Research

Coping mechanism and professional quality of life in northeast Texas EMS personnel during the COVID-19 pandemic: An exploratory study

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Abstract

Introduction
The purpose of this study was to conduct an exploratory evaluation of employee professional quality of life and factors associated with it at an emergency medical service (EMS) agency in northeast Texas in the United States. Initially, we intended to evaluate typical day-to-day factors, however we ended up capturing these factors during the unique environment of the COVID-19 pandemic.

Methods
We conducted an exploratory cross-sectional survey at an EMS agency in northeast Texas in November 2020. Surveys were web-based and anonymous. They included the ProQOL 5, the Survey of Perceived Organizational Support, the Brief Resilience Survey, the RAND Social Support Survey Instrument, the Kessler-6, the Workplace Incivility Scale-Revised, the General Self-Efficacy Scale and the Brief Cope Scale.

Results
The survey had a response rate of 19% (38 participants). Findings suggest a positive relationship between utilising religion as a coping mechanism and higher compassion satisfaction. There was also a relationship associated between increased perceived organisational support leading to an increase in compassion satisfaction. The most significant predictors of burnout were two different coping mechanisms. Those who relied more heavily on behavioral disengagement and those who employed humour as a coping mechanism displayed average increased levels of burnout. Finally, those who experienced workplace incivility and those who relied on self-blame as a coping mechanism experienced on average higher levels of secondary traumatic stress.

Conclusion
This study adds to the limited literature examining coping mechanisms, stress and burnout in EMS personnel. It is also unique for examining how EMS personnel are coping with stress during a prolonged pandemic.

Keywords:
professional quality of life; perceived organisational support; workplace incivility; coping mechanism; emergency medical technicians

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Introduction

Previous research has examined emergency medical services (EMS) workplace perceptions (1,2). We wanted to explore what factors were associated with professional quality of life in EMS personnel. Professional quality of life in the human services setting can be described as a balance between positive compassion satisfaction (CS) and negative compassion fatigue, which is comprised of burnout and secondary traumatic stress (STS) (3). Compassion satisfaction can be thought of as the sense of satisfaction one receives from assisting others (4), while STS can be described as the post-traumatic stress disorder (PTSD)-like alternating symptoms of numbness and overwhelming feelings that occur after witnessing a trauma, which has been described in EMS personnel as a trio of "emotional exhaustion, depersonalisation and low personal accomplishment" (5). Gender can play a role, as female EMS personnel have been found to have lower levels of CS (5). There is a lack of a consensus in the research exploring the relationship between gender and CS, with many contradictory findings in healthcare professionals (6). To date, we could only find one study examining CS in EMS personnel (5). Although there has been a sizeable portion of the literature devoted to exploring the professional quality of life in EMS personnel (1,7,8), the number of studies examining how EMS professional quality of life is associated with organisational, managerial and workplace factors is more limited (5). This study explains previous research by including instruments exploring personal coping factors. This study was initially conceived as an attempt to explore what personal and organisational factors were associated with career EMS personnel in northeast Texas in the United States. The aim of the study was to explore the impact of the COVID-19 pandemic on professional quality of life in EMS personnel.

Methods

This study took place at a hospital system affiliated career EMS agency in northeast Texas. The authors received institutional review board approval before distributing any survey. From 4 to 24 November 2020 subjects had the opportunity to participate in a survey. A flyer was created describing the purpose of the study and inviting participation in an email the clinical director distributed to their employees. The flyer included information on how to participate in the random drawing of electronic gift cards. It included a link to the web-based survey tool through PsychData. To be eligible for the study, participants had to be currently employed as an emergency medical technician (EMT) of any level in the agency and over the age of 18 years. The survey included demographic questions as well as eight previously validated instruments. The instruments, and the literature surrounding each, is discussed below.

ProQOL-5
The Professional Quality of Life: Compassion Satisfaction and Compassion Fatigue version 5 (ProQOL-5) was used to ascertain the three subscales of compassion satisfaction, burnout and STS (9). Professional quality of life in the human services setting can be described as a balance between positive CS and negative compassion fatigue (which is comprised of burnout and STS) (3). Compassion satisfaction can be thought of as the sense of satisfaction one receives from assisting others (4), while STS can be described as the PTSD-like alternating symptoms of numbness and overwhelming feelings which occur after witnessing a trauma. Burnout is described as a trio of "emotional exhaustion, depersonalisation and low personal accomplishment" (5). Burnout has been documented as having a high prevalence in EMS, with higher rates in paramedics than EMT-basics (10). EMT-Basic is the first level of certified Emergency Medical Technician in the United States. This is included in professional quality of life because burnout is highly related to one's ability to deal with job stresses and with intent to turnover (11). The inclusion of STS makes professional quality of life an even more powerful predictor of turnover in healthcare organisations (12).

