


Magnitude and Determinants of job Stress among pre-Hospital Care Providers Working in Ambulance Centers, Addis Ababa

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Abstract

Introduction: Pre-hospital care personnel, including paramedics and emergency medical technicians (EMTs), are crucial frontline responders in emergency medical situations. They are critical in delivering timely medical assistance to individuals in emergencies. However, the demanding nature of their work can subject them to significant job stress, which may adversely affect their well-being and job performance.

Objectives: This study aimed to assess the levels of job stress and explore associated factors among pre-hospital care providers in Addis Ababa.

Methodology: A cross-sectional study was conducted at a healthcare facility, involving 134 ambulance healthcare providers. Participants were selected through a simple random sampling technique. Data collection employed pretested, self-administered questionnaires utilizing a nursing stress scale. Descriptive statistics were utilized to summarize the findings. Logistic regression analysis was employed to ascertain associations between variables while controlling for potential confounders. The strength of the association between dependent and independent variables was evaluated using odds ratios with a 95% confidence interval.

Result: Of the 134 study participants, 47% (95% CI: 38.2, 55.8) of them had job stress. Notably, several factors were significantly associated with job stress among pre-hospital healthcare providers working in ambulances. Conflict with leaders (AOR = 5.07; 95% CI: 2.98, 12.53), fear of mistakes (AOR = 8.22; 95% CI: 1.86, 36.34), lack of resources (AOR = 11.06; 95% CI: 5.19, 22.41), overloaded with ambulance care (AOR = 18.94; 95% CI: 4.33, 38.73) and inadequate information from dispatchers (AOR = 7.35; 95% CI: 3.32, 16.62) were identified as significant associated factors of job stress among these providers. These findings highlight the critical need to address leadership conflicts, fear of errors, and communication deficiencies to mitigate job stress among pre-hospital healthcare providers working in ambulances.

Conclusion: This study highlights the prevalence of job stress among pre-hospital healthcare providers working in ambulances, and found it as a significant problem. Notably, conflict with leaders, fear of mistakes, lack of resources, work overload and inadequate information from dispatchers emerged as significant associated factors contributing to job stress among pre-hospital health care providers. Efforts to foster better communication channels between providers and dispatchers, promote supportive leadership practices, and implement error-reduction strategies are essential. By addressing these challenges, healthcare organizations can create a more conducive work environment that supports the mental and emotional health of pre-hospital healthcare providers.

Keywords

pre-hospital care, job stress, emergency medical technicians, ambulance, Ethiopia

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Introduction

The World Health Organization (WHO) defines job stress among healthcare providers as a negative physical and emotional reaction resulting from a misalignment between job demands, resources, and the work environment (World Health Organization, 2007; Tekeletsadik, Mulat, Necho & Waja, 2017). This stress can lead to adverse health effects, including mental and behavioral disorders like exhaustion, burnout, anxiety, and depression, as well as physical ailments such as cardiovascular disease and musculoskeletal disorders (Papandrea, 2016; Pisljar, van der Lippe & den Dulk, 2011). In addition, stress is now considered a major cause of increasing cardiovascular disease and incidence of infections in pre-hospital care providers (Montero-Tejero, Jiménez-Picón, Gómez-Salgado, Vidal-Tejero & Fagundo-Rivera, 2024).

The burden of job stress on pre-hospital care providers includes a range of physical, emotional, and operational challenges. These professionals encounter intense workloads, unstable environments, and high-pressure situations, all of which can be detrimental to their well-being and the quality of patient care (Baier, Roth, Felgner & Henschke, 2018; Chang & Hu, 2022; Ericsson, Lindström, Rudman & Nordquist, 2022). The pre-hospital care environment presents unique challenges that can significantly impact the mental and physical well-being of healthcare providers. From emergency medical technicians (EMTs) to paramedics, these professions face high-pressure situations, long hours and unpredictable work conditions (Bardhan & Byrd, 2023; Bohström, Carlström & Sjöström, 2017; Sedlár, 2021).

