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The Impact of Working Overtime or Multiple Jobs in Emergency Medical Services

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Abstract
Background: EMS professionals frequently work more than a standard 40-hour work week. For some EMS professionals, working overtime or multiple jobs may be necessary to make ends meet. Our objective was to evaluate the association between job satisfaction, intention to leave EMS, and financial dependence on overtime or working multiple jobs.

Methods: We conducted a cross-sectional analysis of nationally-certified EMS professionals who completed an online questionnaire after submitting their recertification application (22,626/101,363, response rate=22%) between October 2017 – May 2018. Items included dependence on additional work, satisfaction with job, and intentions of leaving the profession. Multivariable logistic regression models were used to describe the association between dependence on additional work, and job satisfaction and intention to leave EMS within 1 year and 5 years, controlling for age, sex, minority status, agency type, employment status, and urbanicity.

Results: A total of 18,285 respondents were included in the analysis. The majority of EMS professionals (75%) worked over 40 hours per week. Most respondents (71%) were dependent on overtime or multiple jobs to make ends meet. Those who were dependent on extra work had higher odds of being dissatisfied with their job (aOR 1.92, 95% CI:1.64–2.44, and higher odds of intentions to leave EMS within 1 year and 5 years respectively (aOR 1.32, 95%CI:1.14–1.54; aOR 1.16, 95%CI:1.07–1.25).

Conclusion: Many EMS professionals depend on additional work to make a living. Financial dependence was associated with increased odds of workforce-reducing factors, including job satisfaction and intention of leaving. This can lead to poor individual outcomes such as stress and burnout, as well as to turnover within the workforce, thus reducing the number of individuals available to provide high quality emergency care.

Keywords: emergency medical services; overtime; financial stress; occupational health

Introduction

The provision of emergency medical care in the prehospital setting is vital to protecting the public. Emergency medical services (EMS) respond to the needs of communities that require 24-hour a day availability of resources (1). As such, EMS professionals often complete shift work, which entails a work schedule with a large variety of hours organized into shifts to staff EMS agencies (2). The nature of shift work and long shift durations often enables EMS professionals to work a condensed 40 – or more – hour work week in fewer than five days. This can provide opportunities for EMS professionals to supplement their base income if needed with overtime hours or a second job. This phenomenon has been studied in some specific agencies and cities; some EMS professionals have been able to increase their yearly income by working additional time (3). One study has identified that some North Carolina EMS providers were working an average of over six hours of overtime per day, while another study showed that the majority of EMS workers at

air medical programs had another job (3,4). The prevalence and frequency of additional work at the national level for EMS professionals is unclear.

While providing medical care in the prehospital setting, EMS professionals work in hazardous, unpredictable environments that require fast-paced critical thinking and life-saving interventions. These work environments and conditions are routinely shared with other first responders, such as with law enforcement officers and firefighters; however, EMS professionals are often compensated at a lower rate of pay (5). On average, firefighters are paid \$25.60 per hour and police officers \$31.47 per hour (6). In comparison, EMTs and paramedics are paid an average of \$14.00 per hour and \$20.86 per hour, respectively (7). There has been political discussion concerning the wage disparity among EMS and other first responders (5,8,9).

As EMS professionals are responsible for treating medical emergencies across the United States, the issues of wage disparity bring up concerns for occupational health and wellness of EMS professionals. While some view the condensed work week as a benefit, reliance on secondary income through overtime or additional jobs to make a living is concerning due to potential negative effects for the EMS workforce. Specifically, in times of disaster, EMS professionals who regularly work multiple jobs would only respond with one agency, limiting the accessibility of emergency care when needed most. Further, it is unclear how the financial dependency on additional work may be affecting the individuals and the overall strength and stability of the EMS workforce. Research has shown that work and financial stress may have a negative impact on mental and physical health (10–13). The association between dependence on additional work and workforce-reducing factors has not been studied in the EMS population on a national level. The goal of this study was to identify the association between the prevalence and dependence on additional work among EMS professionals and workforce-reducing factors. Our objective was to evaluate the association

between job satisfaction, intention to leave EMS, and dependence on overtime or working multiple jobs.

