Is Dispatching to a Traffic Accident as Stressful as Being in One? Acute Stress Disorder, Secondary Traumatic Stress, and Occupational Burnout in 911 Emergency Dispatchers

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ABSTRACT

Emergency dispatchers are exposed to potentially traumatic events at rates that likely exceed that of emergency first responders. Although not physically present at the time of the incident, it is likely that this repeated exposure in concert with highly stressful work conditions could lead to potentially negative emotional and physical outcomes. To date few studies have examined rates of stress related pathology and subsequent impairment in emergency dispatchers. The following study takes an initial step to investigate rates of Acute Stress Disorder, Secondary Traumatic Stress and Occupational Burnout. 205 emergency dispatchers completed a survey while considering their occupational experiences and recent dispatch call history. Although the results of this study are exploratory, rates of these three outcomes exceeded that of the general population and were related to several job-specific factors that could potentially be modified to reduce dispatcher stress. Additional emergency call specific factors were also examined to uncover the potential contribution to negative stress-related outcomes.

INTRODUCTION

The job of an emergency dispatcher requires the strategic and complex coordination of emergency personnel under highly stressful time-intensive conditions. Additionally, dispatchers are the first contact between a distressed individual and emergency responders. As a result, dispatchers are immediately immersed into a traumatic scene and are required to communicate with frantic and panicked callers.[1,2] These demanding work conditions require the dispatcher to remain calm and suppress emotional reactions during exposure to traumatic events that include drowning, distressed children, suicide, physical assault, as well as the aftermath of these incidents.[3]

Dispatchers are chronically exposed to these traumatic events at rates that likely exceed that of emergency first responders as they are often cross-trained to handle rescue, medical, and fire emergencies. This rate of exposure may place dispatchers at increased risk for trauma related psychopathology. Existing empirical evidence suggests that exposure to multiple traumatic events increases the risk of developing PTSD[4]. Furthermore, given that dispatchers experience a similar amount and type of traumatic event as first responders, the first responder literature serves as a logical proxy to base research endeavors.

Prevalence estimates for PTSD in emergency personnel markedly exceed that of civilian populations with estimates ranging from 6% to 32%[2]. Chronic stress in this population is associated with an increased risk of cardiac disease, general psychopathology, alcoholism, and occupational burnout.[5-7] Empirical evidence suggests that chronic exposure to less severe traumatic events (e.g., vehicle accident) has similar consequences as exposure to large-scale events[8] and that a chronic subclinical level of PTSD symptoms is among the possible illness trajectories following exposure to a traumatic events.[9] Occupations that require this level of chronic exposure to traumatic events may be associated with increased stress-related symptoms as chronic trauma exposure may not activate the same protective factors (e.g., social support networks) as major disasters.[10]

Although emergency dispatchers are not physically present during a traumatic incident, researchers have reported the development of PTSD symptoms due to various peritraumatic responses and traumatic situations.[11] Although the presence of life-threat increases the risk of developing PTSD[12], many studies have found that expanding PTSD criteria to included "witnessing and hearing about a trauma" additionally accounts for 38% of true PTSD cases in a given population.[13,14] Additionally, helping professionals (e.g., social workers) have reported symptoms of intrusion, avoidance, and sleep disturbance[15-18] related to secondary trauma exposure. This is commonly referred to as "Secondary Traumatic Stress" (STS) or when combined with burnout, as "Compassion Fatigue". Due to these findings, the DSM criteria for PTSD has been changed, reflecting the addition of "experiencing repeated or extreme exposure to aversive details of traumatic events," and specifically mentioning first responders.[19]

