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Perceived Stress among Health Service Providers' during COVID- 19 Pandemic in Hospitals of Syangja District, Nepal

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Abstract*: The ongoing pandemic, novel Coronavirus disease (COVID-19), is declared as a public health emergency of international concern on January 30, 2022 by WHO. Impact of COVID-19 is seen in all areas. Due to high exposure with COVID-19 infected patients, different problems is increasingly being recognized in health care professionals. The objective of this study was to assess the perceived stress and its determining factors among health service providers' during COVID-19 pandemic in hospitals of Syangja district. A cross-sectional study was conducted among 128 health service providers of Syangja district. A self-administered questionnaire including Perceived stress scale was used as a data collection tool. Chi-square test was performed to assess the association. Among total population, the prevalence of perceived stress among participant was found to be 55.46%. Majority of health service providers (61.7%)were females with working experience one to five years. Age(p=0.024), health service providers satisfied with government incentives(p=0.033) and Health service Providers family member suffering from COVID-19(p=0.035)was seen to be significantly associated with perceived stress.More than half of the health service providers had perceived stress during COVID-19 pandemic. So,early prevention and detection of the problem would be beneficial for the promotion of their health.*

Keywords: *COVID-19 pandemic,Perceived Stress,health service providers, hospitals, Syangja, Nepal*.

I.   Introduction

Coronavirus disease 2019 (COVID-19) is a new serious disease of human respiratory system and caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1-3]. The first case of COVID-19 was reported from Hubei Province of China on 31 December 2019. WHO has declared it as a Public health Emergency of International Concern (PHEIC) on 30 January 2020 and pandemic on 11 March 2020 [4].The symptoms include fever, cough and fatigue, mild to severe respiratory illness appearing after an incubation period of approximately 5.2 days [1].As of August 2022, nearly 600 million cases and over 6.4 million death of COVID-19 are reported globally [5]. In case of Nepal more than a million case and more than 12000 deaths has been reported due to COVID-19 till first week of September 2022 [6].

The previous study showed that the outbreak has wide range of psychological impact at the individual and community level, additionally health workers are core to be affected by such pandemic in the past [7, 8].These repercussions due to emergencies are highly neglected and very costly [9, 10].Due to inadequate resources, health workers faces challenges like inadequate PPE, work burden, increasing number of confirmed and death

cases as well as being inadequately unsupported in the workplace can proliferate mental health effects in health workers [11].

Impact of COVID-19 on mental health of health service providers' is well managed in the other countries but in the context of Nepal it was not found so far, few research were done regarding impact of COVID-19 pandemic in health professional [12].However, Nepal Health Research Council (NHRC) published the list of nineteen COVID-19 related research proposals that were approved by the ethical review board of which eleven studies were concerned with the mental health among different population subgroups on 18 May 2020 [13]. Among them a web based cross-sectional survey on 374 health care workers found that the self-perception of the stress ranging from low, moderate to high was 17.9 %, 76.7% and 5.3% respectively[14].Recently a study was conducted on stress, anxiety, depression and their factor associated among 404 frontline health care workers during COVID-19 pandemic including seven provinces showed the symptoms of depression (29.0)%,anxiety (35.7)%,and psychological distress (17.1)% were in clinical level [15].Only in few selected hospitals COVID-19 cases are managed in Nepal [16].

A survey conducted among 1257 health care workers in China found that more than half of the health care workers had experienced symptoms of depression, anxiety, insomnia and distress [17]. Likewise, in Southern Ethiopia, Dilla Town health institution, the magnitude of perceived stress of corona virus disease 2019 among health care providers' was found 51.6% while conducting survey mostly nurses and pharmacist professional which were in the age between 25 to 31 years old [18]. Similarly, in India the prevalence rate of health care professionals with high level stress was 3.7% and mostly female workers were more prone to stress than male workers working at the time of pandemic [19].