Methods

Study Population

For this study, we used data available from the National EMS Certification database, which is housed by the National Registry of Emergency Medical Technicians. The National Registry is the organization that coordinates the initial national certification and recertification of EMS professionals in the United States. EMS professionals are required to obtain a state licensure to practice in that state, with many states recognizing initial national certification through the National Registry as the most standardized proxy for entry level competency (14). To maintain their national certification, EMS professionals are required to maintain competency in their skills through recertification, another process that is supported through the National Registry. As part of the recertification process, demographic data are collected from recertification applications submitted by EMS professionals, and a voluntary survey is administered to these EMS professionals after they submit their application. Inclusion criteria were EMS professionals between the age of 18 and 85 who completed the questionnaire, were certified at the emergency medical technician (EMT) level or higher, and currently working as a patient care provider for at least one non-military EMS agency or organization.

Study Design

This was a cross-sectional analysis of survey data from nationally-certified EMS professionals. There are four nationally recognized EMS certification levels including emergency medical responder, emergency medical technician (EMT), advanced emergency medical technician (AEMT), and paramedic. During the biennial recertification cycle necessary to maintain national certification, EMS professionals at the EMT, AEMT and

paramedic levels were given an online, optional questionnaire after submitting their recertification application.

The survey data were collected during the 2017-2018 recertification cycle, and data collection occurred from October 1, 2017 to May 31, 2018. The sampling frame was all nationally-certified EMS professionals who renewed their national certification in the 2017-2018 recertification cycle. Exclusion criteria included any respondent who was not providing patient care (n=7,435), was not working for an EMS organization (n=1,776), was working for a military agency (n=5,426) or was younger than 18 years (n=11) or older than 85 years (n=0). Some respondents were excluded for multiple criteria.

Questionnaire items focused on topics regarding dependence on overtime or multiple jobs to make ends meet, satisfaction with their job, and intentions of leaving the EMS profession (see Appendix A)(15,16). The items that asked “make ends meet” was used as a measure of an individual’s reliance on additional work to maintain financial stability (17,18). The American Institutes for Research Institutional Review Board approved this study, and a waiver of consent was granted.

Measurements

Demographic characteristics were collected from respondents’ recertification application from the National EMS Certification database. Demographics of currently nationally-certified EMS professionals included sex, age, race/ethnicity, urbanicity (urban vs. rural), EMS certification level (EMT, AEMT or Paramedic), and the number of EMS jobs held (1 job vs. 2 or more jobs). Respondents were also asked how many hours a week on average they worked collectively at any job over the past 14 days (0, 1-20, 21-40, 41 or more). The nominal variable of sex was categorically designated as male or female. Age was analyzed as a continuous variable. Due to the small proportion of minority EMS professionals, race and ethnicity were dichotomized to non-minority (white, non-Hispanic) or

minority. The minority category included any person who self-identified as Black or African American, Asian, Hispanic or Latino, Asian or Native Hawaiian or Pacific Islander. For the main agency that respondents worked, data were collected on agency type, employment status, and typical shift length. The main agency a person worked for was defined as the agency for which the respondent did most of their EMS work. Employment status was identified as full-time, part-time or volunteer. Items regarding the topics of dependence on overtime or multiple jobs to make ends meet, satisfaction with their EMS job, and intentions of leaving the profession were assessed on 4-point Likert scales dichotomized to agree or disagree. The colloquial term of ‘making ends meet’ is a subjective measurement that respondents are likely to define in different ways. The term ‘make ends meet’ was used to measure what each individual person needs to maintain their cost of living, such as working an additional job or working overtime hours in order to make a living and pay their bills.

Statistical Analyses

Descriptive statistics were calculated for demographic and work characteristics. Separate multivariable logistic regression models were used to describe the association between the primary exposure of interest of dependence on additional work, and the outcomes of job satisfaction, intention to leave EMS within 1 year, and intention to leave EMS within 5 years. Each model was adjusted for the potential confounders of sex, age, minority status, certification level (EMT vs. AEMT and Paramedic), EMS agency type, employment status, and urbanicity and selected *a priori* from prior literature and substantive reasoning. Available case analysis was used to handle missing data.

