Impact of brief psychological intervention on reducing the psychological symptoms after COVID-19 infection among healthcare workers (HCWs) in Nepal

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Abstract

Background:

Studies from various countries showed that HCWs suffered from psychological problems during the period of COVID-19 and psychosocial intervention to address the issues was found effective. This study aimed to find out the status of depression, anxiety, stress and post-traumatic stress disorder (PTSD) symptoms among HCWs after COVID-19 infection including determining the outcome of a brief psychosocial intervention protocol in reducing the symptoms.

Methods:

Group-based pretest-posttest interventional design was adopted. A total of 380 HCWs, recovered from the COVID-19 infections were selected through a purposive sampling technique. The study period was from November 2020 to January 2021. The Nepalese-translated and validated version of the Depression, Anxiety and Stress Scale – 21(DASS-21) and Impact of Event Scale-Revised (IES-R) were used to assess the symptoms. A brief psychosocial intervention was done by a trained clinical psychologist and compared the differences in mean scores on the level of depression, anxiety, stress and PTSD symptoms before and after the intervention.

Results:

This study found that about 11% HCWs had symptoms of depression, 31% had symptoms of anxiety, 3% had stress and 98.50% had symptoms of PTSD. The paired sample t-test showed a significant difference between the means for the IES-R before the intervention (M=47.94, SD=14.53) and after the intervention (M=43.63, SD=15.35); t = 5.003 and p=.000 as well as the DASS-21 mean score before (M=14.11, SD=11.74) and after (M=12.28, SD=10.81); t = 2.97 and p = .003 the intervention.

Conclusion:

This study showed that this intervention protocol was found effective in reducing the symptoms of depression, anxiety, stress and PTSD symptoms of the participants. However, a longitudinal study is needed to confirm these findings.

Key words:

anxiety, brief interventions, COVID-19 infection, depression, HCWs, PTSD

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INTRODUCTION

The world is responding to an unprecedented pandemic and medical crisis [1]. Huge numbers of HCWs were infected causing medical crises [2]. Uncertainty and fear of getting an infection, guilt about transmitting the infection to loved ones, traumatic experiences of witnessing critically ill patients, their distress and suffering, facing social isolation and discrimination, heavy workload, time pressure, low levels of autonomy and decision-making input were noticed as a common psychosocial problems among HCWs including decreased level of motivation and performance, physical exhaustion, sleep disruption, and fear and emotional disturbances [3, 4]. Psychological reactions are associated with negative outcomes including suicidal behavior [5, 6]. Thus, HCWs exposed to COVID-19 may need psychological support or interventions [7]. Assessment of psychological care needs and evidence-based services are necessary [8, 9]. Continuous psychological services are essential for even mild psychological issues to decrease the possibility of escalating such problems [10, 11]. Specific intervention protocols for HCWs are needed to manage these psychosocial challenges to prevent mental health problems [12]. Despite the recommendation of the previous studies regarding the huge necessity to assess the problems or, psychological care needs and provide evidence-based psycho-social interventions to HCWs, the interventional program was

designed and provided. However, none of the published studies was found in the Nepalese context to see the effectiveness of such a program. Therefore, to fill the gap these small attempts were made to see the effectiveness of the designed brief psychosocial intervention protocol in reducing psychological symptoms.

METHODS

The group-based pre-test and post-test interventional design were carried out with 380 HCWs who had been diagnosed and recovered from the COVID-19 infection. The inclusion criteria for the HCWs were adults previously diagnosed as COVID-19 positive according to their presenting symptoms and their nasopharyngeal swab. Participants were involved in the study at least a month after the diagnosis of COVID-19 infection. The study period was from November 2020 to January 2021. The study site was a tertiary level Hospital in Kathmandu. A purposive sampling technique was used. Formal ethical approval was obtained from the Institutional Review Committee (IRC) from the Nepalese Army Institute of Health Sciences (NAIHS) and the data collection site. The phone number of the possible participants who met the inclusion criteria was obtained from the data collection site. Verbal informed consent was provided by all participants before their enrollment via individual phone calls. The objectives of the study were explained. Participants were allowed to terminate the survey at any time if they desired. The anonymity of the participants was maintained through self-administered questionnaires without mentioning their names. Confidentiality was maintained as their responses were used for study purposes only. The brief (total of 3.20 hours) psychosocial support protocol (Identification and management of stress among HCWs) was implemented via an online Zoom platform. Groups were formed by asking for their convenient time either off-duty hours or on the day of duty off. The group session was planned accordingly. However, an in-person session was provided to a few interested participants by maintaining physical distance, who were of the view that an in-person intervention session was more effective than the online one.

