

Anxiety, Depression, and Stress among Female Community Health Volunteers during COVID-19 Pandemic in Province 1, Nepal

Saraswati Basnet^{1*} and Suvekshya Silwal²

¹Lecturer, Adult Health Department, Tribhuvan University Institute of Medicine Biratnagar Nursing Campus, Biratnagar.

²Instructor, Adult Health Department, Tribhuvan University Institute of Medicine Biratnagar Nursing Campus, Biratnagar.

*Corresponding author

Saraswati Basnet, Lecturer Tribhuvan University Institute of Medicine Biratnagar Nursing Campus, Biratnagar, Nepal.

Submitted: 09 Nov 2022; Accepted: 30 Nov 2022; Published: 10 Dec 2022

Citation: Saraswati Basnet and Suvekshya Silwal (2022). Anxiety, Depression, and Stress among Female Community Health Volunteers during COVID-19 Pandemic in Province 1, Nepal. *Arch Epidemiol Pub Health Res*, 1(2), 84-96.

Abstract

Introduction

Female Community Health Volunteers (FCHVs) are an integral part of various community-based health programs visiting households and communities to screen for diseases, risk factors and educate on basic health issues. A profound and wide range of psychological health issues (anxiety, stress, and depression) at the individual, community, and international levels has been reported during the COVID-19 outbreaks.

Methods

An analytical cross-sectional study design was used to assess the anxiety, depression, and stress level among rural and urban FCHVs during the COVID-19 in Province 1. A multistage random sampling technique was used to select the sample. The total sample size was 384. Semi-structured structured valid Depression, Anxiety and Stress Scale (DASS-21) was used for measuring the Depression, Anxiety, and Stress level of FCHVs. Descriptive analysis i.e. frequency, percentage, mean, median, and standard deviation was used to assess the level of anxiety, depression, and stress among adults. Inferential analysis i.e. logistic regression was used to find the association between dependent and selected demographic variables.

Findings

The study revealed that the prevalence of extremely severe levels of anxiety was 35.5 % of the Female Community Health Volunteers (FCHVs) 23.4% of moderate level of stress and 21.6% of respondents were a severe level of depression respectively. There is significant association between level anxiety and ethnicity ($p=0.040$; $OR=1.562$; $CI=1.021-2.390$), occupation ($p=0.013$; $OR=3.861$; $CI=1.325-11.249$) and place of residence ($p\leq 0.001$; $OR=1.959$; $CI=1.470-3.413$). There is significant association between level stress and occupation ($p=0.037$; $OR=3.363$; $CI=1.074-10.531$) place of residence ($p=0.005$; $OR=1.817$; $CI=1.193-2.767$). There is significant association between level depression and ethnicity, occupation ($p\leq 0.001$; $OR=2.117$; $OR=1.391-3.222$) and place of residence ($p=0.026$; $OR=3.371$; $CI=1.158-9.812$).

The study concluded that the female community Health Volunteers was mild, moderate, severe and extremely severe level of anxiety, stress and depression level so prompt psychiatric intervention to enhance the mental wellbeing of FCHVs.

Keywords: Anxiety, Stress and Depression, Female Community Health Volunteer, Logistic Regression.

Introduction

Female Community Health Volunteers (FCHVs) are the pillars of community health programs in Nepal. Being healthcare representatives in community settings, they play a crucial role to prevent and control the COVID-19 pandemic by educating the community

on social distancing principles, hand hygiene, and safety measures. However, due to overburden of large coverage area, technical incompetence in different aspects of health, inadequate knowledge, sometimes lack of family support, fewer competencies in digital reporting, and limited access to mass media, they may face various forms of imputation, isolation, and can be socially blackballed

in the community [1, 2]. In South Africa, the important role of Community Health Workers (CHWs) during this pandemic has been highlighted by improving COVID-19 health education and early screening [3, 4]. Over 1 million COVID-19 screening activities were conducted over 9 months in the study district concluded they are means to provide equitable, affordable access to quality basic health services directly to the community [5]. Low and Middle-Income Countries (LMICs) are increasingly strengthening their CHW programs, for attaining the purpose of universal health coverage, as an affordable and critical intervention [6, 7]. Furthermore, the study conducted among 1139 Health Care Workers (HCWs) working in Oman finding shows that nearly 32.3% of them had depression, 34.1% had anxiety, 23.8% had stress and 18.5% had insomnia respectively. HCWs working in the frontline group were 1.5 times more likely to report anxiety and insomnia as compared with those in the non-frontline group. HCWs had higher hopelessness and anxiety levels than non-HCWS [8].

In Nepal, the network of Female Community Health Volunteers created in 1988 provides support for maternal and child health through the sharing of information and collaboration with local health services and plays a vital role in the healthcare system. [9] In fiscal year 1988/89, the Government of Nepal (GoN) initiated this program in 27 districts by selecting one Female Community Health Volunteer per ward regardless of the population size, and later in 1993/94, a population-based approach was introduced in selected 28 districts. Then the program was established in all 75 districts by 1995. Altogether there are 51,416 FCHVs in the country (46,088 FCHVs at rural/Rural Municipality level and 5,328 at urban/municipality level). The major roles of the FCHV are the linkage between the health facility and the community and providing referral services, especially for Maternal and Child Health (MCH) services, Community Based- Integrated Management of Neonatal and Childhood Illness (CB-IMNCI) services [10]. FCHVs make door-to-door visits and counsel parents about getting their children vaccinated. During the earthquake in Nepal, they were on the front lines, providing psychological support to prevent post-traumatic stress disorder in victims [11]. GoN has acknowledged that the FCHVs have contributed significantly to achieving the milestones of Nepal's Millennium Development Goals 4 and 5 by providing basic health services to women and children in the community. They counsel mothers, dispense health commodities such as zinc, ORS, pills, or condoms, and refer to health centers by screening [13]. The benefits to community women from the female volunteers' work were significant; as a result pregnant women and mothers from the poorest communities were aware of existing healthcare services and would visit health centers [12]. FCHVs being the first contact health workers in the community faced anxiety and stress during the COVID-19 pandemic in Nepal because of their limited activities, resources, and training to handle immediate outbreak response [14].