Job stress among pre-hospital care providers poses a significant challenge with far-reaching consequences for individuals, healthcare systems, and patient care outcomes. These frontline responders encounter distinct stressors due to the demanding nature of their work. Such stress can impair crucial abilities like decision-making, reaction times, and cognitive functioning, potentially compromising patient care quality and safety. This may result in medication errors, adverse outcomes, and reduced job satisfaction among providers (Baier et al., 2018; Bardhan & Byrd, 2023; Dagget, Molla & Belachew, 2016).

Work-related stress is a prevalent occupational health issue globally, with estimated annual costs reaching 5.4 billion Dollars (Baye, Demeke, Birhan, Semahegn & Birhanu, 2020; Mojinyinola, 2008). Studies indicate a significant likelihood of stress among ambulance workers, with reports showing high percentages of experiencing acute and chronic stress effects (Afshari, Borzou, Shamsaei, Mohammadi & Tapak, 2021; Carvalho et al., 2020). These professionals regularly face pressure to deliver swift, high-quality, and cost-effective care to patients, inevitably leading to stress. Research from Norway highlights the heightened risk of post-traumatic stress disorder (PTSD) among ambulance personnel due to exposure to stressful events (Skogstad et al., 2013).

The literature revealed that multifactorial risk factors are associated with job stress among pre-hospital healthcare providers. A systematic review demonstrated that interpersonal, environmental, and personal factors were identified as associated factors of job stress in pre-hospital healthcare providers (Çelmeçe & Menekay, 2020). Another study indicated that types of care like traumatology accidents, respiratory distress and cardiovascular problems lead to high levels of occupational stress in pre-hospital care providers (ALmutairi & El. Mahalli, 2020). In addition, a study indicated that gender, sleep quality, professional autonomy restrictions, and emotional exhaustion were reported as risk factors for job stress among pre-hospital care providers (Carvalho et al., 2020). A study also indicated that age, marital status, year of service, and level of training were associated with job stress (Donnelly & Siebert, 2009).

Literature Review

Previous studies have demonstrated that 30% of the workforce in developed nations suffers from job stress, in America, about 11 million people were affected. However, pre-hospital care providers in developing countries face a significant burden from job stress and it is expected to be higher in developing countries compared to developed countries (Hoel, Sparks & Cooper, 2001; Rajabi, Jahangiri, Molaeifar, Honarbakhsh & Farhadi, 2018). Similarly, in Thailand, 33.5% of ambulance nurses experience high levels of work stress, attributed to factors such as poor general well-being, a lack of support from supervisors and peers, as well as role ambiguity and conflict (Sakkomonsri, Suwan-Ampai & Kaewboonchoo, 2016). A study in Brazil revealed that about 24.6% of the nurses working in pre-hospital care had job stress (Carvalho et al., 2020). The United Kingdom sees an annual incidence rate of work-related stress, depression, or anxiety at 760 cases per 100,000 workers, as per recent surveys among healthcare providers (Wells, 2011). A study in Canada revealed that about 28% of healthcare providers experienced job-related stress (Bergman, Corabian & Harstall, 2009). Studies conducted in southern Iran indicate a notably high incidence of post-traumatic stress disorder (PTSD) among paramedics and hospital emergency personnel, reaching 94% (Iranmanesh, Targari & Bardsiri, 2013). In several studies between 27 to 46.9% of nurses reported high levels of job stress (Johansen & Cadmus, 2016; Lu et al., 2015).

Ambulance healthcare providers require optimal psychological well-being to effectively carry out their duties. Therefore, it is crucial to scientifically study job stress among pre-hospital healthcare providers to develop and implement suitable stress management strategies. However, there is a dearth of studies addressing the burden of job stress encountered by pre-hospital care providers in Ethiopia. Hence, this study aimed to fill this gap by addressing the prevalence of job stress and its determinants among pre-hospital care providers working in Addis Ababa ambulance centers.