Survey of Perceived Organizational Support
To establish the level of support that the employees felt from the agency, the 8-item survey developed from Eisenberger's Survey of Perceived Organizational Support was used (13). Perceived organisational support is the perception from employees that the organisation they work for cares for their needs and wellbeing (14). It is associated with both a reduction in burnout and an increase in job satisfaction in law enforcement officers (15). It has also been associated with a reduction of turnover in frontline employees (16). Reciprocal organisational exchanges have also been found to be present, with employees feeling that they have obligations to the organisation and greater commitment to the organisation (17). Organisational factors, including perceived organisational support, have been found to influence behavioural responses such as burnout and STS in both fire and EMS personnel (5). Among EMS personnel, both perceived organisational support and psychological resilience are associated with higher CS as well as lower STS and burnout (1).

Brief Resilience Survey
The Brief Resilience Survey was used to establish the individual levels of psychological resilience (18). Psychological resilience is the ability to adapt in response to stressful situations (19) through using positive emotions to cope in a healthy manner (20). Psychological resilience is also considered the ability of individuals to recover from negative experiences by using positive emotions to cope in a healthy manner. Those with normal or high resilience are more likely to be able to recover from traumatic experiences. Resilience has been found to be negatively related to PTSD in EMS personnel (21), and is also associated with lower levels of burnout and STS in EMS personnel (1). It has been proposed that individuals with high levels of resilience may self-select into public safety professions, or those who remain in the job possess high levels of resilience (22). As such, it would not be surprising if this was not significant in this population.

RAND Social Support Survey

The RAND Social Support Survey instrument (23) was used to evaluate employees' level of social support in their personal lives. Much like organisational support, social support has been shown to positively influence intent to turnover and burnout (24). Social support, combined with psychological resilience and organisational support, helped nurses deal with anxiety over the COVD-19 pandemic (25). Social support, combined with a perceived work-life balance, has also been associated with a reported reduction in stress and intent to turnover (26). EMS personnel have also been found to have high levels of depression (28%) and high levels of alcohol abuse (23%) (27). However, social support was a preventive factor for both in paramedic students (28). A meta-analysis found that the most important predictors of depression and traumatic stress symptoms in first responders were the length of time on the job and social support (29).

Kessler-6

The Kessler-6 (30) was utilised to assess the presence of serious mental illness symptoms. As noted above, EMS has a relatively high prevalence of clinical depression (27). Given the stresses and traumatic nature of the, it is not a surprise that this is a population considered at high risk for mental illness (31). However, there are significant social barriers and stigmas faced by first responders with mental illness (32).

Workplace Incivility Scale-revised

The Workplace Incivility Scale-revised (33) was chosen to evaluate the perception of uncivil behaviour in the work environment. Uncivil behaviours include rude and discourteous comments and actions, and displaying a lack of concern for others from co-workers and supervisors (34) and can occur in person or via electronic channels (35). It has been associated with increased burnout, turnover and intent to leave the profession among nurses (34).

General Self-Efficacy Scale

The General Self-Efficacy Scale (36) was present to evaluate their self-perceived ability to overcome barriers. Self-efficacy is the belief that one can perform novel or difficult tasks or cope with adversity – in various domains of human functioning. Perceived self-efficacy facilitates goal setting, effort investment, persistence in the face of barriers and recovery from setbacks. It can be regarded as a positive resistance resource factor. In volunteer EMS personnel, self-efficacy has been found to be a mediating variable between professional identification with burnout and CS, respectively, while it had no relationship to STS (8). It has also been found to serve as a protective factor against workplace incivility they experience (34).