FCHVs play a crucial role and key team members of COVID-19 prevention group which is accountable for prevention and control of COVID 19 at ward level. FCHVs have numerous qualities for

mobilize their communities, they have been successful in building trust and rapport with the people in their respective areas; available 24 hours and can be mobilized immediately. [2]

Materials and methods

Data was collected using Standard Valid Depression, Anxiety and Stress Scale (DASS-21) was used as the research instruments.

Ethical approval: Ethical clearance for the study was obtained from the Ethical Review Board of Nepal Health Research Council (Ref. No-1135/22 November, 2021), and written informed consent was obtained from each of the participants. The consent was documented from each respondent before the initiation of the response. Before data collection, all the participants were informed about the aims, objectives, and background of the study. Likewise, they were also informed regarding the risks and benefits of the study. Only those willing to participate and those providing informed consent were included in the study. Participants had the right to withdraw from the study at any point, if they so wish, without any negative repercussions. Confidentiality of the participant was maintained throughout the study and after data collection.

Study design: A quantitative analytical cross-sectional study was used to assess the anxiety, depression, and stress level among rural and urban female community health volunteers during the COVID-19 in Province No 1.

Study Setting and Population: The setting of the study was all wards of selected rural and urban municipalities of Province 1. Province no. 1 is divided into 14 districts and then those districts are subdivided into Municipalities. There is one metropolitan city i.e. Biratnagar, two sub-metropolitan cities i.e. Itahari and Dharan. Altogether, there are 46 municipalities and 88 rural municipalities [16]. The population of Province No. 1 is 4,534,943 among which total FCHVs is 51470 (including 47,328 FCHVs at rural/ VDC level 4142 at urban/municipality) in Nepal [17]. The study population was recruited from all FCHVs of selected rural and urban municipalities of Province No 1.

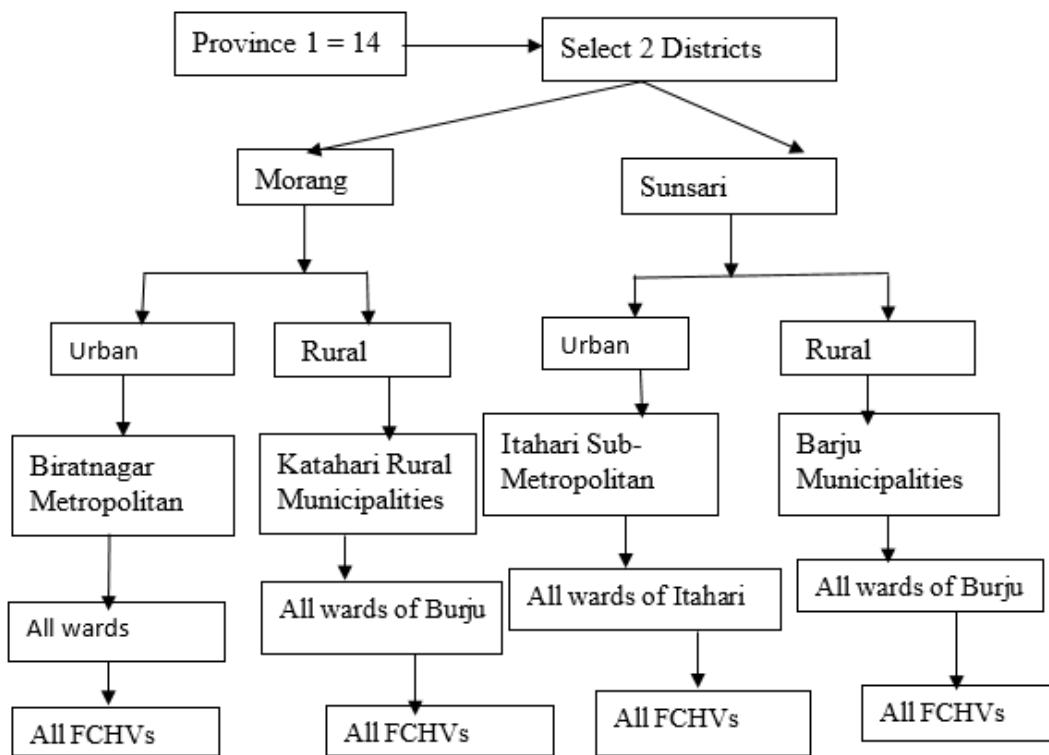
Study Population: The study population was all the FCHVs of one Metropolitan, one sub-metropolitan, and two rural municipalities (Biratnagar Metropolitan, Budiganga rural municipality of Morang district, and Itahari Sub metropolitan and Barju rural municipality of Sunsari district). The age of the study population was 20 to 60 years of FCHVs of Morang and Sunsari districts of Province No 1.

Sampling technique and sample size: For this study, a multistage random sampling technique was used for the selection of the sample. At the first stage, a total of two districts were selected by using a simple random technique among the 14 districts of Province No. 1. At the second stage, two municipalities (one urban and one rural) were selected from each district via a simple random sampling (lottery) method. However, the administrative and ethical clearance purpose of the NHRC, lottery method has been conducted among 14 districts of province 1 where Morang and Sunsari had

been withdrawn. In Morang district altogether there are 17 municipalities (1 metropolitan, 8 urban municipalities, and 8 rural municipalities). Similarly in Sunsari district altogether there are 12 municipalities (two sub-metropolitans, four urban municipalities and six rural municipalities). Among 17 municipalities Biratnagar metropolitan as urban and Budiganga as the rural municipality had been selected by simple random method from the Morang district. Likewise, Sunsari district Itahari sub-municipality as urban and Barju as rural municipalities was selected by simple random (lottery method) technique among 12 municipalities from Sunsari districts. Total FCHVs were selected by the census method from these four municipalities.

Criteria for sample selection: first setting of the sample (Metropolitan, sub-metropolitan, and two rural municipalities) was selected with the bottleneck rotation method which is neck pointed direction was selected first then done accordingly. But the sample (FCHVs) was selected for the census method. Inclusion Criteria were those all-female community health volunteers present who were available at the time of data collection and were willing to participate in the study. Exclusion Criteria was the participants diagnosed with any kind of mental illness: depression, anxiety, and other psychological problems.

