ORIGINAL ARTICLE

STUDY ON THE PREVALENCE AND ASSOCIATED FACTORS OF PERCEIVED STRESS ON COVID-19 AMONG HEALTHCARE PROVIDERS IN RUPANDEHI DISTRICT HEALTH INSTITUTIONS, WESTERN NEPAL
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Sreya Paudyal,[1] Sailaja Ghimire,[2] Yudhisthir Raj Khadka,[3] Manoj Dhungana[4]

ABSTRACT

INTRODUCTION

Healthcare providers (HCPs) though stood as front-liners during the crisis situation were not themselves immune to the psychological consequences due to COVID-19. The present study aimed to find the prevalence of perceived stress on COVID-19 pandemic and its associated factors among health care providers in Rupandehi district health institutions.

MATERIAL AND METHODS

This cross- sectional study was conducted among the HCPs in the institutions of Rupandehi district in Western Nepal, from August to November, 2020. Total 126 subjects were included and probability sampling technique was applied for sample collection. After written consent from participants, socio-demographic data were collected and Perceived Stress Scale (PSS-10) was applied.

RESULTS

The study showed the prevalence of perceived stress in COVID-19 HCPs to be 65.1% considering score 20 as cut-off. Age, work place, precaution measures taken and staying with family were statistically significant with the perceived stress level ($p < 0.05$). Multivariate logistic regression showed perceived stress level had statistically significant association with precaution means and work place of HCPs. Healthcare providers who had unsatisfactory precaution means followed at work were 2.66 times more likely to have perceived stress as compared to satisfactory precaution means as adjusted odds ratio (AOR) = 2.66 (1.09-6.51). Healthcare providers who stayed with family members were 2.28 times more likely to have perceived stress level as AOR=2.28 (0.94-5.52).

CONCLUSION

The study showed increased prevalence of perceived stress among HCPs during the initial stage of COVID-19 pandemic in Nepal. Considering the findings, there is urgent need to develop and implement appropriate stress management and coping strategies to the target group.

KEYWORDS

COVID-19, Healthcare providers, Perceived stress.

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INTRODUCTION

The COVID-19 pandemic has created a crisis situation, and any such unexpected events or challenging situations can cause significant stress due to the feelings of uncertainty. Hence, perceived stress is the feelings that an individual has about how much stress they are under at a given point or over a given period.[1,2] Healthcare providers (HCPs) who were in frontline for management of COVID-19 cases were in tremendous psychological distress besides physical stress.[3,4]

Significant and prolong exposure to stress may manifest itself in several outcomes including depression, anxiety, suicidal thoughts, loss of sleep, compromised immune function, and disturbed relationships.[5-7] As other countries, Nepal was also least prepared for the pandemic as it did not have adequate testing kits, resource allocation, preventive measures, step-wise clinical response and management protocol to suspected or confirmed cases.[5]

The aim of this study was to assess the prevalence of perceived stress and its associated factors on COVID-19 among HCPs.

MATERIAL AND METHODS

This was an institutional based cross-sectional study conducted among the healthcare providers (HCPs) which included doctors, interns, nurses, health assistants, and pharmacists who were directly or indirectly involved in the care of patients with COVID-19 in different health institutions of Rupandehi district which is a metropolitan city in Western Nepal. Calculated sample size $= z^2 pq/E^2 = 95$, prevalence of perceived stress (p) = 54%.[8] q (1-p), z=1.96 (95% confidence interval), E (allowable error) =10%.

A total of 126 healthcare workers from different hospitals meeting the inclusive criteria of being more than 18 years, and those consenting to participate were included in the study. Selection of centre were done randomly, as Rupandehi district has two Medical Colleges where general patients with COVID-19 and Non-COVID-19 were treated from which one was selected, only one provincial hospital and district hospital are present which were included, similarly private hospitals with bed more than 50 were included in the study. Each centre being considered as one stratum and by using proportionate stratified random sampling technique, samples were selected from each centre. One data collector from each hospital was selected who was trained on each item included in the study i.e., tools and objective of study. During data collection, supervision and follow up were made by investigator. The study was conducted during the increasing incidence of COVID-19 cases from mid-August to mid-November, 2020 after being approved by the ethical committee Universal College of Medical Sciences. (UCMS/IRC/060/20).