A recent survey conducted in Nepal among general population during the initial phase of COVID-19 states that nearly three quarters participants rated their self-perceived stress as moderate to high and about one quarter reported having low self-perceived stress [15].Large number of health workers were in high risk during this pandemic[20]reasoning with inadequate Personal Protective Equipment (PPE) and limited testing kits which lead towards stress [21, 22].

COVID-19 has brought the world in the state of emergency and became a global crisis. Gradually increase in COVID-19 cases makes population more panic and frustrated. Mostly health service providers' who provide services in pandemic situation are racked towards stressful situations. This occurs due to lack of PPE, inadequate testing kits, increasing duty hours, rise in incidence and mortality cases, extended days of lockdown, less support from the family and the community etc.As we know that Nepal is a developing country only small number of researches were carried out [12]. Current research into COVID-19 is focused on the epidemiology and clinical aspects only. At the initial stage of COVID -19 pandemic self-perceived stress was measured in general population only[15]. Mainly the mental health area is overshadowed. COVID-19 brings lots of mental health problems in the health workers as well [20]. This study helps to insight the perceived stress in the health serviceproviders'so that the findings of this research will be useful for government and concern stakeholders. The study aimed to identify the factors associated with perceived stress among health service providers' to assess the mental health status of health service providers' in Syangja district during the time of COVID-19 pandemic.

II.   Methods

Cross-sectional analytical study was conducted in Syangja District. The study population was health service providers' who were working in different hospitals of Syangja district. Health workers included in this study were consultants (doctors), medical officers, nurses and paramedics. Census was done in 9 different hospital of Syangja district. So, none of the participant were excluded in this study. The total sample size for the study was 128.

Data collection tools was self-administered questionnaire. Perceived stress scale was used as a data collection tool. The Perceived Stress Scale (PSS) [23] is a classic stress assessment instrument having 10 items. It is retrospective global measure of stress which is developed to measure the degree to which life events are judged as stressful and reaction of respondents to them. The scale consists of negatively and positively worded items. The items are rated on a 5-point Likert-type scale ranging from 0 to 4. The total possible score ranges from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0-13 would be considered low stress, 14-26 would be considered moderate stress, and 27-40 would be considered high perceived stress. Perceived Stress was calculated by taking average value.

For maintaining the validity, extensive literature review and consulting with the Supervisor was done. Translation of Sheldon Cohen Perceived Stress Scale tool by the experts during data collection were done. The tools was pretested among 10% of the total population in hospital of Kaski district in similar setting to observe the familiarity of tools with our study environment. Modification was also done in consultation with the experts.During data entry, data editing was done on the same day of data collection by re-checking every information before data entry to minimize the error. The data was entered in Epi Data (Version 3.1) in order to control the limit error. To minimize within the limit error, 10% of the entered data was selected randomly and checked manually. The percentage of the error was repeated. Data were then exported to SPSS (Version 20) for analysis. Socio-demographic characteristics were analyzed in frequencies and percentage. Chi-square test was done to find out the association between dependent and independent variable.Ethical clearance was obtained from Institute Review Committee, Pokhara University (Ref. no. 21/2078/079). The data collection approval was received from Health Office Syangja (Ref. no. 398). The study was approved by School of Health and Allied Sciences, Pokhara University, Nepal.

III. Results

3.1 Socio-demographics characteristics of the participants

Table 1:Socio-demographic Characteristics

Characteristics(n=128)	Frequency(f)	Percentage (%)
Age(years)		
below 20	4	3.1
20-30	93	72.7
30-40	29	22.7
More than 40	2	1.5
Gender		
Male	49	38.3
Female	79	61.7
Marital status		
Married	62	48.4
Unmarried	66	51.6
Religion		
Hindus	117	91.4
Buddhists	6	4.7
Muslims	3	2.3
Christians	2	1.6
Caste/Ethnicity		
Brahmin	59	46.1

