Perceived Stress and Its Associated Factors towards Covid-19 Outbreaks Among Health Professionals of Asella Referral and Teaching Hospital, Southeast Ethiopia

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Abstract

Background: Frontline health workers are encountering an increasing workload and risk of infection while saving lives and it was reported that infected health workers accounted for 29% of all hospitalized COVID-19 patients during early pandemic. Thus they are under psychological distress because of risk of contracting COVID-19.

Objectives: To assess the perceiving stress and its associated factors towards COVID-19 outbreaks among health professionals of Asella referral and teaching hospital, Arsi zone, Oromia Region, Ethiopia, June 2020.

Methods: An institutional based cross sectional study design was conducted from June 1 - 20, 2020. Simple random sampling technique and proportional allocation was used. Data was collected by trained BSc nurses in face to face by using pretested and structured questionnaire and entered into Epi-info and exported to SPSS for analysis and presented by descriptive statistics. Bivariate and multivariate binary logistic regression was used.

Result: The prevalence of perceived stress was 60.8%. The married were more stressed than divorced individuals, (AOR: 1.213, 95 CI: (1.199, 3.571). Protestant (AOR: 2.552, 95% CI: (1.098, 10.846) stressed more than

Waaqeffata religion followers. Amhara (AOR: 1.757, 95% CI: (1.337, 9.158) more likely stressed than Siltey ethnicity.

Conclusion: This study revealed health professionals found to have high perceived stress. Religion, marital status and ethnicity were found to have a statistically significant association with perceived stress. Early screening and intervention of psychological stress of health professionals were highly recommended.

Key words: Perceived stress, health professional, Asella Referral and teaching Hospital, Arsi Zone.

Introduction

This century 21st already had been experienced several outbreaks of virus disease. In December 2019, an outbreak of a new viral disease, novel coronavirus another virus from the Corona family like SARS and MARS, was reported in Wuhan, the capital of Hubei Province, China, announced by World health organization as COVID-19 on February 11, 2020 and declared it is pandemic on March 11, 2020 as it is affecting more than 215 countries (Ahmed, M.Z, 2020; Jiang D, 2020). It is more dangerous and transmitted by physical contact and respiratory routes. Frequent hand washing and keeping social distance prevents the disease (Chan JF-W, 2020; Ministry of Health, 2020; McManus S, 2016; Ford T, 2020; Holmes E, 2020; WHO, 2020).

As on March 12, 2020, there are 80814 COVID- 19 cases found in China, where 64117 recovered and discharged from hospital where death tolls total reached 3177 (Worldo meters, 2020). As of 3 May 2020, there have been approximately 3,546,758 global cases of COVID-19, 1137,349 people have

recovered from the disease, and while there have been 247,312 deaths from the virus (World meter, 2020).

Ethiopia confirmed the first COVID-19 case on 12 March 2020. Since then, within one-hundred days, (as of June 22, 2020 G.C.) 216,328 laboratory test have done, 31,573 have contact history (of which 708 infected), 4532 people are infected, 75 have died, 32 million house to house investigations have done, 13,858 treatment beds prepared, 4500 new health professional have been recruited, 12,000 free service have been registered, 513 million Birr have invested to buy personnel protective equipments (Ministry of Health, 2020). This is very low when compared to other countries. Yet, given the weak institutional capacity, it should be noted that Ethiopia with a total population of 109,224,559, according to the 2018 World Bank estimate, has a high vulnerability to the pandemic, this sudden outbreak poses mental effect (MoH, 2020; Elston J, 2016; Xiang, 2020).

Frontline healthcare workers (HCWs) in Wuhan have been under tremendous pressure and risk of contracting COVID-19. As of February 12, 2020, 21,569 HCWs from other cities in China have been deployed to support emergency response efforts while 1,716 Chinese health care workers (HCWs) have contracted COVID-19 and 5 have died (Chen Q, 2020; CDC, 2020; Du J, 2020; Song Z, 2019; Chong MY, 2004; Mc Alonan GM, 2007; Lee E-H, 2012; Paules C, 2020). According to the study done by Ahmed, M.Z., et al, 2020 in China perceived stress of the health professionals were 37.1 % (2), in Southwest Ethiopia by Abel Girma and Ermias Ayalew, 2020**,** the prevalence of perceived stress was 41.6% (Girma A, 2020), in Dilla town, Southern Ethiopia, on perceived stress on COVID-19, prevalence of perceived stress were 51.6% (Ali Y, 2020).