Tools: The self-administered questionnaire was developed and distributed to participants with other two tools. These tools were Nepalese validated versions of the structured self-report tools i.e. Questionnaire to assess depression, anxiety and stress, which was Depression, Anxiety and Stress Scale – 21 (DASS-21). The DASS-21 is a set of 3 self-report scales designed to measure the emotional states of depression, anxiety and stress. Scores for depression,

anxiety and stress scale were calculated by summing the scores for the relevant items. The DASS-21 has been validated and used in the Nepalese population to identify the symptoms of Depression, Anxiety, and Stress [13–15]. Cronbach's alpha coefficient for DASS-21 is ranging from 0.78-0.91[16, 17].

A short, easily administered self-report questionnaire, a Nepalese-validated version of the Impact of Event Scale-Revised (IES-R) [18] has 22 questions. The tool, not diagnostic for PTSD [18,19] is an appropriate instrument to measure the subjective response to a specific traumatic event in the senior population, especially in the response sets of intrusion (intrusive thoughts, nightmares, intrusive feelings and imagery, dissociative-like re-experiencing), avoidance (numbing of responsiveness, avoidance of feelings, situations, and ideas), and hyperarousal (anger, irritability, hypervigilance, difficulty concentrating, heightened startle), as well as total subjective stress IES-R score. The IES-R revised the original IES-R, recognized as one of the earliest self-report tools developed to assess post-traumatic stress, to add a third cluster of symptoms, hyperarousal, to intrusion and avoidance subscales. IES-R is the acronym for the test assessment purpose: I – Impact, E – of Event, S – Scale R – Revised. The IES-R is a measure of the symptomatic status of PTSD after specific traumatic events [20]. According to Kvestad et al. [18], the IES-R questionnaire measures the degree of distress related to a traumatic event in the past 7 days on a Likert scale and provides a total score (range 0–88), and three subscale scores; Avoidance (range 0–32), Intrusion (range 0–32), and Hyperarousal (range 0–24). This study used the formally Nepalese-translated version of the IES-R scale. The internal consistency reliability of the Nepalese translated version for the total scale was found at 0.87 and ranged from 0.50 to 0.80 in the subscales. It has been highlighted that a score of 24 or more is an indication of PTSD and should be a clinical concern [18, 21], above 33 is an indication of a probable PTSD diagnosis [18, 22] and these cut-offs have shown good psychometric properties when validated against a diagnostic interview [18]. Our study used a total score of 24 as it is seen as a matter of clinical concern. The study planned to use Nepalese-translated and validated versions of DASS-21 and IES-R. Permission from authors who have translated and validated these tools in the context of Nepal was obtained. Permission was also obtained from UNICEF to use the intervention protocol (i.e. "Identification and management of stress among HCWs during a pandemic") in research. Then, facilitation training was provided to the data collector (a clinical psychologist, who has been work-

ing in the same hospital for many years) by the protocol developer before starting the data collection.

Training Methods as recommended by the protocol developer: The total duration to complete the session is 3.20 hours. The trainer can be a Psychiatrist or a Clinical psychologist who has already completed the facilitation training from the expert of this protocol developer. The total number of participants in the training can be around 20 participants or less in each group. Equal gender distribution and health staff of similar levels should be considered in each group. These recommendations were followed while collecting the data.