Data collection was carried out with a) semi-structured questionnaire to collect sociodemographic and clinical variables detail (age, gender, education, profession, marital status, type of family, work place, staying with family, following standard precautionary measure, chronic illness) and b) validated tool perceived stress scale-10 (PSS-10) was applied.[9]

Perceived stress scale (PSS-10)

The perceived stress scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. The PSS–10 questionnaire had 10 statements and the respondents were asked to indicate their level of agreement using an ordinal scale (0=Never; 1=Almost; 2=Sometimes; 3=Fairly often; 4=Very often). PSS–10 has a possible range of scores from 0 to 40. More score indicates more stress and vice versa. The range of PSS scores were also divided into quartiles. The upper two and lower two quartiles were combined (20 being the operational cut off value for the upper bound) and were labelled as stressed and not-stressed respectively for this study. This cut off value was selected in accordance to a similar study from India.[10] In other studies PSS-14 scale was used and similarly a score of 28 was considered as operational cut off.[11,12]

Data were coded and entered into Microsoft Excel sheet and analyzed using Statistical Package for Social Science (SPSS) version 16. Descriptive statistics like frequency, percentage were used to find the descriptive information of variables. In inferential statistics, Chi-square test was used to find the association between significant perceived stress level and sociodemographic variables. Further, multivariate logistic regression was used to find the net effect of significant variable in perceived stress level. Results were reported using crude and adjusted odds ratios (COR and AOR respectively) with corresponding 95% confidence intervals (CI). p value less than 0.05 is considered as statistically significant.

RESULTS

A total 126 subjects were included in the present study, where 34.9% were male while 65.1% were female. About 54% of the study populations were age group 18-30 years, while only 7.9% were more than 60 years. In the study, 32.5% were nurses and postgraduate doctors. About 54.8% of participants were married, 63.5% of total were from nuclear family and 60.3% of healthcare providers stayed with their family members during this Covid-19 pandemic. As per the work place 43.7% were working in teaching hospital, 41.3% were working in district and provincial hospitals while only 12.7% were from private hospital and 2.4% included in the study were from primary health centre. Chronic illnesses like

diabetes, hypertension, respiratory problems, heart disease were reported in 19% of study population. Most of the health workers (70.6%) agreed on working with unsatisfactory precautionary measures with no proper personal protective equipment (PPE) sets.

The study showed that the prevalence of overall perceived stress in COVID-19 HCPs found to be 65.1% considering score 20 as cut-off. Out of the 126 subjects, 82 subjects had a PSS Score ≥20 and hence were considered to be stressed. Age, work place, precaution measures taken and staying with family have a statistically significant association with the perceived stress level as $p<0.05$ (Table1). However, variables like gender, marital status, type of family of healthcare providers, education level, individual's profession and presence of chronic illness were not determinants of perceived stress.

Table 1. Association between the variables and perceived stress score

Variables		Frequency (%)	*p*-value
Age group	18-30 years	68 (54.0)	0.05
	31-59 years	48 (38.1)	
	60 years and more	10 (7.9)	
Gender	Male	44 (34.9)	0.154
	Female	82 (65.1)	
Marital status	Unmarried	56 (44.4))	0.349
	Married	69 (54.8)	
	Widow	1 (0.8)	
Family type	Nuclear	80 (63.5)	0.127
	Joint	46 (36.5)	
Education	Masters and above	47 (37.3)	0.594
	Bachelors	46 (36.5)	
	Diploma	33 (26.2)	
Profession	Postgraduate	41 (32.5)	0.458
	Resident	8 (6.3)	
	House officer	14 (11.1)	
	Interns	8 (6.3)	
	Nurses	41 (32.5)	
	Pharmacist	5 (4.0)	
	Health Assistant	9 (7.1)	
Work place	Teaching Hospital	55 (43.7)	0.017
	Provincial/ District Hospital	52 (41.3)	
	Private Hospital	16 (12.7)	
	PHC	3 (2.4)	
Precaution means	Satisfactory	37 (29.4)	0.037
	Unsatisfactory	89 (70.6)	
Chronic illness	No	24 (19.0)	0.108
	Yes	102 (81.0)	
Stay with family	No	76 (60.3)	0.004
	Yes	50 (39.7)	

Table 2. Multivariate logistic regression of variables with perceived stress score