Early identification of distress and timely psychological interventions is to prevent crisis at times of pandemics, controlling its spread and management disease outbreak (Banerjee D, 2020; Karger AG, 2020; Bao Y, 2020; Kang L, 2020; Liu S, 2020).

Identifying the health professional psychological perception during the COVID-19 pandemic contribute very important input for the intervention to control the disease and on the management disease outbreak. So the main significant for this research is one of the inputs and tool the introduction and intervention in the health professional psychological perception about COVID-19 emergency outbreak during COVID-19 pandemic.

Objective

General objective

The aim of this study was assess the perceiving stress and its associated factors towards COVID-19 outbreaks among health professional of Asella referral and teaching hospital, Arsi zone, Oromia, South Eastern Ethiopia, June 2020 G.C.

Specific objectives

1. To determine the perceiving stress towards COVID-19 outbreaks among health professional in Asella referral and teaching hospital
2. To identify the associated factors affecting the perceived stress towards COVID-19 out breaks among health professional in Asella referral and teaching hospital

Methods and Materials

Study area

The study was conducted in Asella referral and teaching hospital. Located in Asella town Arsi zone Oromia regional states southeastern Ethiopia. Asella

Hospital was founded in1964 G.C by the Ethio-Italian co-orporation and currently it is surving as a referal hospital for about 3.5 million populations in Arsi Zone and for the neighbors zones. The hospital has 294 beds in EOPD, Festula clinic, ICU and four main wards.In addition to clinical services the hospital is now procesing teaching learning, for rearch and community services as teaching hopistal both undergraduate and post graduate students of medical and health sciences students. According to the Asella hospital profiels there are 445 health professionals and medical doctors, 600 adminstartion staff and more than 2000 students enrolled in college of health scieces and asella referral and teaching hospital.

Study design and period

An institutional based cross-sectional study design was conducted from June 1 to June 20, 2020 G.C. to assess the perceiving stress and its associated factors towards COVID-19 outbreaks in health professional of Asella referral and teaching hospital.

Source Population and study population

All health professionals working in Arsi Zone hospitals were considered for the study.

Study population

All randomly sampled physicians, Nurses, Midwives, Laboratory technician/technologist, pharmacist/ druggist and medical doctors who had been working in Asella referral and teaching hospital were study population.

Inclusion and exclusion criteria

Inclusion criteria

- Health professional who is Ethiopian citizenship
- Permanently employed health professional

Exclusion criteria

- Very ill health professional
- New recruited of less than six months

Sample Size Determination

The required sample size was calculated using the formula of estimating a single population proportion n_o**= [(Zα/$_2$)^2 p (1-p)/d^2]. At 95% CI = 1.96, P= 51.6% (20), d= 0.05** as: $n_o = [(Z\alpha_2)^2 \text{ p } (1\text{-p})] /d^2 = ((1.96)^2 *0.5 *0.5)/0.05^2$=384 (since there is no such research done P=50%)

Since the number of health professional is less than 10,000 we will use finite Population Correction for Proportions: - $n= n_o/ (1+ (n_o/N)) = 206$, since N= 445

Thus, by adding 10% of non-respondents, 227 health professionals will be the final sample size

Sampling technique

Simple random sampling was used for the selection of sampling units from different department of nurse, midwifery, medical doctors, pharmacy, medical laboratory of health professional in Arsi University Asella referral and teaching hospital. The required number of health professional from each department was proportionally allocated.