Sampling Frame



Sample Size: The sample size was calculated based on Cochran's formula.

$$I.e. \text{ Sample size } (n) = z^2pq/d^2$$

$$z = 1.96 \text{ at } 95\% \text{ Confidence Level}$$

$p = 42\% = 0.42$ (prevalence=41.9%~42%, obtained from the study on prevalence of mental health impacts among health workers during COVID-19 in a low resource setting: a cross-sectional survey from Nepal [29]).

$$q = 1 - p = 1 - 0.42 = 0.58$$

$$d = \text{allowable error } (5\% = 0.05)$$

Then, after calculation, the sample size was 412 after adding 10% non-response but available total respondents were only 384 during data collection.

Instrumentation: A structured interview schedule was developed by researchers based on the objectives of the study. The study instrument was divided into two parts: Part 1: Socio-Demographic information of the participant Part 2: Questions related to interpersonal factors (social support system, social network, family, friendship, workgroup network) and organization factors (Policy-rules & regulation, Workplace, climate) of the participants. Part 3: Standard Valid Depression, Anxiety and Stress Scale (DASS 21). The instrument was translated in Nepali with the help of bilingual experts and as well as the back translation was done. Pretesting of the instrument was done among 10% (i.e. 41, where $n=412$) among FCHVs of Jhapa district for any clarity and modification in the research tool [19].

Table 1: The Recommended Cut-Off Scores for Conventional Severity Levels (Normal, Moderate, Severe) Are as Follows.

Severity Level	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Note: Total Scores need to be multiplied by 2 to calculate the final score.

Validity and reliability of tool: The tool consists of three-part, part I consist of socio-demographical portion, part II consists of interpersonal factors of FCHVs, and part III consists of standard valid Depression, Anxiety and Stress Scale (DASS 21) was adopted which is developed by Lovibond & Lovibond. [19] It is used in various settings and various researchers in the world as well as Nepal too. The tool further consultation with research experts too for maintaining validity. The English version of the tool was translated into Nepali version by bilinguistic experts. The team researchers assess each item of the instruments along with all study variables for its relevancy by using the evaluation method via pretesting of the instruments and interview to measure the anxiety, depression, and stress level of the FCHVs. Each item of the tool measures the same theoretical construct asset objective of the study. The content validity was maintained by consultation with subject experts. For maintaining consistency, the principal researcher herself was engaged in data collection and monitoring, data entry, editing, and processing and analysis procedure.

Data Collection Procedure: Data Collection Technique Data was collected via face-to-face interviews using a structured interview schedule for about one and half months (30th November to 30th December 2021). Each participant has explained the nature and purpose of the study. Safety precautions were maintained (physical distancing, using mask and sanitizer) before an interview. Informed consent (both verbal & written) was taken before performing the interview. The time duration for each interview was about 15-20 minutes. Collected data was checked for its completeness and editing was done on the same day to prevent recall bias, ensure the quality & accuracy of the study.

Data Analysis Procedure: Collected data was checked daily for its completeness. All the data was kept for editing and coding. At first data entry was done in MS-excel followed by using the computer Statistical Package for the Social Sciences (SPSS) version 20.00. Descriptive analysis i.e. frequency, percentage, mean, median, and standard deviation was used to assess anxiety stress and depression level of the Female community health Volunteer of province one. Inferential analysis i.e. logistic regression was used to find the association between dependent and selected demographic variables p-value of >0.05 was considered to indicate statistical significance at a 95% confidence level. Analyzed data was presented in the relevant tabular form.

Results

Table 2: Socio-Demographic Characteristics of The Respondents n=384

Variable	frequency (f)	Percentage (%)
Age		
20 to 40 years	84	21.9
41 to 60 years	277	72.1
>60	23	6.0
Mean±SD	47.51±9.28	
Sex		
Male	1	0.3
Female	383	99.7
Ethnicity		
Brahmin/Chhetri	152	39.6
Janajati	34	8.9
Madeshi	174	45.3
Muslim	14	3.6
Dalit	10	2.6
Religion		
Hindu	366	95.3
Buddhist	2	0.5
Muslim	14	3.6
Christian	2	0.5
Education		
Literate only	106	27.6
Primary	48	12.5
Secondary	104	27.1
SLC	108	28.1
Bachelor and above	18	4.7
Occupation		
FCHVs with Service	9	2.3
FCHVs with Business	10	2.6
only FCHVs	365	95.1

Type of Family		
Nuclear	255	66.5
Joint	129	33.5
Marital status		
Married	381	99.2
Unmarried	3	0.8
Personal habit		
Relax	381	99.2
Tense	3	0.8
Place of Residence		
Urban	200	58.1
Rural	184	47.9

Table 2 showed that nearly third-fourth (72.1%) of respondents were aged 40 to 60 years of age and 21.9% of respondents were aged 20 to 40 years. The mean age was 47.5 years whereas only 6.0% of respondents were aged above 60 years. Almost of the (99.7%) respondents were Female whereas only 0.3 % was male. Less than half (45.3%) of the respondents were Madhesi and more than one-third (39.6%) of respondents were Brahmin and Chhetri. Only 2.6% of Respondents were Dalit. Most of them (95.3%) of respondents were Hindu whereas 0.5% of respondents were Buddhist and Christian. More than one-fourth (28.1%) of the respondent's education level was SLC whereas only 4.7% of respondents' education level was Bachelor and above. almost (95.1%) of the respondent's occupations were only FCHVs whereas only 2.3% of the respondents were FCHVs with did service. Two-thirds (66.4%) of the respondents had nuclear families whereas only 33.5% had a joint family. Similarly, almost of the respondents were married whereas 0.8 % were unmarried.

Table 2 B: Socio-Demographic Characteristics of Respondents n=38

Variable	frequency (f)	Percentage (%)
Personal habit		
Relax	381	99.
Tense	3	0.8
Social network		
Use properly	371	96.6
Not use properly	13	3.4
Family support		
Supportive	377	98.2
Not supportive	7	1.8
Workplace Climate		
Favorable	380	99.0
Unfavorable	4	1.0
working environment		
Supportive	373	97.1
Unsupportive	11	2.9
Policy		
Favorable	381	99.2
Unfavorable	3	0.8

Table 2 revealed that almost (99.2%) of respondents were looked relaxed whereas only 0.8% of respondents were looked tense. Similarly, most of (96.6%) the respondents had a proper social network. Likewise, almost (98.2%) of the respondents had supportive families whereas only 1.8% of the respondent's families had unsupportive. Almost (99.0%) of the respondents had favorable working environments whereas only 2.9% of respondents had unfavorable working environments. Similarly, almost (99.2 %) of respondents had expressed unfavorable policy for them whereas only 0.8% of respondents had expressed unfavorable policy for them.