Data collection and intervention procedures

Pre-test and post-test designs were used to deliver DASS-21 and IES-R before and after the introduction of the intervention program for the participants in the group. The pre-test is the measurement of baseline levels of symptoms of depression, anxiety, stress and PTSD which was done before the intervention. The post-test involves the measurement of the dependent variable after the intervention has been carried out on the participant group. The purpose of the post-test is to determine any variations in the level of symptoms felt by the participant group after the intervention has occurred. Therefore, a post-test was done after 2 weeks (i.e. on the 14th day) of the intervention. [(I) Pre-test, (II) intervention and (III) post-test are the 3 major steps that were applied in this study].

I. Pre-test: DASS-21 and IES-R were used to identify the level of depression, anxiety and stress of the selected HCWs on the same day, before starting the intervention.

II. Intervention: Three hours and 20 minutes of intervention were provided to all the selected HCWs by using the PowerPoint slides (PPTs) derived from the same intervention protocol (i.e. "Identification and management of stress among HCWs during a pandemic"). These PPTs were made by the protocol developers to use the same content and format by each trainer after the completion of the facilitation training to maintain implementation fidelity. At the end of the training, the research participants were notified about the post-test date i.e. after two weeks (on the 14th day) from the training day and the procedure of the post-test i.e. via an online platform.

III. Post-test: The same DASS-21 tool was used to reassess the level of depression, anxiety and stress. Likewise, the same IES-R was used to reassess the improvement of post-traumatic stress symptoms after two weeks (on the 14th day) of the intervention among selected HCWs, who were involved in the pre-test and who participated in the intervention session. The link (google form) was forwarded to their Email/ Viber / Facebook messenger (based on their availability) and requested to complete the form as soon as possible. However, 12% of HCWs were not responding well to the post-test questionnaires. Two participants just filled in a few sociodemographic-related information and submitted it.

Data Analysis Procedures: The collected data was reviewed, organized, coded, entered and analyzed by using Statistical Package for Social Sciences-26. Some post-test data had a lot of missing information which was excluded while doing the main analysis. The pre-test was completed by the participants and the post-test was not submitted by around 12% of participants which was also excluded while doing the main analysis. As highlighted by the previous study [23], the most common approach to the missing data is to simply omit those cases with the missing data and analyze the remaining data. This approach is known as the complete case (or available case) analysis or list-wise deletion. According to the author, list-wise deletion is the most frequently used method in handling missing data and thus has become the default option for analysis in most statistical software packages. This study further explained that some researchers insist that it may introduce bias in the estimation of the parameters [23]. Data were analyzed by using descriptive statistical methods to describe participants' demographic variables (mean, standard deviation, frequency, and frequency percentage indexes). On the inferential statistics, a paired sample t-test was used. Then the findings were presented in the tables.

RESULTS

Table 1: Intervention Protocol (Facilitator's Guide)

S.N.	Structure of the session	Time (Mins)
1	Introduction Session (Self &Participants)	10
2	State the Objectives of the Session	5
3	Section 1: Allow to Ventilate, Acknowledge, Universalize, Validate and Empathize on the problems expressed by the HCWs	40
3-A.	Activity-1.1: Ventilate	(20)
3-B.	Activity-1.2: Acknowledge, Universalize, Validate and Empathize	(20)
4	SECTION II: TO IDENTIFY AND MANAGE ONE'S STRESS DURING A CRISIS	90
4-A.	Activity- 2.1: pair and share part A	(10)
4-B.	Ask participants individually to share their s ymptoms of stress	(10)
4-C.	Discussion	(20)
4-D.	Activity- 2.2: Strive for balance	(20)