Method and Materials

Study Area

The study was conducted in Addis Ababa, the capital city of Ethiopia, which serves as the economic, social, political, and administrative hub of the country. Covering an estimated area of 526.99 square kilometres, Addis Ababa is characterized by its diverse population and dynamic urban landscape. The city comprises 10 sub-cities and 99 districts, with a total population of approximately 3,384,569 residents. Addis Ababa is equipped with several pre-hospital ambulance service providers to cater to the emergency medical needs of its population. These include institutions such as the Red Cross Society, Tebita Ambulance, and the Fire Emergency Prevention and Rescue Authority. These ambulance hubs offer a spectrum of pre-hospital care services, providing to the diverse needs of individuals in both urban and nearby areas of Addis Ababa city. Their services range from basic to advanced ambulance care, ensuring prompt and comprehensive medical assistance to those in need. The Ethiopian Red Cross Society is the largest and operates a comprehensive emergency ambulance service across the country, with 255 ambulance stations.

Study Design and Period

A quantitative cross-sectional study design was implemented within an institution setting, focusing on pre-hospital healthcare providers working in ambulance services across Addis Ababa city. The study was conducted over two months, specifically from May to June 2022.

Study Population

The study population comprised all pre-hospital healthcare providers currently employed in the selected ambulance centers of Addis Ababa city.

Inclusion/ Exclusion Criteria

The study included all pre-hospital care providers who were actively working in the selected ambulance service centers and had more than six months of work experience. Additionally, only those providers who were on duty during the data collection period were eligible for participation in the study. However, individuals working exclusively at the dispatch centers and those who were not present during the data collection period were excluded from the study.

Sample Size Determination and Sampling Procedure

The study's sample size was determined using the single population proportion formula, with parameters including a 95% confidence level, a 5% acceptable margin of error, and an

assumed proportion of 50% of pre-hospital healthcare providers experiencing job stress, expected to seek treatment at ambulance services. Given that the total number of pre-hospital healthcare providers in the setting was less than 10,000, a population reduction formula was applied. Consequently, the study's total sample size was calculated to be 134, with an additional 10% non-respondent rate.

To select participants, a systematic random sampling method was employed using the registered list of human resources for each ambulance center. Proportionate allocation was applied to ensure representation from each center. This approach guaranteed that each pre-hospital healthcare provider had an equal chance of being included in the study, thus enhancing the sample's representativeness and generalizability of the findings.

Operational Definition

Job stress refers to the physical and emotional reactions that arise when the demands of a job exceed a worker's capacity to adapt (Porcel-Gálvez et al., 2020).

Pre-hospital care providers are medical professionals who deliver emergency medical assistance before patients reach a hospital setting. This crucial role encompasses a range of skilled professionals, including nurses, emergency medical technicians (EMTs), and paramedics.

Team leaders: The team leaders are defined as acting as operational leaders during each shift, leading and guiding every ambulance crew."

Measurement Tools

Data collection involved the use of a structured and pretested self-administered questionnaire, prepared in English, consisting of two primary sections: socio-demographic information and work-related stress assessment. **Part I:** of the questionnaire comprises queries aimed at gathering socio-demographic information pertinent to the study subjects. These include sex, age, ethnicity, marital status, educational level, religion, monthly income, and work experience. **Part II:** This section of the questionnaire is designed to assess job stress among pre-hospital care providers by using the Nursing Stress Scale (NSS) (Lee, Holzemer & Faucett, 2007; Porcel-Gálvez et al., 2020). It consists of eight items measured on a Likert scale with four response options. Participants were asked to express their level of agreement or disagreement with each item, ranging from "never" (1) to "always" (4). Job stress defined based on the Nursing Stress Scale, participants who scored equal to or greater than the mean on the job stress test questionnaire were categorized as experiencing job stress. On the other hand, participants, who scored below the mean value were categorized as not experiencing job stress. The tool was validated with Cronbach's alpha of 0.82 with (95% CI: 0.813, 0.838). Its consistent application over the years has contributed to its

reputation as a robust tool for assessing occupational stress in healthcare settings. By utilizing this questionnaire, the study aims to gain valuable insights into the specific stressors experienced by pre-hospital healthcare providers and their impact on job satisfaction and overall well-being.