A growing body of literature has also supported the occurrence of PTSD in emergency dispatchers.[20-22] Pierce and Lilly[21] reported that in their sample of 911 telecommunications an average of 32% of traumas were endorsed as evoking a peritraumatic response involving fear, helplessness, and horror (i.e., DSM-IV A2 criteria for a trauma). These researchers also found that traumas involving harm to a child or an individual with a personal relationship to the dispatcher were associated with the most distress. However, this study used a dichotomous question (i.e., yes/no) to inquire about the occurrence of these responses and did not examine functional impairment. Furthermore, the A2 criteria has been removed from the DSM-5 due to the lack of predictive validity as it did not accurately identify those with adverse stress reactions or PTSD symptoms, especially in military and first responder populations.[11] Other studies have more clearly established the link between dispatcher trauma and PTSD symptoms. In a population of police dispatchers, Regeher and colleagues[22] found that based on a self-report measure, 31% of the participants exceeded the clinical cut-off for PTSD and that the most common and severe symptoms involved intrusion and avoidance.

Despite the similarities between the first responder and dispatchers literatures, few empirical studies have evaluated adverse mental health outcomes in the dispatcher population. The existing dispatcher literature has mainly focused on the prevalence of PTSD and has failed to investigate the effects of STS or PTSD on functional and occupational outcomes. Many job-related factors such as job satisfaction and burnout have not yet been examined in relation to traumatic experiences in the emergency dispatcher literature. The investigation of these outcomes is essential due to the high degree of responsibility dispatchers incur and that the fact that PTSD symptoms are related to poor professional decision making.[21] First responders with symptoms of PTSD have been shown to take more sick days and retire earlier[23,24] and a large epidemiological study found that PTSD was one of three psychological disorders associated with the greatest loss of occupational productivity.[25] In emergency dispatchers, longer employment has been associated with higher rates of depression and PTSD[18], a finding mirroring the emergency first responder literature.[26]

The present study examines the effects of STS and functional impairment on job satisfaction and burnout. The inclusion of functional impairment is crucial as some symptoms of PTSD are part of a normal reaction to a trauma and dissipate with time. Investigating the occurrence of functional impairment will provide researchers with a better understanding of the impact of symptoms related to chronic traumatic event exposure and subsequent occupational impairment. Additionally, examination of call specific and occupational variables (e.g. number of years as dispatcher, shift-schedule) will provide potential points of intervention.

Based on the extant literature we hypothesize that

1. The prevalence of ASD, STS and occupational burnout will be higher in emergency dispatchers than the general population, and similar to rates found in first responder populations.
2. Longer-employment and/or a more demanding shift schedule will be related to more symptoms of ASD, burnout, and STS.
3. Traumas involving children or an individual with a personal relationship to the dispatcher will be related to greater STS and symptoms of ASD.
4. Exploratory analysis will be conducted to assess the characteristics of an emergency call that dispatchers perceive as distressing and impairing to their function and that are related to STS and burnout. Due to the dearth of literature in this area, there are no formal hypotheses.

METHODS

Participants

Data was collected as part of a study investigating the relationship between stress, compassion fatigue, and quality of life for 205 9-1-1 emergency dispatchers. Dispatchers participated in this study during a national conference and received a travel coffee mug for participating in the survey. Inclusion criteria required that participants be at least 18 years of age and currently working in the field of emergency dispatching.

Demographic Information

The demographic survey asked about personal and professional information. The personal demographic portion of the survey included: age, gender, race/ethnicity, highest level of education, current partner status, pri-mary caregiver of any dependent children or any elderly parents or other dependent adults. The professional demographic portion of the survey included: number of years worked as an emergency dispatcher, years worked in current service, type of dispatching, shift assignment, length of shift, number of days worked in a 7 day period, and number of personnel on