S.N.	Structure of the session	Time (Mins)
4-E.	Activity 2.3: Teach HOW to manage stress in a healthy way. – Discuss self-care activities	(5)
4-F.	Teaching Self-care activities	(5)
4-G.	Activity- 2.3: Moving on with COVID-19 feeling stronger	(10)
4-H.	Discussion	(10)
	Short break	(10)
5	SECTION III: ENSURING MENTAL HEALTH AND WELL-BEING OF COLLEAGUES AND FAMILY MEMBERS INCLUDING CHILDREN	15
5-A.	Activity-3.1: check your BURNOUT status	(5)
5-B.	Discussion about measures that can be taken to prevent burnout/Role of team leader	(5)
5-C.	Activity- 3.2: Helpful responses for family members and children	(5)
6	SECTION IV: TO REDUCE SOCIAL STIGMA AMONG HCWs AND PROVIDE SUPPORT TO COLLEAGUES	10
6-A.	Activity- 4.1: Experiencing stigma Ask participants to share their ideas about measures/steps to reduce stigma.	(7)
6-B.	State the importance of Peer Support	(3)
7	SECTION V: TO REFER HCWs FOR MORE DETAILED EVALUATION AND ASSISTANCE WHEN NEEDED	20
7-A.	Activity- 5.1: Quiz activity about when to refer	(3)
7-B.	Discuss Institutional Role	(2)
7-C.	Review and End of Session	(15)

Demographic Information

The number of participants was found to be high (N=194) between the ages of 31 to 40 years, followed by the age group of 20 to 30 years (N=113), 41 to 60 years (N=38), and below 20 years (N=3) respectively. The number of male participants (N=229) was greater than females (N=119). Most of them were married (N=253) followed by unmarried (N=92), widows (N=2) and divorced (N=1) respectively. The majority (N=229) of participants were from the upper caste (Brahman and Chhetri) and less than half (N=102) were janajati. The majority (N=316) of the participants were Hindu followed by Christians (N=9), Buddhists (N=19), Muslims (N=2), and others (N=2). The monthly income of major participants mainly lay between 24,351 and 36,550 (N=108). Sixty-two percent (N=218) and 37% (N=129) of participants were members of joint and nuclear families respectively. Sixty percent (N=210) of participants were Paramedics, followed by 15.51% (N=55) Nurses and 15.51% (N=54) of them were from other professions in the hospital where the least number of participants were Doctors 8.33% (N=29). Twenty-six (N=92) of the participants worked in the surgery department, whereas 17% (N=58), 10 % (N=35), 5% (N=18), 4.5 % (N=16), and 37% (N=129) of the participants worked in the medical, laboratory, gynecology, emergency,

and other departments, respectively. Approximately 66% (N=230) participants worked 6–10 hours, 28 % (N=98) worked 11–15 hours, 3% (N=12), and 2% (N=7), respectively, worked more than 15 hours and less than 5 hours. The largest number of participants (N=181) reported that personal protective equipment (PPE) was provided, but that was not adequate, whereas around 20% (N=71) and 27% (N=96), respectively, reported that there was no PPE provided. About 59% (N=205) participants were informed about the COVID-19 protocol but 34% (N=118) participants were partially informed and 7% (N=25) participants were not informed about the protocol. Ninety-one (91%, N=318), people were separated from their families and loved ones, and 9 % (N=30), participants were allowed to stay with their families and loved ones.

Table 2. Pre-post status of Depression, Anxiety and stress according to DASS-21Scale.

Status	Before Intervention (Pre-test)			After Intervention (Post-test)		
Depression	**N**	**%**	**Total Depression (N %)**	**N**	**%**	**Total Depression (N %)**
Normal	311	89.37	37 (10.63)	324	93.1	37 (10.63)
Mild	21	6.03		15	4.31	
Moderate	14	4.02		8	2.29	
Severe	2	0.57		1	0.28	
Anxiety	**N**	**%**	**Total Stress (N %)**	**N**	**%**	**Total Stress (N %)**
Normal	241	69.25	107 (30.74)	259	74.43	
Mild	26	7.47		24	6.89	
Moderate	62	17.82		53	15.23	
Severe	15	4.31		12	3.44	
Extreme	4	1.14		0	0	
Stress	**N**	**%**	**Total Stress (N %)**	**N**	**%**	**Total Stress (N %)**
Normal	339	97.41		341	97.98	
Mild	4	1.14		3	0.86	
Moderate	5	1.43		4	1.14	
Severe	0	0		0	0	

Table 2 demonstrated that about 11% (N=37) of participants had the symptoms of depression, about 31% (N=107) had symptoms of anxiety and about 3% (N=9) had stress before the innervation whereas all three symptoms were found to be reduced within a period of 2 weeks. Depression reduced from about 11% (N=37) to about 7% (N=24), Anxiety reduced from about 31% (N=107) to about 26% (N=89) and stress reduced from about 3% (N=9) to about 2% (N=7) after the intervention.