Variables

Dependent: - Perceived stress

Independent variable: Age. Sex, religion, ethnicity, marital status, occupational status, educational status, monthly income, culture, health institution facilities, governmental institution, non-governmental institution, political instability, family instability, community

Operational definition

Perceived stress: - It is measured with the perceived stress scale (PSS). PSS is a 10-item multiple-choice self-report psychological instrument for measuring the perception of stress. Each answer is scored 0 to 4. PSS is scored by summing across all scale items. The total score ranges 0.0–40.0 with higher scores indicating health profession with more perceived stress symptoms. The cut off value for the stress limit will set at 20 (Manzar D, 2019)

Health professionals:- maintain health in humans through the application of the principles and procedures of evidence-based medicine and caring. Health professionals study, diagnose, treat and prevent human illness, injury and other physical and mental impairments in accordance with principle of health institution and the needs of the populations they serve.

Data Collection procedures and tools

The data was collected from each health professional of respective departments by face to face self-administered structured questionnaire which was prepared to ask questions related to socio-demographic data of health professional, questions to assess the perceived risk of COVID-19 using Perceived stress scale, PSS-10. (Ali Y, 2020)

The PSS is a 10-item questionnaire to measure the self-reported level of stress (6 of them) and copying strategy (4 of them) in the respondents by assessing feelings and thoughts during the last month (Ali Y, 2020) which has a wide range of applications and of which the scores are obtained by reversing responses (e.g. 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A 5-point Likert scale was employed to evaluate each item

(e.g. 0 = Never, 1 = Almost Never, 2 = Sometimes, 3 = Fairly Often, 4 = Very Often). Individual scored on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress of COVID-19 out breaks. For the purpose of this study, a total score of >20 points was considered as the cut off for experiencing perceived stress on COVID-19 (Ali Y, 2020).

Data Quality Assurance

The questionnaire which was adopted from pre-defined scale, adopted from WHO, was prepared in English. To check the validity of the study, to improve the sensitive or ethically unacceptable words and to check the questionnaire was in line of the objective the study, pretest was done on 5% of sample population of the Bokoji Hospital.

Interviewees were given intensive orientation on how to fill the questionnaire and information was collected under close supervision by principal investigator and 2 data collectors in order to achieve reliable and valid data. At the end of each completed questionnaire was checked to ascertain that all questions were answered correctly and consistently.

Data Processing and Analysis

The data was processed by using Epi.info version 7 and SPSS version 21 for analysis. Cross-checking was done for inconsistencies by running frequencies of each variable. Similarly, frequency distribution, percentage, tables and charts was used to present results of univariate analysis. Odds and adjusted ratio (OR/AR) using 95% confidence interval (95% CI) was done for binary and then multivariate logistic regression model to control for possible confounders. Variable showed statistical significance at $p<0.05$ was declared as significant contributing factors of Perceived stress.

Ethical considerations

Ethical approval was obtained from the Ethical and Review Committee of Arsi University. An official permission was communicated through formal letters from Arsi University Research and Community Service Directorate Offices. Written consent was secured from each participant. Participants were informed that the information provided kept confidential and that their identities would not be revealed in association with the information they were provided.

RESULT

Socio-demographic characteristic of health professionals

All study participants, 227 of health professionals in Asella Referral and Teaching hospital, were interviewed which provided the response rate of 100%. The mean age of the health professionals was 32.67 (±6.209) years and 90 (39.6%) the age of 30-34 years, fifty eight percent 132 (58.1%) were males. Majority of the respondents 106 (46.7%) were Orthodox Christian religion followers, 158 (69.6), belongs to the Oromo in Ethnicity and 143 (63.0%) were married. Concerning professional status, majority of them 109 (48.0%) were nurses. Majority 144 (63.4%) BSc in education qualification level and 109 (48.0%) had work experiences more than five years on medical work. From the total only 28 (12.3%) experienced psychological history before and only 5 (2.2%) use substances like *khat*, tobacco and other substances (Table 1).