Characteristic	N (%) (n=205)
Age	
18-21	3 (1.5)
22-25	5 (2.4)
26-30	29 (14.1)
31-35	27 (13.1)
36-40	31 (15)
41-45	38(18.4)
46-50	25 (12.1)
51-55	23 (11.2)
56-60	8 (3.9)
Over 60	3 (1.5)
Gender	
Female	133 (64.6)
Male	56 (27.2)
Level of Education	
High School or GED equivalent	59 (30.9)
Associates Degree	60 (31.4)
Trade School	9 (4.7)
Bachelor's Degree	41 (21.5)
Professional Degree	7 (3.7)
Master's Degree	15 (7.9)
Race/Ethnicity	
White/Caucasian	165 (80.1)
American Indian or Alaskan Native	3 (1.5)
Asian/Pacific Islander	1 (0.5)
Black or African American	9 (4.4)
Hispanic American	9 (4.4)
Other	3 (1.5)
Choose not to answer	1 (0.5)
Relationship Status	
Single	31 (16.2)
Unmarried living with a partner	23 (12.0)
Married	109 (57.1)
Separated	3 (1.6)
Divorced	18 9(9.4)
Widowed	2 (1.0)
Choose not to answer-partner status	5 (2.6)

Table 1. Demographic Characteristics of 9-1-1 Emergency Dispatchers

Characteristic	N (%) (n=205)
Dispatch Service	
EPD	11(5.3)
EFD	3 (1.5)
EMD	30 (14.6)
EFD, EMD	34 (16.5)
EPD, EFD	10 (4.9)
EPD, EFD, EMD	100 (48.5)
Total Years Working as a Dispatcher	
Less than 1 year	1 (0.5)
1-3 years	26 (12.6)
4-8 years	46 (22.3)
9-12 years	32 (15.5)
13-19 years	50 (24.3)
20+ years	37 (18.0)
Total Years Working as a Dispatcher in Current Service	
Less than 1 year	5 (2.4)
1-3 years	35 (17.0)
4-8 years	53 (25.7)
9-12 years	30 (14.6)
13-19 years	41 (19.9)
20+ years	28 (13.6)
Shift Worked*	
Day	109 (46.8)
Evening/Swing	32 (13.7)
Graveyard/Night	39 (16.7)
On Call	12 (5.2)
Rotational	41 (17.6)

*Note. Some participants selected multiple shifts

Table 2. Professional Demographic Characteristics

on duty per shift (See Tables 1 and 2 for details about the sample).

Stress and Functioning Related to Traumatic Calls

A list of potentially stressful or traumatic calls was created in collaboration with professional dispatchers. A list of 30 calls/events were identified that were more likely to be considered traumatic. The list was comprehensive in that it included EPD, EFD, and EMD (Emergency Police Dispatch, Emergency Fire Dispatch, and Emergency Medical Dispatch). For each traumatic call the participant was asked to rate on a scale of 0 (None) to 5 (Extremely) for both acutely experienced stress and the degree to which the call effected functioning at work and home.

Organizational Sources of Stress

The Organizational Sources of Stress[24] questionnaire asked 17 sources of stress experienced specific to the emergency dispatch workplace. Participants were asked to indicate all that are currently sources of stress.

Adequacy of Staffing

Adequacy of staffing[27] was assessed with 4-items rated on a 5-point Likert scale of Never (1) to All of the time (5). The sum of these ratings represented the adequacy of staffing index. In the sample conducted by Troxell[27] a mean of 12.9 (3.3) was observed in emergency dispatchers perceptions of staffing adequacy.

Stanford Acute Stress Reactions Questionnaire (SASRQ)

The Stanford Acute Stress Reactions Questionnaire (SASRQ)[26] is a 30-item instrument used to diagnose Acute Stress Disorder. The items on the SASRQ include items that are relevant to the DSM-IV diagnostic criteria, which include dissociation (10 items), re-experiencing of trauma (6-items), avoidance (6-items), anxiety and hyper-arousal (6-items), and impairment in functioning (2 items). Participants were asked to rate each item on a scale of 0 (Never) to 5 (Very Often) regarding how well each item described their feelings during and immediately following a call that the participant believed was the most personally distressing. Due to an administrative error, items numbered 23-30 were not administered. As a result, four dissociative items related to sense of numbing and detachment, decreased awareness of surroundings, and dissociative amnesia were not administered. In addition, two re-experiencing items, along with one avoidance and one marked anxiety/increased arousal item were not administered.