Table 3. Pre-Post status of PTSD symptoms according to the IES-R Scale

PTSD Status	Before Intervention (Pre-test)		After Intervention (Post-test)	
	N	%	N	%
Normal	5	1.44	19	5.46
Clinical Concern	46	13.20	68	19.54
PTSD	297	85.30	261	75
Total PTSD	**343**	**98.50**	**329**	**94.54**

Table 3 clearly showed that nearly all i.e. about 99% (N=343) of participants who had experienced COVID-19 infection had symptoms of PTSD before intervention. It was found that there was a reduction of the symptoms from PTSD to either clinical concerns or Normal after the intervention. In total, these symptoms were reduced from about 99% (N=343) to about 95% (N=329) after the intervention.

Table 4. IES-R and DASS-21 score before and after the Intervention

		Mean	N	Std. Deviation	Std. Error Mean	t	df.	Sig. (2-tailed)
Pair 1	Pre-test (IES-R)	47.94	348	14.53	.77	5.00	347	<0.0
	Post-test (IES-R)	43.63	348	15.35	.82			
Pair 2	Pre-test (DASS-21)	14.11	348	11.74	.62	2.97	347	.003
	Post-test (DASS-21)	12.28	348	10.81	.58			

To compare the mean of the IES-R and DASS-21 before and after the intervention, a paired-sample t-test was used. The results of the paired sample t-test showed a significant difference between the means for the IES-R before the intervention (M=47.94, SD=14.53); and after the intervention (M=43.63, SD=15.35); (t = 5.003 and p=.000). The study also found a significant difference between the DASS-21 mean before the intervention (M=14.11, SD=11.74) and after intervention (M=12.28, SD=10.81); (t = 2.97 and p = .003).

DISCUSSION

A number of studies done in different parts of the world including Nepal have found increased mental health problems among HCWs during the pandemic crises. Studies also demonstrated that mental health problems among HCWs negatively impact the quality of the health care delivered by them [22, 24]. However, this study would be

one of the few and earliest studies, if any, to see the impact of brief psychological intervention to reduce the mental health problems (i.e. anxiety, depression, stress and post-traumatic stress symptoms) of the COVID-19 pandemic among HCWs who were previously diagnosed as COVID-19 positive in the context of Nepal. A Systematic review [25] reported that as of 8 May 2020, a total of 152 888 HCWs have been infected with COVID-19 and 1413 deaths of HCWs were reported due to infection. Infections were mainly in women (71.60%, N=14 058) and nurses (38.60%, N=10 706), but deaths were mainly in men (70.8%, N=550) and doctors (51.40%, N=525). Later on, the next review study done by Chutiyami et al. [26] reported that the overall infection rate among healthcare workers ranged from 3.90% to 11%. Another study highlighted that worldwide trends of COVID-19 resulted in over 333 thousand deaths till that time (i.e. till May 2020) where higher incidences of COVID-19 infection and mortality in HCWs are well documented Rothan & Byrareddy; Sheraton et al. [27,28]. In this crisis situation, individual caretaker workloads were increased either due to high-risk exposure developing symptoms or testing positive and the resulting quarantine as highlighted in the previous research [28, 29]. These factors may also result in significant stress for HCWs in Nepal as highlighted by Sheraton et al. [28]. Other significant factors, according to the studies done by Neto et al. & Lai et al. [29,30] were depletion of personal protective equipment, extensive media coverage, lack of specific medications and inadequate support feelings that can contribute to the mental burden of these health professionals. Similar problems might be experienced by these HCWs in Nepal. As coronavirus cases increased and deaths surged in Italy, the media during this period was constantly highlighting the morbidity and mortality rates of COVID-19, focusing particularly on index cases and affected HCWs over there. Many HCWs were traumatized either directly by eyewitnesses of the infection of colleagues or patients admitted to the hospital or vicariously as a consequence of extensive media coverage. Despite media coverage, as HCWs, they also knew the fact that COVID-19 is transmissible from human to human as highlighted by Li et al.& Rothe et al.[30,31] and they were aware that the pandemic is associated with high morbidity and potential fatality that might intensify the perception of personal danger as highlighted by Wang, Tang and Wie [32]. At the beginning of the pandemic in Nepal, there were no mortality or severe forms of COVID-19 cases [17]. However, few studies were conducted in Nepal to screen the mental health consequences of the HCWs. A study done in Nepal between April 26 and May 12, 2020[14] revealed a considerable propor-