The questionnaires were distributed across the different ambulance service providers in each dispatch center daily, based on three consecutive days at each ambulance center. After getting permission from each participant, data collectors provided a questionnaire to self-administer and explain the procedure for any issue regarding the questionnaire. Then, the data collectors collected the completed questionnaire. Supervisors checked the completeness of the questionnaire daily.

Data Process and Analysis

The collected data was checked for completeness and consistency before being entered into the Statistical Package for the Social Sciences (SPSS) version 25 for analysis. Descriptive statistics including frequency, percentage, mean, and standard deviation (SD) were used to present the characteristics of the study participants and the distribution of variables. To ensure the reliability of the model, the Hosmer-Lemeshow goodness-of-fit test was conducted to assess the model's fit to the data. Additionally, multicollinearity among independent variables was assessed to ascertain the independence of predictors and avoid redundancy in the analysis. Bivariate logistic regression analysis, accompanied by 95% confidence intervals (CI), was employed to examine the individual associations between job stress and its predictors. Variables with p-values less than 0.2 in the bivariate analysis were then included in the multiple logistic regression analysis to further explore their combined effects on job stress. Finally, variables showing a p-value of ≤ 0.05 with a 95% CI were considered a statistically significant predictor of job stress among pre-hospital healthcare providers.

Data Quality Assurance

A structured questionnaire was employed for data collection following a pretest conducted on 5% of the study participants, which included 7 pre-hospital healthcare providers employed at Adama City Ambulance Service. The pretest, conducted two weeks prior to the actual data collection period, served as a preliminary evaluation of the questionnaire's effectiveness. Notably, data collected during the pretest were excluded from the main study analysis to prevent duplication. To enhance the quality of data collection, comprehensive training sessions were conducted for supervisors and data collectors. These sessions focused on familiarizing participants with the data collection instruments and addressing any identified gaps in the methodology and materials. Subsequent adjustments and refinements were made based on the feedback received during the training sessions to ensure the efficiency and accuracy of the data collection process for the main study.

Ethical Considerations

Ethical clearance was obtained from the Research and Ethics Committee of the Emergency and Critical Care Nursing Department at Saint Paulo's Hospital Millennium Medical College. Official letters were sent, and permissions were obtained from the relevant authorities in the Fire Emergency Authority, Tebita Ambulance Center, and Ethiopian Red Cross organizations before data collection began. Strict adherence to ethical considerations regarding respondents and procedures was ensured throughout the study. Participation in the study was voluntary, and each participant signed a written consent agreement indicating their willingness to take part. Participants were informed that their involvement would neither entail any incentives nor cause harm. Additionally, the confidentiality of participants' identities was maintained throughout the data collection and analysis processes to uphold anonymity and protect their privacy.

Result

Socio-Demographic Characteristics

Out of the total 134 participants, 49 individuals (36.6%) were females. The majority of the participants 59.7%, fell within the age range of 25–35 years, of which 37 (46.3%) participants experienced job stress. Furthermore, nearly 65% of the study subjects reported earning a monthly income of 4500 ETB or less, which is less than 79 USD. Regarding educational attainment, approximately 65% of pre-hospital care providers held diplomas, and 32.8% were married. Additionally, only 47% of the study participants had between two to four years of work experience in ambulance care (Table 1).