ASD diagnosis:

As items 23-30 were missing from the administration of the SASRQ, the researchers combined the 22 SASRQ items with eight items from the ProQOL. The eight items were chosen because these items were representative of the DSM-5 Acute Stress Disorder (ASD) diagnostic criteria and matched the missing SASRQ items. The items from the ProQOL that were matched to DSM-5 criteria and SASRQ items were as follows: items 2, 14, and 25 represented the Intrusion category; item 13 represented Negative Mood category; item(s) 4 and (23) represented Avoidance category; and items 8 and 11 represented Arousal category.

A frequency count for each case determined the number of symptoms that were endorsed with a score of three or higher on the aforementioned ProQOL and SASRQ Likert scales. A score of three or higher was utilized as per the directions of the SASRQ scoring guide. A frequency count was performed to identify the number of individual cases that endorsed nine or more symptoms, as outlined in the DSM-5 diagnostic criteria of ASD.

Professional Quality of Life: Compassion Satisfaction and Compassion Fatigue (ProQOL), Version 5 (2010)

The Professional Quality of Life Scale (ProQOL)[26] is a self-report measure that consists of 30 items and is comprised of three scales consisting of ten items each. Respondents rate their experiences, both positive and negative as they pertain to their job as an emergency dispatcher by indicating how frequently they had experienced these characteristics in the last 30 days. The three scales include: Compassion Satisfaction (CS); Burnout; and Secondary Traumatic Stress (STS). Burnout and STS are two subscales of Compassion Fatigue, however, the subscales may not be combined to yield a total score[26]. The ProQOL-5 manual indicates the participant should rate each item on a scale of 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), 5 (Very Often), due to administrative error, participants rated each item on a scale of 1 (Never), 2 (Rarely), 3 (A Few Times), 4, (Somewhat Often), 5 (Often), 6 (Very Often). This rating scale is similar to the rating scale that was used for the SASRQ. The researchers of the current article transformed the rating scale from a 6-point scale to a 5-point scale to be in accordance with the ProQOL-5 manual.

Data analysis

IBM SPSS Statistics for windows was used for data analysis. Frequencies and percentages were calculated to determine percentages of calls endorsed as stress and impairing to functioning.

Independent and one sample T-tests were used in addition to χ^2 as the primary methods of comparison between groups for continuous and dichotomous dependent variables respectively. Although multiple comparisons were conducted, a bonferroni correction was not implemented as many findings were largely exploratory. Given the absence of relevant literature these findings should be further investigated.

ASD Diagnosis Status	Diagnosed with ASD Mean (SD)	Not Diagnosed with ASD Mean (SD)
Burnout	28.97 (4.21)	24.01 (4.16)
Secondary Traumatic Stress	30.03 (5.28)	20.31 (4.46)
Compassion Satisfaction	38.83 (6.01)	40.09 (5.85)

Table 3. Mean Burnout, Secondary Traumatic Stress, and Compassion Satisfaction Scores as a Function of ASD diagnosis (with Standard Deviation in Parentheses).