Due to an anticipated low response rate based on prior work with EMS professionals, we also conducted a descriptive comparison of the demographic and work characteristics survey respondents and the recertification population, to assess for possible response bias

(19). All analyses were completed using STATA IC version 14.2 (StataCorp LP, College Station, TX).

Results

A total of 22,626 individuals completed the questionnaire (response rate = 22%) with 18,285 respondents meeting inclusion criteria. Most respondents were male (74.4%), with a median age of 41 years (IQR 30-48), and identified as white, non-Hispanic (88.8%) (Table 1). Over half of respondents were working in urban settings (61.3%). One-third of respondents were currently working for 2 or more EMS organizations (34.4%), and most respondents were working full-time at their main EMS agency (73.8%). Most respondents reported working 24-hour (39.8%) or 12-hour shifts (28.0%).

In the descriptive comparison between survey respondents and the eligible sampling frame, we found no substantial difference in sex, age, agency type, full-time status and volunteer status (Appendix B). There was over a 10% difference between the respondents and the eligible sampling frame for urbanicity and certification level, and a smaller difference in the proportion of minority status, illustrating the variables of which the respondents may differ from the overall population. Over the previous 14 days from when the respondents were surveyed, 74.5% worked 41 or more hours per week on average at any job (Figure 1). Over half (56.9%) of respondents agreed that they depended on overtime work, while a similar proportion stated that they depended on more than one job (56.4%) (Table 2). Overall, 71.1% of respondents stated that they depended on additional work to make ends meet. When surveyed regarding their satisfaction with their EMS job, 7.7% of respondents said they were dissatisfied. While only 6.1% of respondents stated that they were intending to leave the EMS profession in one year, over a quarter said they were intending on leaving the profession within five years (26.5%).

Dependence on additional work was significantly associated with increased odds of workforce-reducing factors in both unadjusted and adjusted (aOR) models. After controlling for potential confounders, respondents who were dependent on extra work such as overtime or multiple jobs had a 92% increase in odds of being dissatisfied with their job (aOR 1.92, 95% CI: 1.64 – 2.44, Table 3). For respondents who were dependent on this extra work, they also had a 32% increase in odds of intentions to leave EMS within one year (aOR 1.32, 95% CI: 1.14 – 1.54). Respondents who were dependent on this extra work had a 16% increase in odds of intentions to leave EMS within five years (aOR 1.16, 95% CI: 1.07 – 1.25).

Discussion

In this analysis of nationally certified EMS professionals, we found that there was dependence on additional work in the EMS workforce. Over a third of respondents reported working for two or more EMS agencies, and most reported working over 40 hours per week. About half of respondents reported that they depended on overtime or multiple jobs in order to make ends meet. We also found that those who were dependent on this additional work, either through overtime hours or working multiple jobs, had higher odds of being dissatisfied, as well as increased intentions to leave the EMS workforce. Our findings in this study echo previous studies that have examined the prevalence of additional work in EMS. Many EMS professionals are working multiple jobs, either in EMS or not, and therefore may be affiliated with multiple agencies (20). Most respondents reported working 24-hour or 12-hour shifts. These long shift durations have been shown to be a common schedule for EMS professionals (1). Expanding on this prior work, this is the most recent evaluation of the EMS population that analyzes how often EMS professionals are working more than a standard work week, and provides an innovative perspective on the impact this may have on the individual and the workforce.