Table 3: Respondent's response on different variables of Depression Anxiety Stress

Variable	Did not apply to me at all (f) %	Apply to me some degree (f) %	Apply to me considerable degree (f) %	Apply to me very much (f) %
I found it hard to wind wound	147 (38.3)	197 (51.3)	21 (5.5)	19 (4.9)
It was aware of dryness of mouth	167 (43.5)	172 (44.8)	27 (7.0)	18 (4.7)
I couldn't seem to experience any positive feeling at all	190 (49.5)	144 (37.5)	30 (7.8)	20 (5.2)
I experienced breathing difficulty	201(52.3)	138 (35.9)	29 (7.6)	16 (4.2)
I found it difficult to work up the initiative to do things	200 (52.1)	139 (36.2)	27 (7.0)	18 (4.7)
I tended to over-react to situations	199 (51.8)	138 (35.9)	27 (7.0)	20 (5.2)
I experienced trembling (e.g. in the hands)	207 (53.9)	133 (34.6)	28 (7.3)	16 (4.2)
I felt that I was using a lot of nervous energy	206 (53.6)	129 (33.6)	29 (7.6)	20(5.2)
I was worried about situations in which I might panic and make a fool of myself	201 (52.3)	132 (34.4)	34 (8.9)	17 (4.4)
I felt that I had nothing to look forward to	210 (54.7)	131 (34.1)	24 (6.3)	19 (4.9)
I found myself getting agitated	210 (54.7)	132 (34.4)	23 (6.0)	19 (4.9)
I found it difficult to relax	218 (56.8)	122 (31.8)	25 (6.5)	19 (4.9)
I felt down-hearted and blue	208 (54.2)	129 (33.6)	28 (7.3)	19 (4.9)
I was intolerant of anything that kept me from getting on with what I was doing	210 (54.7)	122 (31.8)	32 (8.3)	20 (5.2)
I felt I was close to panic	213 (55.5)	123 (32.0)	33 (8.6)	15 (3.9)
I was unable to become enthusiastic about anything	213 (55.5)	125 (32.6)	30 (7.8)	16 (4.2)
I felt I wasn't worth much as a person	220 (57.3)	121 (31.5)	26 (6.8)	17 (4.4)
I felt that I was rather touchy	210 (54.7)	126 (32.8)	31 (8.1)	17 (4.4)
I was aware of the action of my heart in the absence of physical exertion	219 (57.0)	121 (31.5)	26 (6.8)	18 (4.7)
I felt scared without any good reason	217 (56.5)	127 (33.1)	23 (6.0)	17 (4.4)
I felt that life was meaningless	218 (56.8)	123 (32.0)	24 (6.3)	19 (4.9)

Table 3 illustrated that in terms of, I found it hard to wind wound, more than half (51.3%) of respondents agree to apply to me some degree whereas more than one-third (38.3%) of respondents were agreed to apply to did not apply to me at all. in terms of, it was aware of dryness of mouth, less than half of respondents (44.8%) were agreed with applying to me some degree whereas (4.7%) of respondents were agreed with applying to me very much. Similarly, in terms of, I couldn't seem to experience any positive feeling at all, nearly half of the respondents (49.5%) agreed that did not apply to me at all whereas only (5.2%) of respondents agreed that apply to me very much. In terms of, I experienced breathing difficulty, more than (51.8%) of respondents agreed that did not apply to me at all whereas only 4.2% of respondents agreed with applying to me very much. In terms of, I found it difficult to work up the initiative to do things more than half (52.1%) of respondents agreed that did not apply to me at all-in terms of, I experienced trembling (e.g. in the hands) more than half (53.9%) of the respondents agreed that did not apply to me at all whereas only 7.3% of respondents were agreed with applying to me a considerable degree. In terms of, I felt that I was using a lot of nervous ener-

gy, more than half (53.6%) of the respondents agreed that did not apply to me at all whereas only 5.2% of respondents were agreed with applying to me very much. In terms of, I was worried about situations in which I might panic and make a fool of me, 52.3% of the respondents agreed that did not apply to me at all whereas only 4.4% were agreed with applying to me very much. In terms of, I felt that I had nothing to look forward to 54.7% of the respondents agreed that did not apply to me at all whereas only 4.9% were agreed with applying to me very much. In terms of, I found myself getting agitated, more than half (54.7%) of the respondents agreed that did not apply to me at all whereas only 4.9% were agreed with applying to me very much. In terms of, I found it difficult to relax, 56.8% of the respondents agreed that did not apply to me at all whereas only 6.5% were agreed with applying to me a considerable degree. In terms of, I felt down-hearted and blue, 54.2% of the respondents agreed that did not apply to me at all whereas only 7.3% were agreed with applying to me a considerable degree. In terms of, I was intolerant of anything that kept me from getting on with what I was doing, 54.7% of the respondents agreed that did not apply to me at all whereas only 8.3% were agreed with apply-

ing to me a considerable degree. In terms of, I felt I was close to panic, 55.5% of the respondents agreed that did not apply to me at all whereas only 8.6% were agreed with applying to me a considerable degree. In terms of, I was unable to become enthusiastic about anything, 55.5% of the respondents agreed that did not apply to me at all whereas only 7.8% were agreed with applying to me a considerable degree. In terms of, I felt I wasn't worth much as a person, 57.3% of the respondents agreed that did not apply to me at all whereas only 6.8% were agreed with applying to me a considerable degree. In terms of, I felt that I was rather touchy, 54.7% of the respondents agreed that did not apply to me at all whereas only

8.1% were agreed with applying to me the considerable degree. In terms of, I was aware of the action of my heart in the absence of physical exertion, 57.0% of the respondents agreed that did not apply to me at all whereas only 6.8% were agreed with applying to me a considerable degree. In terms of, I felt scared without any good reason, 56.5% of the respondents agreed that did not apply to me at all whereas only 6.0% were agreed with applying to me a considerable degree. In terms of, I felt that life was meaningless, 56.8% of the respondents agreed that did not apply to me at all whereas only 6.3% were agreed with applying to me for a considerable degree.