Chhetry/Thakuri	20	15.6
Janajaati	39	30.5
Dalit	8	6.2
Others	2	1.6
Monthly income		
10,000-30,000	88	68.8
30,000-50,000	35	27.3
50,000-70,000	5	3.9
Education Status		
Secondary education	57	44.5
Graduate and above	71	55.5
Position		
Consultant (doctors)	5	18.8
Medical Officer	25	41.4
Nurses	57	3.9
Paramedics	41	35.9
Living arrangement		
On rent	24	18.8
Own houses	53	41.4
With relatives	5	3.9
Office quarters	46	35.9

Table 1 shows the socio-demographic characteristics of participants. The median age of the participant was 27years old with interquartile range 6 years. The minimum and maximum age of the participant was 18 years and 50 years respectively. The mean income of the family was Rs 29345. The minimum income of the participants was NRs 10000 while maximum income was NRs 51000.

3.2 Work Related Factors
In this Section, work related factors of participants are discussed.
Table2:Work Related Factors

Characteristics(n=128)	Frequency(f)	Percentage (%)
Hospital Type		
Government	107	83.6
Private	21	16.4
Work division		
Frontline staffs	125	97.7
Supportive staffs	3	2.3
Work experience		
Less than year	22	17.2
One to five years	75	58.6
Above five years	31	24.2
Precautionary measures in the workplace		
Sufficient	78	60.9

Not sufficient	50	39.1
Experience of stigma due to occupation		
Yes	29	22.7
No	91	71.1
Don't want to answer	8	6.2
Types of major stigma experience(n=29)		
Stigmatized because of Profession	18	62.1
Accused of being a carrier of disease	9	31.0
Threatened	2	6.9
Aware of Government Incentives for health workers		
Yes	105	82.0
No	23	18.0
Satisfied with Government incentives		
Yes	6	4.7
No	122	95.3
Change in regular job duties during COVID-19 pandemic		
Yes	101	78.9
No	27	21.1
Working overtime during COVID-19 pandemic		
Yes	103	80.5
No	25	19.5
Exposure to COVID-19 infected patient		
Yes	125	97.7
No	3	2.3

Table 2shows the work-related factors information of the participants. The result of the study showed that most of the participant (83.6%) were from Government Hospital. Almost all (97.7%) hadworked on the frontline. Majority of the participants (58.6%) had work experience of one to five years. Similarly, more than three-fifth (60.9%) participant felt that there were sufficient precautionary measures in the workplace.Similarly, Majority of the participants (82%) were aware of government incentives for health workers. Only 4.7% of participants were satisfied with government incentives. Nearly four-fifth (78.9%) find change in their regular job time due to COVID-19 cases. Majority of the participants (80.5%) worked overtime during COVID-19 pandemic. Almost all participant (97.7%) were exposure to COVID-19 infected patient.

3.3 COVID-19 Related information
COVID-19 Related Knowledge of participants was discussed in this section.All participants have known that the virus causing COVID-19 is SARS-CoV-2. Majority of the participant (93%) had known the incubation period of the COVID-19. Nearly half of the participants (46.9%) participants had known that the mode of transmission for COVID-19. Almost all (97.7%) had knowledge on main symptoms of COVID-19. More than half participant (67%) had known about the confirmatory diagnosis for COVID-19. More than half of the participants (56.2%) have known the high risk population. More than nine-tenth (96.1%) participant had knowledge on preventive measure while only 78.9% participants had knowledge on management option for COVID -19. Nearly three-fifth (58.6%) participants had knowledge on complication of COVID-19. Among all more than three-fifth(63.3%) of the participant had adequate knowledge regarding COVID-19. Majority of the participants (44.5%) got the COVID-19 related information from the official websites followed by social media (43.8%).

Among all, 76.6% (98) did not feel secure with their family when they return from the work. Nearly two-fifth (35.9%) participant have someone in their family who had suffered from COVID-19 previously. Likewise, 31.2% (40) participant has someone in their family suffering from COVID-19 at recent. More than nine-tenth (92.2%) of the participants had taken both doses of vaccination while less than one-tenth had taken single dose or no any doses of vaccine.