While working overtime or multiple jobs may be a source of additional income for individuals in EMS, there may be long-term consequences of this financial dependence on supplemental work to make a living. The finding that the majority of individuals worked 12- to 24- hour shifts is notable but not surprising. Many EMS professionals are shift workers, and many are partnered with fire departments which utilize longer shift lengths to ensure the provision of emergency medical care to communities (21). Most respondents were working either 12-hour or 24-hour shifts, which have been shown to result in more stress and fatigue, in addition to poor health risks (1,22). Additional negative health consequences that have been linked with working long shift lengths include poor sleep, burnout, and decreased psychological health with longer shifts (23,24). These health consequences may be exacerbated by other factors common in EMS such as overnight shifts, additional jobs, and overtime hours and may result in work-related consequences (23,25–27). Additionally, the finding that most respondents worked 41 or more hours a week illustrates that these professionals have an increased exposure to negative occupational health impacts such as stress, fatigue and burnout. There are likely other factors that may contribute to the outcome measures in the study that were not measured. Other studies have illustrated that other workforce-reducing factors such as dissatisfaction with pay or benefits, lack of career advancement, or other work-related stressors have been associated with dissatisfaction with EMS and intentions of leaving (15).

In addition to the stress associated with providing care in the prehospital setting, EMS workers may be under financial stress due to low wages. The proportion of those depending on overtime or multiple jobs in order to make ends meet is concerning, as it identifies that EMS professionals are reliant on supplemental income to make a living in their career. Previous research has also identified that EMS professionals are leaving the field to seek better pay and benefits, highlighting that this is a reoccurring issue that impacts turnover

within the profession (15,28). This study also demonstrated that those who have this financial dependence are more likely to be dissatisfied with the profession and have higher odds of intentions of leaving. There are other personal characteristics such as family life and personal finances that may play a role in the financial stress for EMS professionals that were not measured in this study.

The phenomenon in EMS of financial dependence on additional work to make a living is likely to have a negative long-term impact on the workforce. If EMS professionals are reliant upon working multiple jobs, overtime or other means of supplemental income and eventually leave the profession to find other jobs, this would impact EMS agencies and the communities who rely on these professionals in emergencies. The workforce-reducing factors of dissatisfaction and intent to leave, in addition to other known factors of stress, fatigue and burnout, will lead to a high turnover of EMS professionals (29).

This financial dependence on additional work in EMS may have a negative impact on the workforce and communities, as there may be lower numbers of EMS professionals who are ready to respond in times of need due being overworked and underpaid. If EMS professionals are forced to work overtime or hold multiple jobs, there may be a limited availability of competent and prepared EMS professionals who are ready to respond to emergencies. These factors have been previously identified as workforce-reducing factors that can lead to poor individual outcomes such as stress and burnout, as well as to turnover within the workforce, thus reducing the number of individuals available to provide high quality emergency care (15,27–29).

If many individuals are working multiple EMS jobs, the multiple agencies they are affiliated with may not truly reflect the availability of the workforce in times of disaster management. The overcommitment of EMS professionals to agencies has been studied at the state level in North Carolina; this research also identified an issue on the true reliable

workforce of EMS professionals who would be available to respond to an emergency with their main agency (20). Adequate staffing is critical for responding to the emergency medical needs of a community and is also important when considering workforce surge capacity in the event of a larger scale emergency. This issue has been studied on a state level, but not at the national level to inform emergency planning and management organizations. In normal settings, as well as surge levels, the EMS professionals should be compensated properly in order to maintain the strength and stability of the EMS workforce.

Limitations

A limitation of this study is the basis of the overtime hours that respondents may be working. It is unknown if the overtime hours are agency mandated or worked voluntarily. Additionally, we did not assess whether individuals were working these additional hours in their EMS job or a job outside of EMS. A challenge when studying EMS professionals is the limited availability and generalizability. Only EMS professionals who held National EMS Certification were included in this study as no complete database of all licensed EMS professionals in the United States currently exists. Response bias due to this circumstance represents a potential limitation to this study.