Brief Cope Scale

Finally, the Brief Cope Scale (37) was used to see what primary coping methods the EMS personnel utilised to deal with stress in their lives. This instrument was designed to measure effective and ineffective ways to cope with a stressful life event. 'Coping' is defined broadly as an effort used to minimise distress associated with negative life experiences. The following methods were examined in this study: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion, and self-blame. There has been some interest in exploring how first responders cope with the difficulties of their job (38), however the literature on the subject is limited and often examines first responders as the same category (39). There was only one article we could find which focussed exclusively on EMS personnel and the subjects of this study were all volunteer EMS personnel (38), not career such as our population.

Analysis

Descriptive statistics and multiple regression analysis was done with SPSS 24 (40). After all the appropriate questions were reverse coded, each scale had a score calculated by summing the appropriate variables. These new variables became the representative score variables, which were inserted into the regression analyses. Separate regressions were run, each with a different ProQOL-5 subscale serving as the continuous dependent variable. A regression was run with each subscale score serving as the dependent variable. The other instruments served as the independent variables to determine what was statistically significant.

Results

Demographic data

Thirty-eight of the 200 employees at the EMS agency took the survey, which results in a response rate of 19%, which is typical of online surveys (41); 24% of the respondents were female, which is reflective of the industry (40). The average age of the respondent was 34 years, although ages ranged from 20 to 63 years. The average years worked at the agency were 7.4 years, although the range was less than one year to 29 years; 18% of the respondents had previously served in the armed forces; 87% of the respondents were Caucasian, which is also typical of the industry (42). The majority (68%) of the respondents were married and most (79%) were heterosexual. Education level ranged from high school diploma to completed graduate school, with the plurality having some college or an associate degree.

Summary data
Professional quality of life

Among the survey participants, 73.7% had moderate compassion satisfaction, 13.2% had high compassion satisfaction and 2.6% had low compassion satisfaction; 10.5% displayed low burnout and 81.6% displayed moderate burnout. None had high burnout. Among the respondents, 42.1% reported low STS symptoms, 44.7% had moderate STS symptoms and 2.6% reported severe STS symptoms.

Perceived organisational support

The scale used has a maximum of 48 points. This study had

scores ranging from 0 to 39. As demonstrated in Figure 1, there appears to be an overall feeling of low organisational support from most respondents, given that 17 of the respondents had a score of 20 or less.

Social support

The scale has a maximum score of 100. In this study, the scores ranged from 32 to 92, with a mean of 72.4. Although the mean is fairly high, it is worth noting that 12 participants had scores lower than this.

Psychological resilience

In this study, 7.9% displayed low resilience, 39.5% displayed normal resilience and 23.7% displayed high resilience, as defined by the scale developers (18).

Mental illness

The Kessler-6 is used to evaluate mental illness in populations. In this study, 63.2% of participants did not display mental distress symptoms (scores <13), whereas 21.1% did report symptoms that indicate psychological distress (scores >13).

Workplace incivility

This is an indication of a hostile workplace or workplace bullying. After averaging the scores, it can range from 0 to 4. In this study, the range was 0 to 2.67, with an average of 0.83. The higher the score, the more workplace incivility the worker encounters.

Self-efficacy

A higher score means more self-efficacy. This scale has a score range of 10 of 40. In this study, the range was 20 to 40, with an average of 32.5, indicating fairly high self-efficacy in the participants.
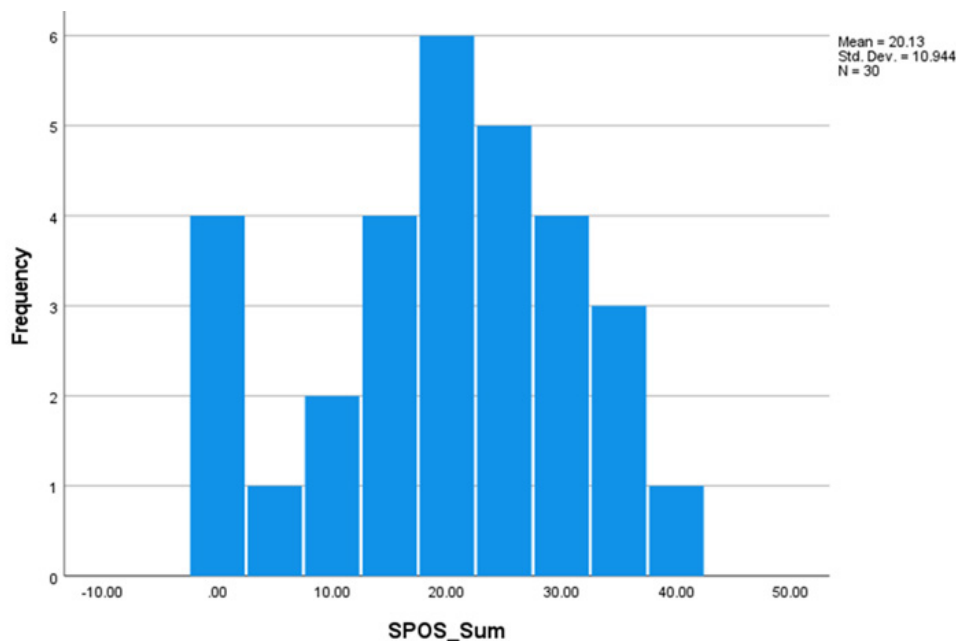