3.4 Perceived Stress Scale
In this section perceived stress of participants was shown.
Table 3: Perceived Stress Scale

Items	Mean Score (SD)	Perceived Stress Scale
Frequency of upset felt due to something unexpected happened	2.66(0.943)	67.2(86)
Frequency of inability to control important things in your life	2.32(0.963)	51.6(66)
Frequency of nervous and stressed felt	2.66(0.872)	70.3(90)
Frequency of confident felt about once ability to handle problems	3.32(0.955)	86.7(111)
Frequency of things going your way felt	3.32(0.955)	86.7(111)
Frequency of one inability to cope with things one had to do felt	2.78(0.896)	68.8(88)
Frequency of one's ability to control irritations in your life	3.45(1.064)	82.8(106)
Frequency of top of things that you were felt	3.47(0.972)	87.5(112)
Frequency of anger felt when things go out of your control	2.77(0.909)	69.5(89)
Frequency of difficulties piling up felt and not able to overcome them	2.58(0.902)	63.3(81)

Table 3 shows the average perceived stress score with individual items with the percentage of Perceived stress in relation to individual characteristics. Among ten item of the scale lowest score (2.32) was observed for frequency of inability to control important things in their life and highest score (3.47) frequency of top of things that you were felt was observed.

3.5 Perceived Stress of Participants
Among 128 participants 44.5 % (57) don't have perceived stress while the remaining 55.5% (71) had perceived stress. So, this study shows the prevalence of perceived stress of healthworkers in Syangja district was 55.5%.

3.6 Association of Socio-demographic Characteristics with Perceived Stress
Table 4: Association of Socio-demographic Characteristics with Perceived Stress

Variables	Perceived Stress		Total	Chi-square	p-value
	Yes	**No**			
Age(years)					
Less than 36	70(57.9%)	51(42.1%)	121	χ^2=5.084	**0.024***
Greater or equal to 36	1(14.3%)	6(85.7%)	7		
Gender					
Male	20(21.8%)	29(27.2%)	49	χ^2=0.444	0.584
Female	37(35.2%)	42(43.8%)	79		
Marital status					
Married	28(27.6%)	34(34.4%)	62		
Unmarried	29(29.4%)	37(36.6%)	66	χ^2=0.019	1.0

Religion					
Hindus	52(52.1%)	65(64.9)	117		
Non-Hindus	5(4.9%)	6(6.1%)	11	χ^2=0.004	1.0
Ethnicity					
Uppercaste	37(35.2%)	42(43.8%)	79		
Janajaati	16(17.4%)	23(21.6%)	39	χ^2=0.447	0.800
Dalit and others	4(4.5%)	6(5.5%)	10		
Monthly income					
Lesser or equal to 29,353	37(34.7%)	41(43.3%)	78	χ^2=0.409	0.468
More than 29,353	20(22.3%)	30(27.7%)	50		
Education Status					
Secondary Education	30(25.4%)	27(31.6%)	57	χ^2=2.730	0.110
Graduate and above	27(31.6%)	44(39.4%)	71		
Position					
Consultant (doctors)	2(40.0%)	3(60.0%)	5	χ^2=4.265	0.234
Medical officer	13(52.0%)	12(48.0%)	25		
Nurses	28(49.15)	29(50.9%)	57		
Paramedics	28(68.3%)	13(31.7%)	41		
Living arrangement					
Own house	23(23.6%)	30(29.4%)	53	χ^2=0047	0.858
Outside their own house	34(33.4%)	41(41.6%)	75		

*significant at p>0.05
Table 4shows association of socio-demographic characteristics with perceived stress. Age was seen to be significantly associated with perceived stress (χ^2=5.084, p value 0.024).