Table 4: Prevalence of level of Depression Anxiety Stress of respondents n=384

Variable	frequency (f)	Percentage (%)
Level of Anxiety		
Normal	194	50.5
Mild	8	2.1
Moderate anxiety	23	6.0
Severe anxiety	23	6.6
Extremely Severe	136	6.6
Level of Stress		
Normal	226	58.9
Mild	18	4.7
Moderate Stress	90	23.4
Severe stress	6	1.6
Extremely Severe	44	11.4
Level of Depression		
Normal	204	53.1
Mild	20	5.2
Moderate depression	29	7.6
Severe depression	83	21.6
Extremely Severe	48	12.5

Table 4 showed that half (50.5 %) of respondents had no anxiety and the prevalence of extremely severe levels of anxiety was 35.5 % of the respondent (FCHVs) whereas only 6.0% of respondents were moderate anxiety. Likewise, the prevalence of stress was

23.4% of moderate level of stress and 1.6 were the severe level of stress of respondents. Similarly, the prevalence of depression was 21.6% of respondents were a severe level of depression whereas only 7.6% of respondents had a moderate level of depression.

Table 5: Association between anxiety and selected demographic variables (Bivariate analysis) n=384

Variable	Level of Anxiety		Unadjusted OR	CI	p-Value
	Normal	Anxiety			
Age					
20 to 40 years	40	44	0.862	0.531-1.399	0.547
41 to 60 year	154	146			
Ethnicity					
Bramin/ Chhetri	85	67	0.699	0.463-1.054	0.087
Other castes	109	123			

Religion					
Hindu			1.022	0.397-2.633	0.964
Others					
Occupation					
Service & FCHVs	14	5	2.878	1.016-8.154	0.047*
Business & FCHVs	180	185			
Types of Family					
Nuclear	128	127	0.962	0.630-1.470	0.858
Joint	66	63			
Marital Status					
Married	193	188	0.962	0.630-1.470	0.858
Unmarried	1	2			
Social network					
Good	187	184	2.595	0.497-13.540	0.258
Bad	7	6			
Place of Residence					
Urban	117	83	1.959	1.305-2.940	0.001*
Rural	77	107			
Co-morbidities					
Yes	145	137	1.020	0.956-1.088	0.559
No	49	53			

Table 5 revealed that association between anxiety and selected demographic variable. There is significant association between anxiety and occupation of (p=0.047; OR=2.878; CI=1.016-8.154) and place of residence (p=0.001; OR=1.959; CI=1.305-2.940). The anxiety level is increased 2.878 times more in service with FCHVs then business with FCHVs and others. Likewise the FCHVs who lived in urban area are 1.959 times more chance to develop stress

then FCHVs who lived in rural area. Similarly there is no association between age (p=0.547; OR=0.862; CI=0.531-1.399); ethnicity (p=0.087; OR=0.699; CI=0.463--1.054); religion (p=0.964; OR=0.1022; CI=0.397-2.633) ; types of family (p=0.858; OR=0.962; CI=0.630-1.470); marital status (p=0.258; OR=2.595; CI=0.497-13.540); social network (p=0.559; OR=1.020; CI=0.956-1.088) and co-morbidities.

Table 6: Association between Stress and selected demographic variables (Bivariate analysis) n=384

Variable	Level of Stress		Unadjusted OR	CI	p-Value
	no stress	stress			
Age					
20 to 40 years	47	37	0.859	0.527-1.400	0.541
41 to 60 year	179	121			
Ethnicity					
Brahmin/Chhetri	97	55	1.408	0.925-2.143	0.110
Other castes	129	103			
Religion					
Hindu	217	149	1.456	0.565-3.755	0.437
Others	9	9			

Education					
below SLC	95	118	1.104	0.940-1.297	0.229
Above SLC	59	94			
Occupation					
Service & FCHVs	15	4	2.737	0.891-8.408	0.079
Business & FCHVs	211	154			
Types of Family					
Nuclear	149	106	0.949	0.617-1.461	0.813
Joint	77	52			
Marital Status					
Married	224	157	0.713	0.064-7.936	0.783
Unmarried	2	1			
Social network					
Good	220	157	0.891	.286-2.774	0.841
Bad	6	1			
Place of Residents					
Urban	117	83	1.630	1.082-2.454	0.019*
Rural	77	107			
Co-morbidities					
Yes	164	123	0.960	0.897-1.028	0.242
No	62	35			

Table 6 revealed that association between stress and selected demographic variable. There is association between stress and place of residence (p=0.541; OR=0.859; CI=1.082-2.454). Likewise, the FCHVs who lived in urban area are 1.630 times more chance to develop stress then FCHVs who lived in rural area. There is no significant association between stress and age (p=0.541; OR=0.859; CI=0.527-1.400); ethnicity (p=0.019; OR=1.408; CI=0.9252.143);

religion (p=0.437; OR=0.1.456; CI=0.565-3.755); education (p=0.229; OR=1.630 ; CI= 0.940-1.297); occupation (p= 0.079; OR=2.737; CI=0.891-8.408); types of family (p=0.813; OR=0.949; CI=0.617-1.461); marital status (p=0.783; OR=0.713; CI=0.0647-7.936); social network (p=0.841; OR=0.891; CI=0.286-2.774) and co-morbidities (p=0.242; OR=0.960; CI=0.897-1.028).