Variables		Perceived stress <20	Perceived stress >20	Crude O.R (95% C.I)	Adjusted O.R (95% C.I)
Gender	Male	19 (43.2)	25 (56.8)	1	
	Female	25 (30.5)	57 (69.5)	1.73 (0.87-3.70)	
Age (years)	18-30	21(30.9)	47 (69.1)	1	1
	31-59	22 (45.8)	26 (54.2)	0.53 (0.24-1.14)	0.51 (0.22-1.19)
	>60	1 (10)	9 (90)	4.02 (0.48-33.81)	3.2 (0.33-31.34)
Education	Masters	19 (40.4)	28 (59.6)	1	
	Bachelors	15 (32.6)	31 (67.4)	1.40 (0.60-3.27)	
	Diploma	10 (30.3)	23 (69.7)	1.56 (0.61-4.01)	
Marital Status	Unmarried	18 (32.1)	38 (67.9)	1	
	Married	25 (36.2)	44 (63.8)	0.83 (0.40-1.76)	
	Widowed	1 (100)	0 (0)	0.002 (0.0005-0.001)	
Type of family	Nuclear	24 (30)	56 (70)	1	
	Joint	20 (43.5)	26 (56.5)	0.56 (0.26-1.18)	
Profession	Postgraduate	15 (36.6)	26 (63.4)	1	
	Resident	4 (50)	4 (50)	0.58 (0.13-2.65)	
	House officer	3 (21.4)	11 (78.6)	2.11 (0.51-8.80)	
	Interns	4 (50)	4 (50)	0.58 (0.13-2.65)	
	Nurses	11 (26.8)	30 (73.2)	1.57 (0.61-4.02)	
	Pharmacist	3 (60)	2 (40)	0.38 (0.06-2.57)	
	Health assistant	4 (44.4)	5(55.6)	0.72 (0.17-3.11)	
Work Place	Teaching Hos.	25 (45.5)	30 (54.5)	1	1
	P/District Hos.	10 (19.2)	42 (80.8)	3.5 (1.47-8.36)	3.43 (1.34-8.77)*
	Private Hospital	7 (43.8)	9 (56.2)	1.07 (0.35-3.29)	1.67 (0.49-5.71)
	PHC	2 (66.7)	1(33.3)	0.42 (0.04-4.87)	0.41 (0.03-5.30)
Precaution means	Satisfactory	18 (48.6)	19 (51.4)	1	1
	Unsatisfactory	26 (29.2)	6 (70.8)	2.30 (1.04-5.06)	2.66 (1.09-6.51)*
Chronic Illness	No	39 (38.2)	63 (61.8)	1	
	Yes	5 (20.8)	19 (79.2)	0.42 (0.15-1.23)	
Stay with family	No	25 (50)	25 (50)	1	1
	Yes	19 (25)	57 (75)	3.0 (1.40-6.41)	2.28 (0.94-5.52)

O.R=Odds ratio, C.I= Confidence interval

Variables found to be associated in bivariate analysis were further entered into the multivariate logistic regression model for adjusting confounding factors. Age group 31-59 years were 49% less [adjusted OR{AOR}=0.51 (0.22-1.19)] likely to have perceived stress level as compared age group 18-30 years, since Adjusted OR is less than 1 (i.e. 0.51), so the likelihood of having the outcome is expressed as (1-0.51) x 100% less, and age group >60 years were 3.2 times more likely to have perceived stress level as compared to age group 18-30 years [adjusted OR=3.2 (0.33-31.34)]. Health workers who worked in District Hospital were 3.43 times more likely to have perceived stress level [adjusted OR=3.43 (1.34-8.77)], health workers who worked in private hospital were 1.07 times more likely to have perceived stress level [adjusted OR=1.67(0.49-5.71)] and health workers who worked in PHC were 59% less likely to have perceived stress level [Adjusted OR=0.41(0.03-5.30)] as compared health workers who worked in teaching hospital. Health workers who had unsatisfactory precaution means were 2.66 times more likely

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to have perceived stress level as compared to satisfactory precaution mean [adjusted OR=2.66 (1.09-6.51)]. Health workers who stayed with family members were 2.28 times more likely to have perceived stress level [adjusted OR=2.28 (0.94-5.52)]. Multivariate logistic regression showed that perceived stress level had statistically significant association with precaution means and work place of health workers (Table 2).