Description of Job Stress Assessment

The study findings showed that more than 71.6% (96) of participants had faced conflict with their team leader, and of those, 32 (33.3%) reported that they had conflict frequently or more. On the other hand, 69.4% (93) of study subjects had a fear of making mistakes while providing care for patients in the ambulance, at least occasionally, and around 51% (68) encountered the death of patients in the ambulance. Furthermore, only 19 (14.2%) providers reported that they had never received inadequate information from the dispatcher about the patient's medical condition. More than 55.2% (74) of study subjects reported that they experienced a lack of resources frequently or always, whereas only 13.4% (18) of them responded that they had never been overloaded with pre-hospital ambulance health care provision (Table 2).

The Magnitude of Job Stress among Pre-Hospital Care Providers

Among the total participants, 63 individuals, accounting for 47% (95% CI: 38.2, 55.8), had job-related stress among

Table 1. Distribution of Socio-Demographic Characteristics among Pre-Hospital Care Providers Working in Ambulance Centers in Addis Ababa, 2022 ($n = 134$).

Independent variables	Categories	Job stress		
		No (%)	Yes (%)	Total (%)
Sex	Male	48 (56.5)	37 (43.5)	85 (63.4)
	Female	23 (46.9)	26 (53.1)	49 (36.6)
Age of respondent	18–25 years	13 (50)	13 (50)	26 (19.4)
	26–36 years	43 (53.7)	37 (46.3)	80 (59.7)
	>36 years	15 (53.5)	13 (46.4)	28 (20.8)
Average monthly income	≤4500 ETB	44 (50.5)	43 (49.4)	87 (64.9)
	>4600 ETB	27 (57.4)	20 (42.5)	47 (35.1)
Work experience	≤4 years	40 (45.9)	47 (54)	87 (64.9)
	>4 years	31 (65.9)	16 (34)	47 (35.1)
Educational level	Emergency medical technicians	5 (50)	5 (50)	10 (13.4)
	Diploma	44 (50.5)	43 (49.5)	87 (65)
	Degree	22 (59.5)	15 (40.5)	37 (27.6)
Marital status	Married	25 (56.8)	19 (43.2)	44 (32.8)
	Unmarried	46 (51)	44 (49)	90 (67.2)

Note. ETB = Ethiopian birr; EMT = emergency medical technician.

Table 2. Job Stress Assessment Questions among Pre-Hospital Care Providers in Ambulance Centers, Addis Ababa, Ethiopia, 2022 ($n = 134$).

Statements	Responses			
	Never Frequency (%)	Occasionally Frequency (%)	Frequently Frequency (%)	Always Frequency (%)
Conflict with the team leader	38 (28.4)	64 (47.8)	30 (22.4)	2 (1.5)
Fear of making a mistake in treating a patient	41 (30.6)	58 (43.3)	32 (23.9)	3 (2.2)
The death of a patient in an ambulance	66 (49.3)	67 (50)	1 (0.7)	0 (0)
Lack of an opportunity to share experiences and feelings with other personnel	14 (10.4)	37 (27.6)	64 (47.8)	19 (14.2)
Adequate information from a dispatcher regarding the medical condition of a patient	19 (14.2)	58 (43.3)	52 (38.8)	5 (3.7)
Not enough time to provide emotional support to the patient	19 (14.2)	62 (46.3)	69 (36.6)	4 (3.0)
Lack of resources to perform a procedure and poor working conditions	13 (9.7)	47 (35.1)	60 (44.8)	14 (10.4)
Work burden of pre-hospital care providers	18 (13.4)	66 (49.3)	50 (37.3)	0 (0)

pre-hospital care providers. The job stress of pre-hospital care providers was determined based on scoring greater than or equal to the mean of stress-related questions, which was calculated to be 17.2.