Mean = 20.13
Std. Dev. = 10.944
N = 30

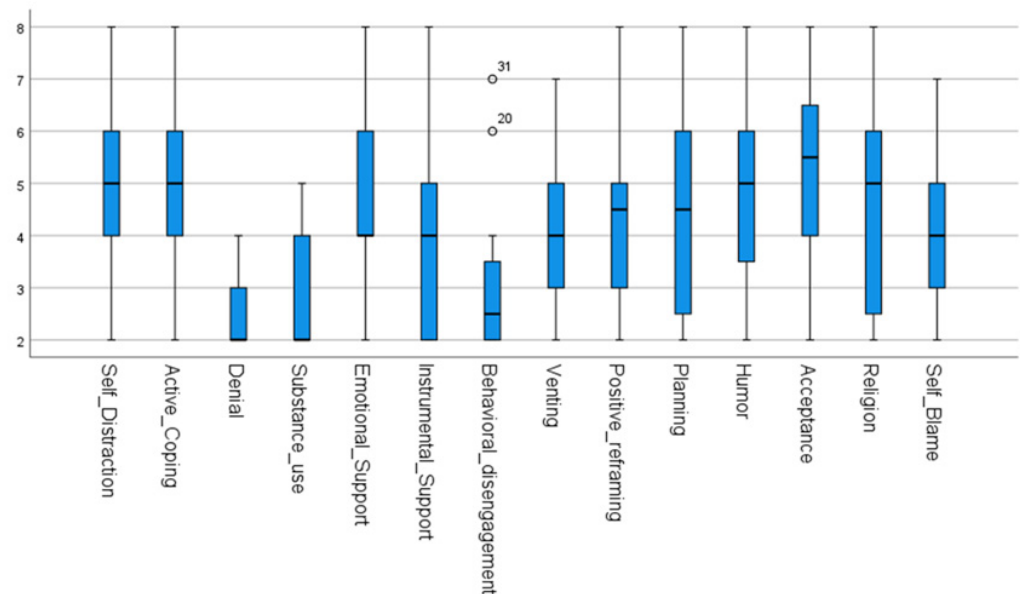Figure 1. Perceived organisational support

Figure 2. Coping mechanisms

Coping mechanism

For each sub-scale, the score can range from 2 to 8. This score is the y-axis in Figure 2. The higher the score, the more the people rely on that coping method as one of their primary coping mechanisms. The descriptive statistics of each coping mechanism are shown in Table 1. The two coping mechanisms with the highest average are 'acceptance' and 'active coping'. The two coping mechanisms with the lowest averages are 'behavioral disengagement' and 'denial'.

Regressions

Compassion satisfaction

The results found a positive relationship between utilising religion as a coping mechanism and higher CS. There was also an increase in CS associated with an increase in perceived organisational support (Table 2).

Table 2. Linear regression of compassion satisfaction

Model	Unstandardised beta	Standard error
Constant	22.649	3.543
Religion	1.534*	0.567
Organisational support	0.238*	0.111

$p<=0.05^*$ R=0.661

Burnout

The most significant predictors of burnout in this study were two different coping mechanisms. Those who relied more heavily on behavioral disengagement and those who heavily employed humour as a coping mechanism experienced higher levels of burnout (Table 3).

Table 3. Linear regression of burnout

Model	Unstandardised beta
Constant	11.197
Behavioral disengagement	3.167**
Humour	1.564*

$p<=0.01^*$ $R^2=0.603$
$p<=0.001^{**}$ Adj $R^2=0.559$

Secondary traumatic stress

Those who used self-blame techniques as a coping mechanism reported higher levels of STS symptoms, as did those who reported more incidents of workplace incivility (Table 4).