This study was an online population survey of a large sample, which is likely to elicit a low response rate (30). From the analysis of respondents and the eligible sample frame, we found a substantial difference in the urbanicity and certification level of the respondents compared to the general population, as well as a smaller difference in minority status (See Appendix B). It is possible that these nonresponse biases could affect the results in different ways according to the population. Those in an urban setting might have a higher cost of living, and therefore depend more on additional work to make ends meet (31). Those who are certified as paramedics may be more likely to be working in EMS as their career and are paid more than EMTs, who may be more likely to work other jobs (7). Combined, these two

biases would likely underestimate the effect of dependence on additional work on dissatisfaction with EMS and intent to leave. The difference in minority status response may be related to the wage gap that is a recognized disparity among racial groups (32). This bias would potentially overestimate the effect of dependence on additional work on dissatisfaction with EMS and intent to leave.

Conclusion

Work has been identified as a social determinant of health and should be an important consideration in the prehospital setting, where EMS professionals are providing vital emergency care to the public (33). EMS professionals are a unique work population, as they are working in potentially unsafe and rapidly changing environments, while at risk for the other occupational health risks that accompany long shift durations. This study revealed that many EMS professionals work more than a standard work week and depend on additional work to make a living. Financial dependence was associated with increased odds of workforce-reducing factors, such as job dissatisfaction and intention to leave the profession. There are individual-level and population-level factors that make the findings from this study concerning. EMS professionals who are dependent on additional hours are likely to be under increased physical, mental, and financial stress in addition to their high-risk, high-stress jobs. The impact of dependence on additional work is two-fold: the EMS professionals who are working additional hours or job positions have higher odds of being dissatisfied and leaving the workforce. They are also at risk for stress, fatigue, and burnout from their job, which endangers both the EMS professional's health, as well as communities that rely on emergency medical services. These factors may result in less availability of this crucial workforce who is able to respond to emergencies in times of need. Future research should assess the mental and physical health and well-being, including economic health, of people who work in EMS. Recognizing that EMS professionals are a vital workforce providing care

to the nation, and these individuals should be able to earn enough wages to make a living is a crucial step in developing and strengthening the profession.

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Table 1. Demographic and professional characteristics of the study population.

Abbreviations- IQR: Interquartile range; EMT; Emergency Medical Technician; AEMT: Advanced Emergency Medical Technician; EMS: Emergency Medical Services.

Characteristic	Overall (N=18,284) n (%)
Sex	
Male	13,600 (74.4)
Female	4,643 (25.4)
<i>Missing</i>	41
Age- Median (IQR)	38 (30 – 48)
Minority Status	
White, non-Hispanic	15,856 (88.8)
Minority	1,992 (11.2)
<i>Missing</i>	436
Urbanicity	
Urban	11,208 (61.3)
Rural	7,076 (38.7)
<i>Missing</i>	344
Certification Level	
EMT	7,643 (41.8)
AEMT	904 (4.9)
Paramedic	9,737 (53.3)
<i>Missing</i>	0

Number of organizations	
1	11,992 (65.6)
2+	6,292 (34.4)
<i>Missing</i>	0
Agency Type	
Fire	7,383 (40.5)
Private	4,255 (23.4)
Government Non-Fire	2,526 (13.9)
Hospital	2,315 (12.7)
Other	953 (5.2)
Air Medical	793 (4.4)
<i>Missing</i>	59
Full-Time at Main Agency	13,386 (73.8)
<i>Missing</i>	155
Volunteer at Main Agency	2,644 (14.5)
<i>Missing</i>	64
Typical Shift Length at Main EMS Agency	
8 hours	1,145 (6.3)
10 hours	800 (4.4)
12 hours	5,069 (28.0)
24 hours	7,222 (39.8)
36 hours	117 (0.7)
48 hours	1,627 (9.0)
Other	962 (5.3)
Don't work shifts at main job	1,193 (6.6)
<i>Missing</i>	149

Table 2. Frequency and percentage of dependency on overtime and multiple jobs, dissatisfaction, and intentions of leaving the EMS profession.

	n	%
Depend on overtime to make ends meet	10,074	56.9
Depend on more than one job to make ends meet	9,915	56.4
Depend on either overtime or multiple jobs to make ends meet	12,764	71.1%
Dissatisfied with EMS job	1,371	7.7
Intending to leave EMS within 1 year	1,100	6.1

Intending to leave EMS within 5 years	4,742	26.5
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Table 3. The unadjusted and adjusted odds ratios of dissatisfaction with job and intentions of leaving the profession for respondents who depended on additional income to make ends meet. Abbreviations- OR: Odds Ratio; CI: Confidence Interval.