Factors Associated with job Stress

Following the description of the data, variables were analyzed for potential associations with the dependent variable, job stress, utilizing a binary logistic regression model. Initial bivariate analysis was conducted to identify candidate variables for inclusion in multivariate analysis. Variables with less than 5 counts per cell, such as the religion of participants

and lack of time to provide care, were excluded due to violations of the chi-square assumption. Subsequently, the following variables were considered for inclusion in the multivariate binary logistic regression model for confounder adjustment to identify factors independently associated with job stress: sex, age, educational level, marital status, average monthly income, ethnicity, work experience, conflict with team leader, fear of making mistakes in providing care, lack of resources, workload, patient deaths in ambulances, and inadequate information provided by dispatchers about the patient.

Finally, conflict with leaders, fear of mistakes in providing patient care, inadequate information from dispatchers, lack of

Table 3. Multivariate Logistic Regression Analysis among Pre-Hospital Care Providers Working in Ambulance Centers, Addis Ababa, Ethiopia, 2022 ($n = 134$).

Independent variables	Category	Job stress		COR (95% CI)	AOR (95% CI)	<i>p</i>
		No	Yes			
Sex	Male	48	37	1	1	1
	Female	23	26	1.47 (0.72, 2.97)	0.747 (0.21, 2.66)	.652
Age	15–25 years	13	13	1	1	1
	25–35 years	43	37	0.86 (0.36, 2.08)	2.15 (0.35, 13.15)	.407
	≥36 years	15	13	0.87 (0.29, 2.52)	0.59 (0.07, 4.77)	.623
Average monthly income	≤4500 ETB	44	43	1	1	1
	>4600 ETB	27	20	0.76 (0.37, 1.55)	1.59 (0.34, 7.42)	.552
Conflict with leaders	No	63	39	1	1	1
	Yes	8	24	4.85 (1.98, 11.85)	5.07 (2.98, 12.53)	<.001*
Educational level	EMT	5	5	1	1	1
	Diploma	44	43	0.98 (0.26, 3.62)	0.30 (0.02, 5.69)	.421
	Degree	22	15	0.68 (0.17, 2.77)	0.23 (0.01, 5.97)	.379
Marital status	Married	25	19	1	1	1
	Unmarried	46	44	1.26 (0.61, 2.60)	1.52 (0.31, 7.49)	.609
Fear of mistakes in providing care	No	59	40	1	1	1
	Yes	12	23	2.83 (1.26, 6.32)	8.22 (1.86, 16.34)	.005*
Inadequate information from the dispatcher	No	51	26	1	1	1
	Yes	20	37	3.63 (1.76, 7.46)	7.35 (3.32, 16.62)	<.001*
Work experience	≤4 years	40	47	2.28 (1.09, 4.75)	2.25 (0.54, 9.38, 1.68)	.266
	>4 years	31	16	1	1	1
Workload or burden	No	56	28	1	1	1
	Yes	15	35	4.67 (2.19, 9.94)	18.94(4.33, 18.73)	<.001*
Lack of resources	No	46	14	1	1	1
	Yes	25	49	6.44 (2.99, 13.88)	11.06(5.19, 22.41)	<.001*
Patient death in the ambulance	No	42	24	1	1	1
	Yes	29	39	2.35 (1.18, 4.71)	3.09 (1.61, 11.68)	<.001*
Lack of time to provide care	No	30	31	1	1	1
	Yes	41	32	4.33(2.63, 11.802)	0.001 (0.02, 0.65)	.98

Note. COR = crude odds ratio; CI = confidence interval; AOR = adjusted odds ratio; ETB = Ethiopian birr; EMT = emergency medical technician.

*Statistically significant at 95% confidence level.

resources, work overload, and patient death in the ambulance were identified to have an independent association with job stress among pre-hospital ambulance health care providers at 95% confidence level (Table 3).