3.7 Association of Work-related factors with Perceived Stress
Table 5: Association of Work-related factors with Perceived Stress

Variables	Perceived Stress		Total	Chi-square	p-value
	Yes	**No**			
Work division					
Frontline staffs	56(55.7%)	69(69.3%)	125	χ^2=0.693	1.0
Supportive staffs	1(1.3%)	2(1.7%)	3		
Work experience					
Less than 1 year	11(9.8%)	11(12.2%)	22	χ^2=0.322	0.641
Greater or equal to 1 year	46(47.2%)	60(58.8%)	106		
Precautionary measures in the workplace					
Sufficient	34(34.7%)	44(43.3%)	78	χ^2=0.072	0.856
Not sufficient	23(22.3%)	27(27.7%)	50		
Aware of government incentives for health workers					
Yes	47(46.8%)	58(58.2%)	105	χ^2=0.013	1.0
No	10(10.2%)	13(12.8%)	23		
Satisfied with Government incentives					
Yes	6(3.3%)	0(2.7%)	6	χ^2=5.054	**0.033***
No	65(67.7%)	57(54.3%)	122		
Change in regular job duties during COVID-19 pandemic					
Yes	42(45.0%)	59(56.0%)	101	χ^2=1.684	0.276
No	15(12.0%)	12(15.0%)	27		
Working overtime during COVID-19 pandemic					
Yes	46(45.9%)	57(57.1%)	103	χ^2=0.004	1.0
No	11(11.1%)	14(13.9%)	25		

Exposure to COVID-19 infected patient

Yes	54(55.7%)	71(69.3%)	125	χ^2=3.827	0.086
No	3(1.3%)	0(1.7%)	3		

*significant at p>0.05

Table 5 shows association of Work-related factors with perceived stress. Pearson's chi-square test showed health service providers satisfied with government incentives was significantly associated with perceived stress (χ^2=5.054, p value 0.033).

3.8 Association of COVID-19 related variables with perceived stress

Table 6: Association of COVID-19 related knowledge with perceived stress

Variables	Perceived Stress		Total	Chi-square	p-value
	Yes	**No**			
Knowledge					
Adequate Knowledge	37(36.1%)	44(44.9%)	81	χ^2=0.732	0.854
Inadequate Knowledge	20(20.9%)	27(26.1%)	47		
Suffering from COVID-19 in a family					
Yes	28(22.2%)	12(17.8%)	40	χ^2=4.974	**0.035***
No	43(48.8%)	45(39.2%)	88		
Vaccination Status					
Fully vaccinated	64(65.5%)	54(52.5%)	118	χ^2=0.336	0.510
Partially vaccinated	7(5.5%)	3(4.5%)	10		

*significant at p>0.05

Table 6 shows association of COVID-19 related knowledge with perceived stress. Perceived stress shows a significant association with the family members suffering from COVID -19 (χ^2=4.974, p value 0.035)**.**

3.9 Adjusted relationship of explanatory variables with perceived stress

Table 7: Adjusted relationship of explanatory variables with perceived stress

Explanatory variables	Unadjusted		Adjusted	
	OR **(95% CI)**	**P value**	**OR** **(95% CI)**	**P value**
Age(years)				
Less than 36	7.962	0.058	7.497	0.068
Greater or equal to 36	(0.93-68.17)	Ref	(0.865-65.007)	Ref
Satisfied with government incentives				
Yes	0.00	Ref	0.00	Ref
No	(0.0-0.0)	0.999	(0.0-0.0)	0.999
Suffering from COVID-19 in a family member				
Yes	2.174	0.052	1.734	0.192
No	(0.994-4.754)	Ref	(0.758-3.964)	Ref

Table 7 shows the adjusted relationship of explanatory variables with perceived stress. No any variable seems to be significantly associated with perceived stress.

IV. Discussion

4.1 Perceived Stress among Health workers

Perceived Stress among health serviceproviders was found to be55.46% in this study. A similar study conducted among Health care Providers of Gedeo Zone Governmental Health Institution was found to be 51.6%[24] and

general population in China was found to be 53.8%[25].Such differences may be attributed due to the differences in methodologies, population, and assessments that have been used in the past research.