Table 1: Socio-demographic characteristic of health professionals in Asella Referral and Teaching Hospital, 2020 G.C. (n=227)

Variable	Choices	Frequency	Percent
Gender	Male	132	58.9
	Female	95	41.9
Age in years	20-24	5	2.2
	25-29	68	30
	30-34	90	39.6
	35-39	40	17.6
	40-44	10	4.41
	45-49	3	1.32
	50 and above	11	4.85
Religion	Orthodox	106	46.7
	Muslim	72	31.7
	Protestant	40	17.6
	Waaqeffataa	9	4.0
Ethnicity	Oromo	158	69.6
	Amhara	54	23.8
	Tigre	9	4.0
	Gurage	3	1.3
	Siltey	3	1.3
Marital status	Single	77	33.9
	Married	143	63.0
	Divorced	7	3.1
Professionals	Medical doctors	41	18.1
	Nurse	109	48.0
	Midwifery	19	8.4
	Medical laboratory sciences	19	8.4
	Pharmacy	22	9.7
	Anesthesia	9	4.0
	Public health officer	4	1.8
	Radiology	4	1.8
Qualification /Level	Diploma	26	11.5
	BSc	144	63.4
	MSc	16	7.0
	General practitioner	35	15.4
	Specialist	6	2.6
Work experiences	Less than 1 year	18	7.9

	1 year up to 5 years	100	44.1
	Greater than 5 years	109	48.0
Substance abuse	No	222	97.8
	Yes	5	2.2
History of psychological distress/ anxiety	No	188	82.8
	Yes	28	12.3
	Maybe	11	4.8

Level of perceived stress

Total of 227 health professionals were interviewed to identify their status on PSS-10 in the last months of this study toward the emergency outbreak of COVID-19.

Level of stress (PSS 1, 2, 3, 6, 9 and 10)

From the total of 227 respondents 77 (34%) were frustrated, 77 (34%) worried that they couldn't control important things in their life, 84 (37%) felt nervous in the last months when the COVID-19 outbreak happened unexpectedly, 80 (35%) of the respondents had found themselves that they could not cope with all the things that they had to do due to COVID-19 outbreak,106 (47%) had been angered because things were outside of their control, and 106 (47%) had felt difficulties they could not overcome the increased problem related to COVID-19 outbreak. See table 2 below

Copying level (PSS 4, 5, 7 and 8)

From the total respondents only 76 (33.4%) felt confident about their ability to handle their personal problems, 68 (30%) felt that things related to COVID-19 were going their way of interest, 95 (42%) had been able to control irritations related to COVID-19 outbreak in their life and only 90 (40%) felt confident that they can control everything related to COVID-19 outbreak (Table 2).

Table 2: Perceived stress scale distribution of health professionals of Asella referral and teaching hospital 2020 G.C.

PERCEIVED STRESS DURING THE LAST MONTH RELATED TO COVID-19 OUT BREAK	PERCEIVED STRESS SCALE					Total
	Never (%)	A/never	S/times	F/ often	V/often	
How often have you been upset/ disappointed?	29	35	86	42	35	227
How often have you felt that you were unable to control the important things?	31	43	76	42	35	227
How often have you felt nervous and "stressed"?	40	33	70	54	30	227
How often have you felt confident about your ability to handle your personal problems?	18	58	81	45	25	227
How often have you felt that things were going your way?	11	57	75	50	34	227
How often have you found that you could not cope with all the things that you had to do?	19	38	90	59	21	227
How often have you been able to control irritations your life?	29	66	85	33	14	227
How often have you felt that you were on top of things?	23	67	81	45	11	227
How often have you been angered because of things that were outside of your control?	12	35	74	65	41	227
How often have you felt difficulties?	19	25	77	76	30	227

Prevalence of perceived stress

In general, from the total of 227 health professionals 138 (60.8%) had perceived stress. This makes the prevalence of perceived stress related to COVID-19 outbreak 60.8%. From health professionals whose experienced stress or anxiety related to COVID-19 outbreaks 78 (57%) were males and 60 (43%) females.

The mean perceived stress score of the participants was 20.63 (SD = ±4.516). The majority of (87%) the participants were reported moderate stress level; around 4% were reported low stress level and while 9 % were severe covid-19 related perceived stress level (Figure 1).