The odds of having job stress among participants who conflicted with their team leaders was 5 times higher than those who had smooth relationships with their team leaders (AOR = 5.07; 95% CI: 2.98, 12.53). Participants who faced a lack of resources were 11 times (AOR = 11.06; 95% CI: 5.19, 22.41) more likely to experience job stress compared to their counterparts. Furthermore, healthcare providers who received inadequate patient detail from the dispatch center had a more than 7 times increased chance of acquiring job stress compared to their counterparts (AOR = 7.35; 95% CI: 3.32, 16.62). Besides, the chance of experiencing job stress was increased by 3 folds when there was patient death in the ambulances (AOR = 3.09; 95% CI: 1.61, 11.68). Care providers who fear mistakes while providing patient care were 8 times (AOR = 8.22; 95% CI: 1.86, 36.34) more likely to develop job stress compared to those

who did not fear. Again, the odds of being overloaded with ambulance care were 18 times higher than their counterparts (AOR = 18.94; 95% CI: 4.33, 38.73) (Table 3).

Discussion

This study aimed to assess the prevalence of job stress and its determinants among pre-hospital care providers working in Addis Ababa ambulance centers. The magnitude of job stress among pre-hospital ambulance healthcare providers in this study was found to be 47% (95% CI: 38.3, 55.8). Having a conflict with leaders, receiving inadequate information from dispatchers, lack of resources, work overload, and patient death in the ambulance were identified to have an independent association with job stress among pre-hospital ambulance healthcare providers at a 95% confidence level.

Hence, 47% of pre-hospital ambulance healthcare providers who were working in Addis Ababa faced job stress. The findings of pooled prevalence of work stress (52.5%) from a systematic review conducted in Ethiopia and a reported

prevalence of 48.6% in Addis Ababa (Girma, Nigussie, Molla & Mareg, 2021) were in line with our study findings. On the contrary, another study conducted in Felege Hiwot Hospital, Amhara, Ethiopia, reported a higher rate (68.2%) of occupational stress (Birhanu, Gebrekidan, Tesefa & Tareke, 2018). It may be due to nurses working in regional facilities might receive fewer benefits and travel long distances during patient care. Moreover, Professionals working in Addis Ababa had parallel chances such as educational opportunities while on the job and could get additional fees by working in multiple private centers where regional setups do not have such opportunities and options. This could limit income sources and job satisfaction, which in turn predispose to occupational stress.

However, our finding was higher compared to the reported prevalence of job stress, which was 24.6% in Brazil (Carvalho et al., 2020), 26.2% in Burkina Faso (Hinson et al., 2021), and 17.2% in Taiwan (Kuo et al., 2020) reported to have occupational stress. This discrepancy could be due to the difference in demographic and healthcare infrastructure variation in those settings. Health service provision is highly influenced by the level of development of a country, in which the developed countries could provide better health care service by allocating standardized resources such as quality equipment and highly trained confident care providers. Conversely, care providers working in resource-limited setups would face with lack of those resources and difficulty that consequently leads to occupational stress (Drain et al., 2014).

The odds of having job stress among participants who conflicted with their team leaders were five times higher than those who had a smooth relationship with their team leaders (AOR = 5.07; 95% CI: 2.98, 12.53). This finding was supported by a study conducted in Iran where managerial factors were found to affect providers' occupational stress acquisition (Afshari et al., 2021). Another study conducted in Iran also reported that occupation stress was affected by legal conflicts and interpersonal problems (Palancı, Mengenci, Bayraktaroğlu & Emhan, 2020). This could be justified that healthcare personnel who conflicted with their team leaders would face extra restrictions and lack job freedom. This lack of freedom will lead to inadequate allocation of resources and unnecessary dialogue that could make the care provider depressed and uninterested in the job. These could contribute to job-related stress among pre-hospital care personnel.

Participants who faced a lack of resources were 11 times (AOR = 11.06; 95% CI: 5.19, 22.41) more likely to experience job stress compared to their counterparts. Furthermore, healthcare providers who received inadequate patient detail from the dispatch center had a more than seven times increased chance of acquiring job stress compared to their counterparts (AOR = 7.35; 95% CI: 3.32, 16.62). A study that was done in Iran (Ullah, 2023) reported conformable findings with the current study result that inter-professional interaction can affect occupational stress among

emergency medical service providers. The possible explanation could be inadequate healthcare resources and unclear patient detail delimits the care providers' readiness and confidence to manage the patient case. Hence, the consequences of such inconveniences will be disinterest in job and/or occupational stress.

