronavirus 2
UNFPA:	United Nations Population Fund
WHO:	World Health Organization
WOREC:	Women's Rehabilitation Center.

## Data Availability

The survey questionnaire as well as the datasets used during the current study is available from the corresponding author on reasonable request.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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