RESULTS

The predominantly female sample included 205 emergency dispatchers, whom primarily identified as white/Caucasian, married, between the ages of 18 years and over 60 years, and whose average highest level of education was an associate's degree (Table 1). The sample primarily worked the day shift, dispatched for three services (EPD, EFD, and EMD), and had been working as a dispatcher for 13 to 19 years (current service for 4 to 8 years) (Table 2). In regards to our first hypothesis, 17% of the 205 emergency dispatchers that comprised our sample endorsed the presence of nine or more symptoms of ASD in response to a call that occurred in the last 30 days and that they perceived as traumatic. This rate of ASD is notably higher than that of the general population and similar to other at risk populations[31]. One sample t-tests revealed that the average score on the STS (M=21.9±5.8) and burnout (M=24.8±4.6) subscales were significantly higher $t(184) = 20.688$, $p < .001$; $t(181) = 8.379$, $p < .001$ than the average score of the normed population referenced by the PRO-QOL(μSTS= 13, μburnout=22). Furthermore, in our dispatcher sample the number of ASD symptoms was significantly correlated with STS ($r = .770$, $p < .001$) and burnout ($r = .484$, $p < .001$). Independent sample t-tests also revealed that individuals endorsing 9 or more symptoms endorsed significantly greater STS $t(182) = -10.586$, $p < .001$.) and Burnout $t(180) = -5.958$, $p < .001$ (Table 3)

Dispatchers also reported rates of CS (M=39.88±5.877) that were significantly higher $t(180) = 6.581$, $p < .001$ than the norm group (37) and CS was uncorrelated with the number of ASD symptoms ($r = -.083$, $p = .268$). CS also did not differ based on whether or not an individual endorsed 9 or more symptoms of ASD $t(178) = 1.056$, $p = .292$.

Our second hypothesis was only partially supported as number of years worked as a dispatcher was not significantly correlated of with number of ASD symptoms $r = -.010$, $p = .892$, STS $r = .051$, $p = .491$, or burnout $r = .027$, $p = .716$ and Chi-square tests revealed that the likelihood of endorsing 9 or more symptoms of ASD did not differ if the dispatcher was responsible for one service (e.g., EMD) or multiple services (e.g., EMD, EPD, EFD) $\chi 2\ (1) = .904$, $p = .342$. However, independent samples t-tests revealed that dispatchers responsible for multiple-services had significantly higher rates of STS $t(89.776) = -2.525$, $p = .013$ and BO $t(176) = -2.180$, $p = .031$, but not CS $t(174) = .342$, $p = .733$. Furthermore, the presence of 9 or more ASD symptoms was associated with the dispatchers shift schedule (e.g., day, evening, graveyard, on-call, rotational) $\chi 2\ (5) = 12.278$, $p = .031$. This is reflective of the fact that, based on the odds ratio, individuals who worked a rotational shift schedule were 2-times more likely to meet criteria of ASD. Additionally, the number of ASD symptoms based on shift schedule approached, but did not reach significance $F(5,191) = 2.103$, $p = .06$. However, the type of shift schedule worked was not associated with STS $F(5,183)=1.526$, $p=.184$, Burnout $F(5,181)=1.681$, $p=.141$, or CS $F(5,179)=0.891$, $p=.488$.

As few studies have been conducted with this population, several exploratory analyses were performed to uncover the characteristics of an emergency call that may be associated with distress and impairment as well as increased STS, burnout, and ASD symptoms. In contrast, to our third hypothesis, the type of victim on the call $\chi 2\ (7)= 7.834$, $p=.347$ was not associated with either a diagnosis of ASD and the total number of ASD symptoms endorsed by the dispatcher did not differ based on victim type $F(7.176)=1.674$, $p=.118$. In-line with these results there was no significant association between a diagnosis of ASD and whether the victim on the call was child or an adult $\chi 2\ (1) = .137$, $p = .712$. Additionally, STS $F(1,143)=.355$, $p = .552$, Burnout $F(1, 144)=0.060$, $p=.807$ and CS $F(1, 146)=0.182$, $p = .67$ did not differ based on victim type. Interestingly one caller characteristic that did approach statistical significance was the party of the caller $\chi 2\ (3)= 7.134$, $p=.068$ such that events involving first party callers may be more related to the presence of 9 or more symptoms of ASD than calls from individuals who are not the primary victim of the event. However, the number of ASD symptoms did not differ by the party of the caller $F(2,182) = 1.39$, $p = .250$.