4.2 Socio-demographic Variables with Perceived Stress

In this study, majority of health service providers' were females 61.7%(79). On the contrary, a study conducted in Ethiopia showed that the majority of the respondents were males 161(66.0%)[24]. This difference in male and female health care providers' might be the chance provided by the country. Females are comparatively prioritized and females practices nursing profession more in Nepal than that of others countries of the world. A significant association was observed between the age and perceived stress in our study. Similar study of Ethiopia shows that the health workers in the age range of 25 to 31years had higher perceived stress than others during COVID- 19 pandemic [24, 26, 27].

4.3 Work-Related Factors with Perceived Stress

Health workers need to be close contact with the COVID 19 infected patients so, they were in high chance of exposure [28].Most of the participants (97.7%) were exposed to COVID-19 infected patients. In a study conducted in among Health care providers' in Ethiopia showed that majority of health care providers' work experience was one to five years(53.3%) which is similar to our study [24].Unlike a study conducted in Chine which was six to ten years[29]. This difference might be due to differences in the sample size, educational development system and economic status. The participants who worked for less than a year had perceived stress of less than one-tenth (9.8%) while participants who worked above 1 year had perceived stress of 47.2%.In the study conducted in Japan and Pakistan, amount of prevention measures was negatively associated with psychological distress of the employees and positively associated with performance [30, 31]. But in our study there is no any association between precautionary measures in the workplace with perceived stress. Whereas, more than three-fourth (60.9%)thought that there was sufficient precautionary measures in their workplace.

During the time of COVID-19 pandemic,fearing the spread of novel coronavirus in their neighborhoods some house owners have been reported to evict health workers from their rental apartments [20, 32]. Our study showed that nearly quarter (22.65%) of them experienced stigma Among them 62.1%(18) had stigmatized due to profession, 31% accused of being a carrier of disease and 6.9% were threatened.A significant association was observed between health service providers' satisfied with government incentives and perceived stress in our study.

4.4 COVID-19 Related Factors

In a study conducted in health workers in Nepal almost all health workers had knowledge on COVID-19[33].Our study showed about 44.9%(44) of participants having adequate knowledge had no perceived stress which ultimately shows that awareness on COVID-19 and perceived stress establishes a relation. Our study showed health service providers' family member suffering from COVID-19 in family is significantly associated with perceived stress. 92.2% (118) participants were fully vaccinated against COVID-19. There is no association between vaccination statuses with perceived stress.

A study done on China showed that the health workers family's members were more prone than others during COVID-19 pandemic time. They were in stressful situations [34]. In this study 76.6%(98) participants don't feel secure in contact with their family. This is because they were working in the frontline and exposed with COVID-19 infected patients. They afraid to meet their family members incase transmission of corona virus might occur.

Although research meets its objectives, some limitation was creeping with it. This was the small scale study conducted in hospitals of Syangja district which makes difficulty in generalization of the findings. The accuracy and reliability of the output mainly depends on the adequacy and quality of data but data availability is the main issue. Since this study was conducted during the period of pandemic, so local level health institution were difficult to include in this study.

V.   Conclusion

This study aimed to determine the prevalence of perceived stress and its association with various factors. Through this study, the prevalence of Perceived Stress wasfoundamong more than half of the participants. Majority of health service providers' were females with work experienceof one to five years. One third of them experienced stigma due to profession followed by accused of being a carrier of diseaseand threatened.Participants were fully vaccinated against COVID-19.A significant association was observed between age, Health serviceproviders' satisfied with government incentives and Health care Providers' family members suffering from COVID-19in our study. Our findings can be used to formulate psychological interventions to improve mental health and psychological resilience during the COVID-19.

Based on the study finding, we recommend health service providers'to provide appropriate incentives to health worker on time.It is recommended that health serviceproviders' should be provided immediately with appropriate training/orientation on COVID-19 with a special focus on mental health topics.

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