	Unadjusted OR (95% CI)	Adjusted OR (95% CI)*
Dissatisfied with EMS job	2.29 (1.97 – 2.66)	1.92 (1.64 – 2.44)
Intending to leave EMS within 1 year	1.49 (1.28 – 1.72)	1.32 (1.14 – 1.54)
Intending to leave EMS within 5 years	1.27 (1.18 – 1.37)	1.16 (1.07 – 1.25)

*Controlling for sex, age, race, certification level, agency type, employment status, and urbanicity.

Appendix A

Recertification Survey

For how many different organizations do you currently perform EMS work?

- 0
- 1
- 2 or more

Which of the following comes closest to best describing the length of the shifts you typically work at your main EMS job?

- I don't work shifts at my main EMS job
- 8 hours
- 10 hours
- 12 hours
- 24 hours
- 36 hours
- 48 hours
- Other - Write In: _____

Over the past 4 weeks, how many hours on average did you work at any job (including EMS and non-EMS jobs)?

- 0
- 1-20
- 21-40
- 41 or more hours

Please indicate how much you agree or disagree with the following statements:

	Strongly agree	Agree	Disagree	Strongly disagree
I depend on overtime to make ends meet.	☐	☐	☐	☐
I depend on more than one job to make ends meet.	☐	☐	☐	☐

How satisfied are you with your main EMS job?

- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied

How likely is it that you will leave the EMS profession within the next 12 months?

- Definitely will not leave
- Probably will not leave
- Probably will leave
- Definitely will leave

How likely is it that you will leave the EMS profession within the next 5 years?

- Definitely will not leave
- Probably will not leave
- Probably will leave
- Definitely will leave

Survey Thank You

Thank you for completing this survey. Your response is very important to us and will help shape our profession!

APPENDIX B:

Demographics of both survey respondents and the full population of nationally-certified EMS professionals who recertified in the 2017-2018 cycle. Abbreviations- IQR: Interquartile range; EMT: Emergency Medical Technician; AEMT: Advanced Emergency Medical Technician; EMS: Emergency Medical Services.

Characteristic	Survey respondents N = 18,284 n (%)	Recertification Population N = 101,363 n (%)
Sex		
Male	13,600 (74.4)	72,775 (74.3)
Female	4,643 (25.4)	25,196 (25.7)
<i>Missing</i>	41	3,392
Age- median (IQR)	38 (30 – 48)	35 (28 – 44)

Minority Status		
White, non-Hispanic	15,856 (88.8)	77,418 (81.4)
Minority	1,992 (11.2)	17,675 (18.6)
<i>Missing</i>	436	6,270
Urbanicity		
Urban	11,208 (61.3)	72,906 (71.9)
Rural	7,076 (38.7)	28,457 (28.1)
<i>Missing</i>	344	23,242
Certification Level		
EMT	7,643 (41.8)	60,377 (59.6)
AEMT	904 (4.9)	3,814 (3.8)
Paramedic	9,737 (53.3)	37,172 (36.7)
<i>Missing</i>	0	0
Agency Type		
Hospital	2,315 (12.7)	7,998 (9.9)
Fire	7,383 (40.5)	35,447 (43.9)
Private	4,255 (23.4)	15,878 (19.7)
Government Non-Fire	2,526 (13.9)	10,003 (12.4)
Air Medical	793 (4.4)	2,134 (2.6)
Other	953 (5.2)	3,928 (4.9)
<i>Missing</i>	59	20,549
Full-Time at Main Agency	13,386 (73.8)	61,164 (76.2)
<i>Missing</i>	155	21,094
Volunteer at Main Agency	2,644 (14.5)	10,142 (12.6)

Missing	64	20,593
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Figure 1. Average number of hours worked over the past 14 days at any job, EMS or non-EMS.