In addition to the caller characteristics, we also conducted analyses related to the type of event. Twelve independent sample t-tests were conducted to assess whether individuals that met criteria for ASD (i.e., 9 or more Symptoms) perceive specific types of calls to be stressful to handle and more impairing to their overall functioning than individuals who do not meet criteria for ASD. The 6 types of calls selected were based on the calls at least 45% participants rated as most stressful and impairing to functioning (Table 5-8). Individuals that met criteria for ASD endorsed calls involving children, suicide, structure fires, calls with first party callers, and calls requiring the dispatcher to calm an uncooperative caller as significantly more stressful than individuals not meeting criteria for ASD (p's<.049) (Table 4). Additionally,

Event	Group	Stressful to Handle					Impairment in Functioning				
		M	SD	*df*	*t*	*p*	M	SD	*df*	*t*	*p*
Traffic Accident	Non-ASD	.75	1.123	153	-1.68	.094	.09	.426	143	-2.028	.044*
	ASD	1.16	1.143				.30	.635			
Suicide	Non-ASD	1.67	1.447	110	-1.707	.091	.58	.926	101	-.663	.008*
	ASD	2.33	1.815				1.135	1.656			
Calls Involving Children	Non-ASD	1.77	1.203	100	-3.055	.003*	.71	.964	92	-1.018	.000*
	ASD	2.79	1.718				2.17	1.543			
Structure Fire	Non-ASD	1.23	1.420	107	-2.035	.044*	.25	.759	98	-.725	.156
	ASD	1.95	1.759				.52	.814			
First Party Caller	Non-ASD	.70	.942	110	-1.990	.049*	.17	.485	104	-1.249	.215
	ASD	1.21	1.357				.33	.594			
Calming Uncooperative Caller	Non-ASD	1.43	1.238	98	-3.094	.003*	.36	.678	87	-1.837	.070
	ASD	2.44	1.381				.71	.772			

Table 4. Types of Calls

individuals meeting criteria for ASD reported calls involving traffic accidents, suicides, and calls involving children as significantly more impairing to their functioning than individuals not meeting criteria for ASD (p's<.044); however, examination of the means and standard deviations revealed that for differences based on ASD symptoms, means were centered around the lower ends of the Likert scales indicating that only calls involving children appear to be both meaningfully and statistically different.

DISCUSSION

Few studies have examined the rates of stress induced psychopathology in emergency dispatchers. To our knowledge this is the first study to assess the potential impact of these repeated exposures as well as assess specific environmental and workplace conditions that contribute to dispatcher stress. Results from this study revealed a rate of Acute Stress Disorder significantly greater than the general population with 17% of the sample endorsing nine or more current ASD symptoms to meet criteria for the disorder. Additionally, the level of STS and occupational burnout reported by emergency dispatchers in this study also exceeds that of the general population and was highly related to symptoms of stress based symptoms. Although the mean scores for these subscales fall within low to average range provided by the PRO-QOL, one-third of the PRO-QOL norm sample was comprised of medical nurses[32], which may have elevated rates of STS (M = 13) and BO (M = 22) in the norm sample. Additionally, the significant differences between the scores obtained by the norm group and the dispatcher sample (STS= 21.9 and Burnout=24.82) indicates that dispatchers may be experience higher rates of STS and Burnout than other occupations. Adding nuance to our initial understanding of the role of stress in this population, our study also found a higher rate of CS that was unrelated to ASD symptoms indicating that despite these stressful conditions, dispatchers find their role as helpers to be personally rewarding.