tion of anxiety, depression and insomnia symptoms among HCWs during the early phase of the pandemic in Nepal. They reported that overall, 41.90% of HCWs had symptoms of anxiety, 37.50% had symptoms of depression and 33.90% had symptoms of insomnia. Stigma faced by HCWs was significantly associated with higher odds of experiencing symptoms of anxiety (AOR: 2.47; 95% CI: 1.62–3.76), depression (AOR: 2.05; 95% CI: 1.34–3.11) and insomnia (AOR: 2.37; 95% CI: 1.46–3.84). Similarly, the next study done in Nepal (April 12 to May 12, 2020) [17] also showed the symptoms of depression, anxiety and stress were 29%, 35.70% and 17.10% respectively.

In Nepal, the first case of COVID-19 was reported on January 23, 2020, by a 32-year-old Nepalese man who returned from Wuhan, China [33]. Two months after the first case, the second case was diagnosed through domestic testing on March 23 in a returnee from France [33, 34]. The first mortality due to COVID-19 in Nepal was reported only in May 2020. As of January 22, 2021, 268,948 COVID-19-positive cases were reported, with 263,546 recovered, and 1,986 death cases [33, 35]. During this period many HCWs in Nepal experienced COVID-19 infections. Therefore, by considering these factors our study targeted HCWs who tested positive. However, the reported symptoms of anxiety, depression and stress in our study were lower than in the previous studies, as our study found that about 11%, 31% and about 3% of participants had symptoms of depression, anxiety, and stress respectively. Higher prevalence in previous studies can be due to the time of the data collection when uncertainty and mismanagement of the healthcare system were heightened at the beginning of the COVID-19 era and those studies were conducted in that period of uncertainty when everybody was facing symptoms of acute stress. Next, it might be due to the selection of the assessment scale. The DASS-21 scale has certain limitations that can lead to subscale overlap and interaction. There might be the possibility of bias due to cultural factors in the questionnaire. A study [11] done after two previous studies [14, 17] with paramedic trainees, who were doing round-o'clock duty with HCWs in a hospital found almost similar findings to our study regarding the symptoms of depression i.e. 12%.

Alarmingly, in this study, 98.50% had symptoms of PTSD. It seems that nearly every HCW who participated in the study and experienced COVID-19 infection had symptoms of PTSD. It is due to the time of the study where on January 22, 2021, 1,986 death cases were reported [33, 35]. Therefore, HCWs might have had traumatic experiences [36, 37]. Bo et al. [36, 37] found almost similar findings in China regarding

PTSD symptoms when they assessed (N=714) COVID-19 patients before discharge from quarantine and reported nearly all (96.20%) participants had PTSD symptoms. However, the study was not done with HCWs who had COVID-19 infection. A study done in Turkey [38] highlighted feeling isolated, having suicidal ideation, being a non-physician HCW, fear of spreading coronavirus to family, female sex, and a history of having COVID-19 as independent predictors of PTSD in HCWs working in a COVID-19 unit. A factor highlighted here was the 'history of having COVID-19 infection among the participants'. As all of the HCWs involved in our study had a history of COVID-19, this might be the major reason for reporting PTSD symptoms by almost all HCWs.