Table 7: Association between Depression and selected demographic variables (Bivariate analysis) n=384

Variable	Level of Depression		Unadjusted OR	CI	p-Value
	Non Depressive	Depressive			
Age					
20 to 40 years	44	40	963	0.593-1.563	0.877
41 to 60 year	160	140			
Ethnicity					
Brahmin/ Chhetra	62	90	1.503	1.503-2.272	0.054
Janajati & others	114	118			
Religion					
Hindu	195	171	1.140	0.443-2.938	0.786
Buddhist	9	9			
Level of Education					
Below SLC	194	172	.975	.768-1.237	.832
SLC and Above	10	8			

Occupation					
FCHVs with service	14	5	2.579	0.910-7.308	0.075
FCHVs with Business& other	190	175			
Types of Family					
Nuclear	136	119	1.025	.671-1.567	0.908
Joint	68	61			
Place of Residents					
Urban	121	79	1.864	1.242-2.797	0.003*
Rural	83	101			
Status of Co-morbidities					
Yes	152	135	0.996	0.933-1.064	0.912
No	52	45			

Table 7 revealed that association between depression and selected demographic variable. There is association between depression and place of residence ($p=0.003$; $OR=1.864$; $CI=1.242-2.797$). Likewise the FCHVs who lived in urban area are 1.864 times more chance to develop depression then FCHVs who lived in rural area. There is no significant association between depression and

age ($p=0.877$; $OR=1.140$; $CI=0.593-1.563$); ethnicity ($p=0.832$; $OR=1.503$; $CI=1.503-2.272$); religion ($p=0.786$; $OR=0.1456$; $CI=0.443-2.938$); education ($p=0.229$; $OR=0.975$; $CI=0.768-1.237$); occupation ($p=0.075$; $OR=2.579$; $CI=0.910-7.308$); types of family ($p=0.908$; $OR=1.025$; $CI=0.671-1.567$); and co-morbidities ($p=0.912$; $OR=0.996$; $CI=0.933-1.064$).

Part IV: Multivariate analysis between depression, anxiety stress, and socio-demographic variable of FCHVs

Table 8 :Association between levels of Anxiety and Socio-demographic variables (Multivariate Analysis) n=384

Variables	Unadjusted OR	adjusted OR	CI	p-value
Ethnicity				
Brahmin/ Chhetri	0.699	1.562	1.021-2.390	0.040*
Janajati & others **	(Ref)			
Occupation				
FCHVs with service	2.878	3.861	1.325-11.249	0.013*
FCHVs with businesses/others	(Ref)			
Place of resident				
Urban	1.959	1.959	1.470-3.413	$\leq 0.001^*$
Rural	(Ref)			

Table 8 depicts a multivariate analysis between the anxiety and demographic variable. There is significant association between level anxiety and ethnicity of FCHVs ($p=0.040$; $OR=1.562$; $CI=1.021-2.390$), occupation ($p=0.013$; $OR=3.861$; $CI=1.325-11.249$) and place of residence ($p\leq 0.001$; $OR=1.959$; $CI=1.470-3.413$). The FCHVs who are Brahmin/Chhetri is a 1.562 times more chance

to develop anxiety than FCHVs who are Janajati and others. Similarly, FCHVs who did FCHVs with service is a 3.861 times more chance to develop anxiety than FCHVs did FCHVs with Business and others. Likewise, the FCHVs who lived in urban area is 1.959 times more chance to develop stress than FCHVs who lived in the rural area.

Table 9: Association between levels of Stress and Socio-demographic variables (Multivariate analysis) n=384

Variables	Unadjusted OR	adjusted OR	CI	p-value
Occupation				
FCHVs with service	1.864	3.363	1.074-10.531	0.037*
FCHVs with Business	(Ref)			
Place of resident				
Urban	2.579	1.817	1.193-2.767	0.005*
Rural	(Ref)			

Table 9 depicts a multivariate analysis between the stress and demographic variable. There is significant association between level stress and occupation ($p=0.037$; $OR=3.363$; $CI=1.074-10.531$) place of residence ($p=0.005$; $OR=1.817$; $CI=1.193-2.767$). FCHVs whose occupation FCHVs with service is 3.363 times more chance

to develop stress than the FCHVs who are FCHVs, business, and another profession. Similarly, the FCHVs who lived in urban area are 1.817 times more chance to develop stress than FCHVs who lived in rural areas.

Table 10: Association between levels of Depression and Socio-demographic variables (Multivariate analysis) n=384

Variables	Unadjusted OR	adjusted OR	CI	p-value
Ethnicity				
Bramin/Chhetri	1.503	1.630	1.065-2.496	0.024*
Janajati & others	(Ref)			
Occupation				
FCHVs with service	2.579	3.371	1.158-9.812	0.026*
FCHVs with businesses& other	(Ref)			
Place of resident				
Urban	1.864	2.117	1.391-3.222	0.001*
Rural	(Ref)			

* Significant association p -value < 0.05; ** Madhesi, Dalit & Muslin

Table 10 depicts a multivariate analysis between the depression and demographic variables. There is significant association between level depression and ethnicity ($p=0.024$; $OR=1.630$; $CI=1.065-2.496$) occupation ($p=0.026$; $OR=3.371$; $CI=1.158-9.812$) and place of residence ($p\leq 0.001$; $OR=2.117$; $OR=1.391-3.222$). FCHVs whose ethnicity is Brahmin/Chhetri; have 1.630 times more chance to develop depression than FCHVs who are Janajati & others. FCHVs whose occupation is FCHVs with service; have 3.371 times more chance to develop depression than FCHVs who are FCHVs, Business, and others. Similarly, FCHVs who lived in urban is 2.117 times more chance to develop depression than FCHVs who lived in rural respectively.

Discussion

This study assessed the anxiety, depression, and stress level among female community health volunteers during the COVID-19 pandemic in Province 1. This study finding revealed that nearly third-fourth (72.1%) of respondents was aged 40 to 60 years of age whereas contradict finding by Ayalew et al argued that more than half (60.2%) were aged 26–35 years [22].

Present study finding revealed that more than one-third (35.5%) of the respondent (FCHVs) had the prevalence of extremely severe level of anxiety contradict finding a study conducted in Bangladesh among 547 nurses found that more than half of respondents (51.8%) had the prevalence anxiety. [18] Similarly, a cross-sectional study conducted in Nepal among 475 health workers similar finding revealed that less than half of the health workers (41.9%) had found symptoms of anxiety [18]. Present study findings showed that less than half (23.4%) of the respondents had moderate and 11.4% had an extremely severe level of the prevalence of stress among FCHVs whereas 21.6% of FCHVs had severe and 12.5% of FCHVs had extremely severe level of depression. this

finding supported by Hassannia et al. argued that the prevalence of depression was nearly one-third (32.0%); anxiety less than one-third (25.8%), and stress 14.7% (95% CI: 12.0–17.4), respectively [21]. Likewise study conducted in Nepal, finding supported that more than half (37.5%) of workers had depression symptoms third (33.9%) of workers had symptoms of insomnia [18].