Although limited empirical inquires have been conducted with dispatcher populations, additional specific hypotheses were guided by the extensive work conducted with emergency first responders. The first responder literature serves as an adequate proxy due to similar sources of stress and event exposure. Based on these studies and the limited work with emergency dispatchers our second formal hypothesis related to specific work conditions was only partially supported. The occurrence of ASD symptoms did not differ based on the number of services (EFD, EPD, EMD) the dispatcher was responsible for or the number of years an individual was employed as a dispatcher; however, individuals meeting criteria for ASD did report higher levels of STS and burnout. Furthermore, dispatchers working a rotational shift schedule were more than twice as likely to meet criteria for ASD than dispatchers working a more stable shift schedule, but these factors were not associated with STS or burnout. Although somewhat inconsistent with the existing literature, these findings may partially reflect the fact that our sample was comprised primarily of individu-

Stressful Event	Not Stressful (%)	Stressful (%)
Traffic accident	16.7	83.3
Line of duty death	76.7	23.3
Childbirth complications	83.3	16.7
Person Trapped	76.6	23.3
Childbirth	56.7	43.4
Death of infant	63.3	36.7
Natural disaster	70	30
Line of Duty Death	76.7	23.3
Death of infant	63.3	36.7
Natural disaster	70	30
Suicide	40	60
First responder injured	53.3	46.7
Murder	63.3	36.7
Pursuits	46.7	53.3
Involving children	36.7	63.3
Personal acquaintance	76.7	23.3
Shots fired	56.7	43.3
Officer shot	83.3	16.7
Structure fire	26.7	73.3
Robbery	60	40
Standoff	80	20
Mass casualty	80	20
First party caller	36.7	63.3
Calming uncooperative caller	40	60
First party caller death	66.7	33.3
Drowning	76.7	23.3
Lightning strike	80	20
Electric shock	80	20
Full arrest	46.7	53.3
Providing CPR	43.3	56.7
Choking	66.7	33.3
First party mentally ill caller	50	50

Table 5. ASD Sample-Stressful Event Rate

Stressful Event	Not Impaired (%)	Impaired (%)
Shooting Victim	60	40
Traffic accident	23.3	76.6
Childbirth complications	86.7	13.3
Person trapped	80	20
childbirth	60	40
Line of Duty Death	80	20
Death of infant	66.7	33.3
Natural disaster	73.3	26.7
Suicide	43.3	56.7
First responder injured	56.7	43.3
Murder	6	33.3
Pursuits	50	50
Involving children	40	60
Personal acquaintance	80	20
Shots fired	60	40
Officer shot	86.7	13.3
Structure fire	30	70
Robbery	63.3	36.7
standoff	83.3	16.7
Mass casualty	83.3	16.7
First party caller	40	60
Calming uncooperative caller	43.3	56.7
First party caller death	70	30
Drowning	80	20
Lightning strike	83.3	16.7
Electric shock	83.3	16.7
Full arrest	50	50
Providing CPR	46.7	53.3
Choking	70	30
First party mentally ill caller	53.3	46.7

Table 6. ASD Sample Rate- Impairment by Stressful Event

Stressful Event	Not Stressful (%)	Stressful (%)
Shooting Victim	70.7	29.3
Traffic accident	24	76
Childbirth complications	82.9	17.1
Person trapped	82.4	17.6
Childbirth	72.7	27.3
Line of Duty Death	80.5	19.5
Death of infant	71.7	28.3
Natural disaster	80	20
Suicide	45.4	54.6
First responder injured	71.7	28.3
Murder	75.6	24.4
Pursuits	65.4	34.6
Involving children	50.2	49.8
Personal acquaintance	76.1	23.9
Shots fired	70.7	29.3
Officer shot	83.9	16.1
Structure fire	46.8	53.2
Robbery	71.7	28.3
standoff	80	20
Mass casualty	84.4	15.6
First party caller	45.4	54.6
Calming uncooperative caller	51.2	48.8
First party caller death	80	20
Drowning	84.4	15.6
Lightning strike	84.9	15.1
Electric shock	85.4	14.6
Full arrest	63.4	36.6
Providing CPR	57.6	42.4
Choking	75.6	24.4
First party mentally ill caller	67.3	32.7