DISCUSSION

The study showed that the prevalence of overall perceived stress in COVID -19 HCPs found to be 65.1%. Several studies done at different places showed similar results, study done at Ethiopia showed 61.8% and Ghana reported 64% of healthcare professionals had moderate stress.[13,14] The result showed higher perceived stress which might be due to low perceived preparedness to respond to the COVID-19 pandemic which was itself associated with stress among HCPs.[14] However, comparing the prevalence to some other studies done by Wang et al (53.8%) and Yigrem Ali et al (51.6%), the current prevalence of perceived stress is slight high.[8,15]

In the present study, majority 65.1% of the participants were females, most of the participants 54% were of age group 18-30 years and majority 54.8% were married. A study conducted in China revealed similar findings with the majority of respondents being female 67.3%, in the age range of 21.4 to 30.8 years 53.1%, and married were 76.4%.[8] The odds of having perceived stress on COVID-19 among health workers who were >60 years was 3.2 times more likely compared to those in the age range of 18–30 years of respondents. Advance age is considered as risk factors for adverse outcome in COVID-19. Several studies showed that adults over 65 years of age represent 80% of hospitalizations and have a 23-fold greater risk of death than those under 65.[16] This might be due to the impact of the co-morbidities, immune system capacity, and poor coping strategies elders experience with aging and knowing this fact in medical professional could be possible reason for high perceived stress score in age group >60 years.

Another interesting finding in the study was that age groups 31-59 years were 49% less likely to have perceived stress level as compared younger age group 18-30 years. It showed that young HCPs (medical officers, interns, junior residents, nurses) had more perceived stress. The previous studies have also found significantly high stress among trainee doctors, younger doctors and nurses.[17-19] Resident doctors, trainees and nurses are required to had closer interaction with patient as compared to senior faculty members who have more of supervisory roles.

Healthcare providers who stayed with family members were

2.28 times more likely to have perceived stress level than those staying alone. Those staying with families had higher perceived stress possibly with risk of transmitting them. Safety of family members were seen as major concern to healthcare providers in many other studies. Urooj et al found that 79.7% of doctors are afraid of infecting family members and 28.8% are afraid of becoming a carrier to others.[20]

As per the work place 43.7% were working in teaching hospital, while 41.3% were working in district and provincial hospital which were designated as COVID-19 hospitals by Government of Nepal for management of COVID-19 patients until later when all the medical colleges and private sectors were engaged in COVID-19 response. The finding shows that the health workers who worked in provincial /district hospital were 3.43 times more likely to have perceived stress compared to health workers who worked in teaching hospital. Further, health workers working in PHC were 59% less likely to have perceived stress level as compared to those working in medical college. As the result showed, health workers working in Government hospitals had perceived stress greater than those working in medical college, one of the possible reasons for that could be as mentioned above Provincial/district hospitals were designated as COVID-19 Hospital by Ministry of Health and Population (MoHP) at first place. These hospitals were allotted for screening, testing, treating and referring the COVID-19 cases during first wave until others were involved and this study was conducted during that period. So the health workers working at those place possibly were more stressed compared to others.

Chronic illnesses like diabetes, hypertension, respiratory problems, heart disease were reported in 19% of study population. Presence or absence of chronic illness was not predictors of perceived stress in the present study. Most of the health workers (70.6%) agreed on working with unsatisfactory precautionary measures with no proper personal protective equipment (PPE) sets. The study showed that health workers who were unable to follow satisfactory safety measures during management and care of COVID-19 patients because of unavailability and shortage of necessary personal protective gears at their respective workplaces were 2.66 times more likely to have perceived stress level. Similar result was shown by other studies, 70%-85% of health care professionals responded that the availability of PPE in their working health institution was not adequate.[13,21] Multivariate logistic regression analysis showed that the work place of the HCPs and availability/ use of precautionary means while on duty were the main predictors of perceived stress.

Discussing the limitation of the present study, the study was conducted during the early phase of pandemic and thus the other stressful situations of HCPs existing before the

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pandemic were not ruled out which might bias the current result. The sample size was small in the study. Respondent bias might be there as tool used was self-reported.

CONCLUSION

Healthcare providers have faced considerable perceived stress during the pandemic. Variables like age, staying with family members during pandemic, precautionary measures taken during patient care and work place of HCPs has significant association with perceived stress. The degree to which we protect the physical health and mental wellbeing of HCPs will shape the pandemic. Management of stress among healthcare providers should be one of the priority during this global pandemic situation.

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CONFLICT OF INTEREST

None

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