Similarly, Thomas et al., mentioned that the prevalence of depression and anxiety is moderate to high-level which indicated stress response triggers a cascade producing a series of changes in human vital physiological functions such as blood pressure, respiratory rate, heart rate was significantly higher [20]. Another study conducted in Nepal's contradicting findings revealed that 5.9% had an extremely severe level of anxiety, whereas 14.5% were moderately depressed, 77.5% did not have any stress during the lockdown. [24] Gupta et al., reported that 38 % of the HCWs on COVID-19 duty in Nepal are suffering anxiety and the prevalence of depression was 8% [25].

Present study finding revealed that there is significant association between anxiety and occupation of ($p=0.047$; $OR=2.878$; $CI=1.016-8.154$) and place of residence ($p=0.001$; $OR=1.959$; $CI=1.305-2.940$). The anxiety level is increased 2.878 times more in service with FCHVs then business with FCHVs and others. Likewise the FCHVs who lived in urban area are 1.959 times more chance to develop stress then FCHVs who lived in rural area. Similarly there is no association between age ($p=0.547$; $OR=0.862$; $CI=0.531-1.399$); ethnicity ($p=0.087$; $OR=0.699$; $CI=0.463--1.054$); religion ($p=0.964$; $OR=0.1022$; $CI=0.397-2.633$); types of family ($p=0.858$; $OR=0.962$; $CI=0.630-1.470$); marital status ($p=0.258$; $OR=2.595$; $CI=0.497-13.540$); social network ($p=0.559$; $OR=1.020$; $CI=0.956-1.088$) and co-morbidities whereas contradict finding suggested that there was statistically

significant difference between depression and age ($p=0.016$), depression and sex ($p=0.023$). Also, there was a significant difference between stress and age ($p=0.023$), sex ($p=0.0263$) and education level ($p=0.049$) [23].

This study suggested that there is association between depression and place of residence ($p=0.003$; $OR=1.864$; $CI=1.242-2.797$). There is no significant association between depression and age ($p=0.877$; $OR=1.140$; $CI=0.593-1.563$); ethnicity ($p=0.832$; $OR=1.503$; $CI=1.503-2.272$); religion ($p=0.786$; $OR=0.1456$; $CI=0.443-2.938$); education ($p=0.229$; $OR=0.975$; $CI=0.768-1.237$); the study conducted in Nepal by Silwal et al., contradict finding mentioned that there was significant association of depression with education level ($\chi^2=6.597$; $p=0.01$) and working unit ($\chi^2=8.187$; $p=0.004$) [24].

In present study multivariate analysis suggested that there is significant association between level anxiety and ethnicity of FCHVs ($p=0.040$; $OR=1.562$; $CI=1.021-2.390$), occupation ($p=0.013$; $OR=3.861$; $CI=1.325-11.249$) and place of residence ($p=0.000$; $OR=1.959$; $CI=1.470-3.413$). The FCHVs who are Brahmin/Chhetri is a 1.562 times more chance to develop anxiety than FCHVs who are Janajati and others. Similarly, FCHVs who did FCHVs with service is a 3.861 times more chance to develop anxiety than FCHVs did FCHVs with Business and others. Likewise, the FCHVs who lived in urban areas is 1.959 times more chance to develop stress than FCHVs who lived in rural areas whereas contradict finding the religion, education level, working hours, marital status, ethnicity, province of residence, and extra allowance were not significantly associated with distress level [26].

Conclusion

The study showed the level of depression, anxiety, and stress with varying severity among participants. Nearly third-fourth of respondents was aged 40 to 60 years of age. Almost all of the respondents were female. More than one-third of FCHVs were of an extremely severe level of anxiety. Likewise, less than one-third of respondents had a moderate level of stress whereas only a few FCHVs were a severe level of stress. The bivariate analysis showed that there is a significant association between anxiety, occupation, and place of residence. Similarly, there is no association between age; ethnicity; religion; types of family; marital status; social network, and co-morbidities. There is an association between stress and place of residence. There is no significant association between stress and age; ethnicity; religion; education; occupation; types of family; marital status; social network and co-morbidities. There is an association between depression and place of residence. Multi variant analysis revealed that there is a significant association between level anxiety and ethnicity of FCHVs, occupation, and place of residence. There is a significant association between level stress and occupation place of residence. There is a significant association between level depression and ethnicity, occupation, and place of residence. The study concluded that the depression, anxiety, and stress levels were occurred on FCHVs range from moderate to ex-

tremely severe so prompt counseling family support motivational activities could enhance the mental wellbeing of the FCHVs.

Acknowledgement

We are indebted to different administrative personnels of all selected areas for providing us the opportunity to carry out this research study. Similarly, we would like to thank FCHVS of Province 1 for their selfless participation and providing information about the issues without any hesitation.

Ethical Approval

Ethical clearance for the study was obtained from the Ethical Review Board of Nepal Health Research Council (Ref. No-1135/22 November, 2021), and written informed consent was obtained from each of the participants. The consent was documented from each respondent before the initiation of the response. Before data collection, all the participants were informed about the aims, objectives, and background of the study. Likewise, they were also informed regarding the risks and benefits of the study. Only those willing to participate and those providing informed consent were included in the study. Participants had the right to withdraw from the study at any point, if they so wish, without any negative repercussions. Confidentiality of the participant was maintained throughout the study and after data collection.

Competing interests

The authors had no competing interest of any financial and personal nature.

Authors' contributions

The principal author had involved in development of background, methodology data collection, analysis, writing result and development of manuscript. Co-author involved in data collection and help in report writing and formatting manuscript too.