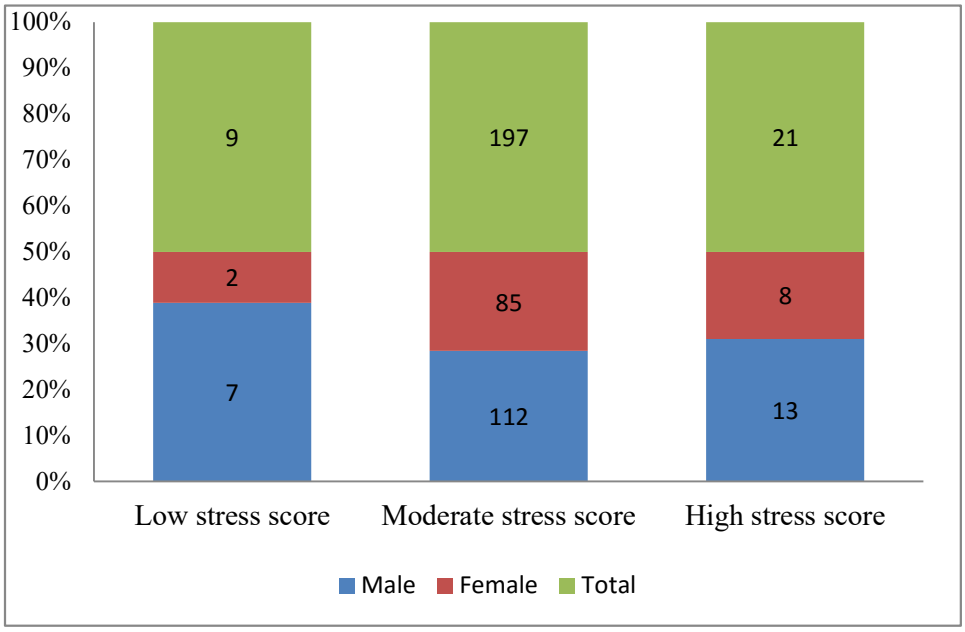

Figure 1: Shows covid-19 related perceived stress level of the study which conducted in Asella referral and teaching hospital, Arsi zone Oromia, Ethiopia

Associated factors

Multivariate analysis

The relationship among health professionals having stressed and socio-demographic characteristic was assessed at P- level of 0.05 and CI of 95%. The result showed the marital status and religion of the health professionals were associated with stress. The married health professionals were 121% more affected than divorced health professionals. ((AOR: 1.213, 95 CI: (1.199, 3.571)), at P value 0.016)). Health profession of protestant religion followers (AOR: 2.552, 95% CI: (1.098, 10.846), P value 0.048) affected three times than other religion followers. On the other hand, health professionals from Amhara ethnicity ((AOR: 1.757, 95% CI: (1.337, 9.158)), at P value 0.03, more likely develop stress than Siltey ethnicity (Table 3).

Table 3: The socio-demographic associated with on the health professionals' perceived stress Asella teaching and referral hospital 2020 G.C.

Variable		PS		COR (95%CI)	P-value	AOR (95%CI)
		No	Yes			
Marital status	Single	28	49	**1.750 (1.100, 2.784)**	**0.018***	1.069 (0.246, 4.636)
	Married	59	84	**1.424 (1.021, 1.986)**	**0.038***	**1.213 (1.199, 3.571), P = 0.016***
	Divorced	2	5	1		
Religion	Orthodox	43	63	1.465 (0.994, 2.159)	1.465	1.375 (0.391, 4.837)
	Muslim	31	41	1.323 (0.830, 2.109)	1.323	1.488 (0.412, 5.374)
	Protestant	11	29	**2.636 (1.317, 5.277)**	**0.006***	**2.552 (1.098, 10.846), P = 0.048***
	Waaqeffata	4	5	1		
Ethnicity	Oromo	66	92	**1.394 (1.016, 1.912)**	**0.039***	0.962 (0.198, 4.690)
	Amhara	16	38	**2.375 (1.324,4.259)**	**0.004***	**1.757 (1.337 9.158, P = 0.03***
	Tigre	5	4	0.800 (0.215, 2.979	0.739	0.494 (0.066, 3.694)
	Gurage	1	2	2.000 (0.181, 22.056	0.571	1.364 (0.075, 24.919)
	Siltey	1	2	1		

Discussion

In this study, from the total of 227 health professionals 138 (60.8%) had perceived stress. This makes the prevalence of perceived stress related to COVID-19 outbreak 60.8%. According to the study done by Ahmed, M.Z., et al, 2020 in China perceived stress is lower than this study 37.1 % (Jiang D, 2020). This possible explanation to this difference could be due to the limited personnel protective equipments, economical difference, sample size and sampling technique, tools to assess the perceived stress.