Besides, the chance of experiencing job stress was increased by threefold when there was a patient death in the ambulance (AOR = 3.09; 95% CI: 1.61, 11.68). Similarly, care providers who fear mistakes while providing patient care were eight times (AOR = 8.22; 95% CI: 1.86, 16.34) more likely to develop job stress compared to those who did not fear. Again, the odds of being overloaded with ambulance care were 18 times advanced compared to their counterparts (AOR = 18.94; 95% CI: 4.33, 18.73). This association was supported by the findings of a cross-sectional study conducted at Felege Hiwot Referral Hospital, Ethiopia (Birhanu et al., 2018). These findings were also in agreement with the findings of a study conducted among pre-hospital emergency staff in Iran (Afshari et al., 2021) that showed patient care-related factors affect health personnel's occupational stress. Besides, a study conducted in Brazil reported congruent findings that exhaustion with the work done was significantly associated with professionals' work stress (Carvalho et al., 2020). Multiple rationales could be forwarded here. Firstly, experiencing unintended health outcomes such as unexpected patient death or patient death regardless of treatment. Second, fear of mistakes among healthcare providers working on ambulances would increase stress since every emergency response and healthcare-related decision is expected to be made by them (Karlsson, 2020; Neale, 1991). Caring for those responsibilities alone with no one to help is stressful and fear of mistakes would escalate this stress and frustration as well as increase the chance of undesired health outcomes to happen (Çelmeçe & Menekay, 2020). Thirdly, excessive workload delegated to healthcare providers would limit effectiveness ending up with complications, deterioration, and other undesired health outcomes. These effects would impose a double burden on care providers and increase the probability of burnout and occupational stress (MacDonald, 2003).

Study Limitation

Despite, the findings of the studies are believed to be relevant and can be used as an input for the health care system improvement; it has its limitations. The main limitation of the study is the small sample size used which could bring difficulty in drawing strong inferences to the population parameter. Additionally, most ambulances in the city were assigned to provide services for COVID-19-infected patients and this will overestimate the prevalence of job stress in our study. This is because providing care for COVID-19 patients imposes stress on care providers in addition to the ambulance care service-related stress.

Conclusion

The magnitude of job stress among pre-hospital ambulance healthcare providers in this study was found to be at a moderate stress level. Having a conflict with leaders, receiving inadequate information from dispatchers, lack of resources, work overload, patient death in the ambulance, and fear of mistakes in treating patients were identified to be independently associated factors of job stress among pre-hospital ambulance healthcare providers.

Recommendations

Emergency medical services managers should develop strategies to reduce job stress, such as providing pre-orientation for new staff on critical incident management, fostering smooth relationships between team leaders and staff, ensuring appropriate staffing levels to avoid work overload, improving communication and information flow from dispatchers, and allocating adequate resources for effective ambulance care. At the policy level, the Ministry of Health should prioritize the implementation of policies that support the physical and emotional well-being of pre-hospital healthcare providers. Additionally, further research triangulating qualitative findings is needed to provide stronger evidence and inform the development of effective stress-coping strategies for pre-hospital healthcare personnel working in resource-limited settings.

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Authors' Contributions

SA, MA, AF, MSM and TMA contributed to the study's design, data analysis, and interpretation of findings, report writing, and manuscript preparation. KGT, GK, EGM, and TMA participated in the study's design, data analysis and interpretation, and review of the report. All authors have read and approved the final manuscript.

Availability of Data

All relevant data are included within the manuscript document. For any additional materials or inquiries, please feel free to contact the corresponding author.

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Supplemental Material

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