References

1. Baloch S, Baloch MA, Zheng T, Pei X. The coronavirus disease 2019 (COVID-19) pandemic. *Tohoku J Exp Med.* 2020;250(4):271–8.
2. Parajuli SB, Shrestha S, Sah A, Heera KC, Amgain K, Pyakurel P. Role of female community health volunteers for prevention and control of COVID-19 in Nepal. *Journal of Karnali Academy of Health Sciences.* 2020 May 7;3(1).
3. Besada D, Daviaud E, If we invested in this today, South Africa could save billions— and fight COVID19. BHEK-ISISA Center for Health Journals [Internet]. 2021; Available from <https://bhekisisa.org/article/2020-05-20-community-health-care-workers-in-south-africa-investment-case-covid19-coronavirus-tracing-programme/>.
4. McKenzie D, Swails B. South Africa's HIV failures cost more than 300,000 lives. Now this painful past is helping in the Covid-19 fight. 2020; Available from <https://edition.cnn.com/2020/04/29/africa/south-africa-hiv-coronavirus/index.html>.

5. Bhutta ZA, Lassi ZS, Pariyo G, Huicho L. Global experience of community health workers for delivery of health-related millennium development goals: a systematic review, country case studies, and recommendations for integration into national health systems. *Glob Health Workforce Alliance*. 2010;1(249):61.
6. Tulenko K, Mogedal S, Afzal MM, et al. Community health workers for universal health-care coverage: from fragmentation to synergy. Geneva: World Health Organization; 2013. p. 847–52. Report No.: 91(11). <https://doi.org/10.2471/blt.13.118745>.
7. Cometto G, Witter S. Tackling health workforce challenges to universal health coverage: setting targets and measuring progress. Geneva: World Health Organization; 2013. p. 881–5. Report No.: 91(11). <https://doi.org/10.2471/blt.13.118810>.
8. Alshekaili M, Hassan W, Al-Said N, Al Sulaimani F, Jayapal SK, Al-Mawali A, Chan MF, Mahadevan S, Al-Adawi S. Factors associated with mental health outcomes across healthcare settings in Oman during COVID-19: frontline versus non-frontline healthcare workers. *BMJ Open*. 2020 Oct 1;10(10):e042030.
9. Najafizada M, Allison J. This is the hidden problem women healthcare volunteers are facing. World Economic Forum. Retrieved from <https://www.weforum.org/agenda>.
10. FHD DOHS. Female Community Health Programme [Internet]. Teku, Kathmandu: Ministry of Health and population. Government of Nepal; 2021. Available from: Page 26/27 <https://www.mohp.gov.np/eng/program/reproductive-maternal-health/female-community-healthprogramme#>.
11. Kandel N, Lamichhane J. Female health volunteers of Nepal: the backbone of health care. *The Lancet*. 2019 Feb 9; 393(10171):e19-20.
12. Panday S, Bissell P, Van Teijlingen E, Simkhada P. The contribution of female community health volunteers (FCHVs) to maternity care in Nepal: A qualitative study. *BMC Health Serv Res* [Internet]. 2017;17(1):1–11. Available from: <https://doi.org/10.1186/s12913-017-2567-7>.
13. Ministry of Health and Population. Annual Report. Kathmandu, Nepal. (2013).
14. Alfadhli K, Güler M, Cakal H, Drury J. The role of emergent shared identity in psychosocial support among refugees of conflict in developing countries. *Int Rev Soc Psychol*. 2019;32(1):1–16.
15. GoN. The Constitution of Nepal 2015. Nepal Gaz [Internet]. 2015; 2015 (February):1–202. Available from: <http://www.lawcommission.gov.np>.
16. Nepal UN: Administrative Unit- Province State 1 Map [Internet]. Kathmandu N. 2021. Available from: <https://un.info.np/Net/NeoDocs/View/8303>.
17. Kathmandu N. Central Bureau of Statistics. Population (in million). 2014 Aug;33:34 – 0.
18. Khanal P, Devkota N, Dahal M, Paudel K, Joshi D. Mental health impacts among health workers during COVID-19 in a low resource setting: a cross-sectional survey from Nepal. *Globalization and health*. 2020 Dec;16(1):1–2.
19. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behavior research and therapy*. 1995 Mar 1;33(3):335 – 43.
20. Thomas AB, Dubey SK, Samanta MK, Alex A, Jose SP. Assessment of psychological stressors of depression and anxiety using depression anxiety stress scale- 21 in South Indian healthy volunteers. *Int J Pharm Pharm Sci*. 2016;8(5):288–95.
21. Hassannia L, Taghizadeh F, Moosazadeh M, Zarghami M, Taghizadeh H, Dooki AF, Fathi M, Navaei RA, Hedayatizadeh-Omran A. Anxiety and depression in health workers and general population during COVID-19 epidemic in Iran: a web-based cross-sectional study. *MedRxiv*. 2020 Jan 1.
22. Ayalew M, Deribe B, Abraham Y, Reta Y, Tadesse F, Defar S, Hoyiso D, Ashegu T. Prevalence and determinant factors of mental health problems among healthcare professionals during COVID-19 pandemic in southern Ethiopia: a multicentre cross-sectional study. *BMJ Open*. 2021 Dec 1;11(12):e057708.
23. Basnet S, Bhandari B, Gaire B, Sharma P, Shrestha RM. Depression, Stress, and Anxiety among Residents of Nepal during COVID-19 Lockdown. *J Adv Acad Res*. 2021 Jun;22(1):53–62. 8(.
24. Silwal M, Koirala D, Koirala S, Lamichhane A. Depression, anxiety and stress among nurses during corona lockdown in a selected teaching hospital, Kaski, Nepal. *Journal of Health and Allied Sciences*. 2020 Oct 19;10(2):82 – 7. Page 27/27
25. Gupta AK, Mehra A, Niraula A, Kafle K, Deo SP, Singh B, Sahoo S, Grover S. Prevalence of anxiety and depression among the healthcare workers in Nepal during the COVID-19 pandemic. *Asian J psychiatry*. 2020 Dec;54:102260.
26. Kafle K, Shrestha DB, Baniya A, Lamichhane S, Shahi M, Gurung B, Tandan P, Ghimire A, Budhathoki P. Psychological distress among health service providers during COVID-19 pandemic in Nepal. *PLOS ONE*. 2021 Feb 10; 16(2):e0246784.

Copyright: ©2022: Saraswati Basnet. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.