The study done in Southwest Ethiopia by Abel Girma and Ermias Ayalew, 2020**,** the prevalence of perceived stress was 41.6% towards the COVID-19 which shows lower than this study (Bostock B, 2020). Additionally, according to the study done on Healthcare providers in Dilla town, Southern Ethiopia, on perceived stress on COVID-19,prevalence of perceived stress were 51.6%, with the respondents in the last month of their life (Ali Y, 2020).

The possible explanation to this difference might be in this study the health professionals are employed in referral and teaching hospital with very overcrowded clients from different areas that may transmit the COVID-19 disease to and in turn fear to them, difference of sample size and sampling technique.

In this study the mean perceived stress score of the participants was 20.63 (SD = ±4.516). The majority of (87%) the participants were reported moderate stress level; around 4% were reported mild stress level and while 9 % were severe covid-19 related perceived stress level.

This is line with study done in Southwest Ethiopia which showed the mean perceived stress score of the participants was 19.31 (SD = ±7.212). The majority of 68.4% the participants were reported moderate stress level;

around 17.8% were reported low stress level and while 13.9 % were severe covid-19 related perceived stress level (Bostock B, 2020).

The study done in China on Epidemics of COVID-19 and psychological associated factors showed mild 10.2 %, moderate 17.8 %, and severe 9.1 (Jiang D, 2020), this shows the severe form of depression is similar to this study. The main possible explanation to this is the tools used for this study was based on PSS-10 while other studies used tools other than PSS-10.

From the total health professional only 12.3% experienced psychological history before and only 2.2% abuse substances as coping strategies. According the study done in southwest Ethiopia 6% of the participants were abused substances as coping strategies. This difference could be due burden of the activities, the habit of the individuals, sample size and sampling techniques difference.

In this study the marital status and religion of the health professionals were associated with stress. The married health professionals were 121% more affected than divorced health professionals. ((AOR: 1.213, 95 CI: (0.199, 3.571)), at P value 0.016. This might be due to the fact that since being married is having a family that could be affected by COVID-19 from the health professional, fear of quarantine, fear of lone less, fear of isolation from their family can lead to stress.

Health profession of protestant religion followers ((AOR: 2.552, 95% CI: (1.098, 10.846)), P value 0.048) affected three times than other religion followers. According to study by Bostock, 2020 approximately 60% of the total infections nationwide are held to have originated from the church (Dein S, 2020). So having this information can lead people to more stressful situation. On the other hand pandemic has affected religious practice in significant ways, including the cancellation of live religious services, closing

religious schools, cancelling pilgrimages and prohibiting group interactions during festivals and celebrations can lead people to hopeless life.

Health professionals from Amhara ethnicity ((AOR: 1.757, 95% CI: (1.337, 9.158)), at P value 0.03, more likely develop stress than Siltey ethnic group. This difference could due to cultural, way of life, way of relationship among neighbors and other differences that can lead to more perceived stress related to COVID-19.

Conclusion and Recommendation

Conclusion

In general, this study revealed health professionals found to have very high perceived stress on COVID-19. Being protestant religion followers, married and Amhara in ethnicity were variables found to have a statistically significant association with perceived stress towards COVID-19 pandemic.

Recommendation

- I would like to recommend Asella referral and teaching hospital to give attention for health professionals by providing appropriate information and necessary personnel protective equipments.
- It is better if routine psychological stress screening is provided to the health professionals.

Acknowledgement

First of all I would like to thanks in depth thanks Arsi University for the initiation and encouraging me by selecting the thematic area to initiate this research the proposal. I especially, grateful to research and community service vice dean of college of health science and clinical nursing department.

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