A longitudinal study would be needed to establish the exact prevalence but it is very evident from the existing literature that mental health problems were raised among the HCWs during the pandemic era and hence, intervention protocols should be there to address these issues. A systematic review suggested that the presence of good mental health support in a safe working environment afforded a greater sense of control and agency to HCWs and helped improve their resilience during the pandemic [39]. Many previous studies have already found that emotional support, the teaching of self-care strategies, and psychological interventions are essential to reduce any kind of mental health problems that arise during the period of pandemic or crisis. Therefore, we also designed the intervention protocol and successfully implemented it to support the HCWs in Nepal. Despite having many limitations of the pre-post design with no control group as discussed in the limitation section, by considering the crisis situation a quick and feasible research design was implemented to see the impact of brief intervention. Our study revealed that the anxiety, depression, stress and PTSD symptoms score identified by DASS-21 and IES-R tools respectively, before and after a brief psychological intervention were found statistically significant where, the paired sample t-test showed a significant difference between the means for the IES-R scale's findings before the intervention (M=47.94, SD=14.53); and after the intervention (M=43.63, SD=15.35); (t = 5.003 and p=.000). Similarly, the paired sample t-test showed a significant difference between the means for DASS-21 scale's findings before the intervention (M=14.11, SD=11.74) and after intervention (M=12.28, SD=10.81); (t = 2.97 and p = .003). This means that it was found that there was a reduction in symptoms after the interventions.

CONCLUSION

The brief online psychosocial intervention protocol developed by a team of psychiatrists and clinical psychologists to help identify the stress and manage stress during the COVID-19 pandemic, and intervention led by a trained clinical psychologist is found to be effective in reducing the psychological symptoms specifically, depression, anxiety, stress and PTSD symptoms of HCWs who were previously diagnosed as COVID-19 positive and recovered from it. Therefore, on the basis of the findings, it can be concluded that the accurate provision of a group-based brief psychosocial intervention protocol developed for HCWs is considered an effective program to reduce anxiety, depression, stress and PTSD symptoms of HCWs in the context of Nepal. Our study evokes the need for further research with longitudinal study designs to see the progress of these symptoms in HCWs who were previously diagnosed as COVID-19 positive to establish the impact of this intervention protocol.

LIMITATIONS

There are a few limitations to this study:

a) Participants were selected from only one hospital in Nepal. Therefore, the findings from this study cannot be generalized to all HCWs in Nepal.

b) Given the ongoing quarantine during the time of the study, an online survey would have introduced the element of selection bias.

c) The main outcome of this study was measured by a self-rating scale with the liability of response bias and less reliable than more objective measurements.

d) Use of the Original version of the cut-off score to calculate DASS-21 findings is also a limitation of the study: Nepali version of the DASS-21, 5 items from the depression subscale and 4 items from the stress subscale loaded to Factor 1 (Depression). Two items from the depression subscale, three from anxiety and two from stress loaded to Factor 2 (Stress). The third factor (Anxiety) consisted of only four items, all from the anxiety subscale [40]. The authors concluded that the Nepali version of the DASS-21 is a reliable and valid instrument with which to assess negative emotional states but may not adequately distinguish between depression, anxiety and stress in this setting. Confirmatory factor analysis could not support the original three-factor solution of the DASS-21 and the cut-off score was not determined according to the factor analysis results from the Nepalese sample.

d) It was a cross-sectional study, so interpretation for causality cannot be established.

e) This study used a pre-post design. A weakness of a one-group pre-post design is that other factors besides the intervention may impact the outcome.

f) Several existing studies (Howard & Dailey, 1979; Howard, Ralph, Gulanick, Maxwell, Nance, & Gerber, 1979; Pohl, 1982; Sprangers & Hoogstraten, 1988; Rockwell & Kohn, 1989; Rohs & Langone, 1997) [41] have documented the problem of pre-post design with no control group is "response shift bias". In the literature, it is also mentioned that designs not including a control condition do not warrant any statement about the cause of the findings, whether due to response shift or subject bias. Thus, the outcomes observed in such studies cannot be reliably attributed to the specific intervention.

g) This research design is less reliable than randomized controlled trials (RCTs) since the results obtained in this research cannot be consistently linked to the particular intervention.

h) The duration to see the effect is too short to have any clinically meaningful impact on the mental health of the study population.

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

There are no conflicts of interest.

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