Table 4. Linear regression of secondary traumatic stress

Model	Unstandardised beta	Standard error
Constant	4.400	3.729
Self-blame	3.796**	0.762
Workplace incivility	3.631*	1.709

$p<=0.05^*$ R=0.804
$p<=0.001^{**}$ R2=0.646

Discussion

Multiple results of this exploratory study are of interest. It was also noteworthy to see the distribution of coping mechanisms and find that acceptance and active coping were the most heavily relied on. The statistical analysis of the coping mechanisms was of particular interest. Those who relied on behavioural disengagement displayed higher levels of burnout. A previous study of Italian EMS personnel found that they were

Table 1. Descriptives of coping mechanisms in EMS personnel

	Mean	Median	Mode	Standard deviation
Acceptance	5.20	5.0	6	1.78
Active coping	5.20	5.0	5	1.66
Behavioral disengagement	3.08	3.0	2	1.35
Denial	3.08	3.0	2	1.55
Humour	5	5.0	6	1.87
Planning	4.60	5.0	6	1.89
Positive reframing	4.29	4.5	5	1.68
Religion	5	5.0	2,5,6	2.15
Self-blame	4.48	4.0	4	1.70
Self-distraction	5.20	5.0	6	1.66
Substance use	3.12	2.0	2	1.33
Use of emotional support	4.42	4.0	4	1.91
Use of instrumental support	3.88	3.0	2	2.01
Venting	4.28	4.0	4	1.67

not likely to engage in behavioral disengagement (43). The average of reliance on behavioural disengagement in their study was lower (mean=1.57) than this study (3.08), however as can be seen in this study, two participants were outliers, raising the average. So, although this coping mechanism appears to be problematic, it does appear that the majority of this population does not rely on behavioral disengagement. These may not have been outliers in a bigger study.

Another interesting finding was the result that the use of humour was not a positive factor in this study. This is particularly interesting because in the field, it is generally considered good that first responders rely on black humour (44-46). Humour has been viewed as beneficial because it allows for comical relief to "mitigate the negative effects of stress" (38). Humour is not always viewed as positive in the literature. Humour at the expense of the victim has been found to be associated with higher levels of STS (47). Research in other fields has also found that humour is a psychological defense against burnout (48).

Unexpectedly, these results show that burnout increases as the use of humour increases, but it could be related to the phenomenon seen in other fields where sometimes the use of humour increases as burnout increases (49) – meaning both may be increasing due to other stresses instead of one directly causing the other to increase.

The relationship between self-blame and traumatic stress symptoms is well-known (50), and this has been found in first responders also (51). Workplace bullying has also been found to be associated with traumatic stress symptoms (52,53). EMS personnel have reported high levels of workplace bullying in previous studies (54). This shows another potential repercussion of workplace incivility among EMS personnel.

Limitations

One of the limitations of this study is that it does have a small sample size. However, given that a 10% response rate is not uncommon for web-based surveys (41), 19% is comparably strong. Another limitation is the possible lack of generalisability. The findings of this survey might not hold outside of northeast Texas or might not hold in fire-based EMS agencies. A final limitation would be the abnormal world events that occurred in 2020. It would be interesting to know if that was a result of the pandemic or if this was a typical perception among the employees. This survey was conducted 8 months into a global pandemic. The personnel in our study may have had stress levels that are not reflective of day-to-day experiences in other times. For these reasons, these results may be atypical.

Conclusion

Life continued for EMS personnel in the face of the COVID-19 pandemic and, as such, they still faced job stresses. This examination of an EMS agency in northeast Texas showed that the respondents had a relatively high professional quality of life, however, there was a general lack of perceived organisational support from employees. On average, they had little sign of severe mental illness, strong social support, high self-efficacy, and the majority did not experience much workplace incivility. There were notable exceptions to this, as displayed by the significant ranges in the scores of the scales. We saw a range of coping mechanisms being used by the population, with some being associated with negative outcomes. Further investigation into the relationship between burnout and humour in EMS personnel should be conducted to determine how they are related, as this study shows it may not always be positive.

Competing interests

The authors declare no competing interests. Each of this paper has completed the ICMJE conflict of interest statement.

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