Table 7. Entire Sample-Stressful Event Rate

Stressful Event	Not Impaired (%)	Impaired (%)
Shooting Victim	73.2	26.8
Traffic accident	29.3	70.7
Childbirth complications	83.9	16.1
Person trapped	83.4	16.6
Childbirth	73.7	26.3
Line of Duty Death	82.9	17.1
Death of infant	73.7	26.3
Natural disaster	81.5	18.5
Suicide	49.8	50.2
First responder injured	74.1	25.9
Murder	77.6	22.4
Pursuits	67.3	32.7
Involving children	54.1	45.9
Personal acquaintance	79.0	21
Shots fired	72.7	27.3
Officer shot	85.9	14.1
Structure fire	51.2	48.8
Robbery	73.2	26.8
Standoff	81	19
Mass casualty	85.9	14.1
First party caller	48.3	51.7
Calming uncooperative caller	56.6	43.4
First party caller death	82	18
Drowning	85.4	14.6
Lightning strike	86.3	13.7
Electric shock	86.8	13.2
Full arrest	64.9	35.1
Providing CPR	61	39
Choking	78	22
First party mentally ill caller	69.8	30.2

Table 8. Entire Sample- Rate of Impaired Functioning by Stressful Event

als with thirteen or more years of service and who therefore may be more resilient to ASD symptoms, but experience higher levels of burnout. However, given our large sample size, these organizational contributors to stress likely reflect a potential source of dispatcher stress and may serve as ideal candidates for potential interventions.

In order to gain further insight into the sources of stress for emergency dispatchers, initial inquiries were also made regarding specific call and workplace characteristics that may be associated with dispatcher stress and impairment. Approximately half the dispatchers surveyed endorsed workload, inadequate communication between coworkers, and a general lack of appreciation as significant sources of stress. Discrepant with the first responder and existing dispatcher literature, the type of victim on the call (e.g., child, adult, first responder) was not associated with ratings of stress, impairment or symptoms of ASD; however, the relationships between ASD symptoms and calls received from a first party callers did approach statistical significance. Although this finding must be interpreted cautiously, calls from first party callers may be a significant source of stress for emergency dispatchers. It is logical to assume that first party callers convey more distress and may be less likely to cooperate with dispatcher instructions due to injury or panic. Adding some credence to this interpretation, calming an uncooperative caller was rated among the most stressful and impairing types of calls to receive by our sample. This type of call may be particularly difficult for emergency dispatchers due to the hindrance of established protocols with the goal of assisting the caller. In line with this hypothesis variables such as perceived control have been shown to mediate the relationship between a traumatic event exposure and symptoms of trauma-based psychopathology in first responders[32]. Future research should explore this relationship further and seek to identify dispatcher and caller based characteristics associated with increased stress and functional impairment.

Specific types of calls were identified by our sample as particularly stressful to handle and impairing to social and occupational functioning. Of these calls, Traffic accidents were identified by the majority of the sample (>70%) to be both stressful to handle and impairing to functioning relative to other types of calls. Additionally, individuals meeting criteria for ASD rated calls involving children as significantly more stressful and impairing than their counterparts not meeting criteria for this disorder. Future research should examine the risk and resilience factors that may moderate the relationship between call characteristics and subjective experiences of distress and impairment as individual dispatcher characteristics likely contribute to the development of ASD.

LIMITATIONS

Despite the importance of these findings several limitations should be considered when interpreting the results of this study. One potential limitation of our study is that given the data collection method, it is possible that our sample included more experienced dispatchers that may be more resilient to stress, STS, and burnout as well as represent a better functioning sample. Equally possible is that the largest percentage of our sample being employed 13-19 years as a dispatcher biased our results and underestimated rates in of ASD, STS, and burnout. Even though number of years employed as a dispatcher was not associated with any of these maladaptive outcomes, this finding could result from a more resilient sample. An additional limitation to our study is the retrospective nature of our survey. Although dispatchers were only asked about the stress related to calls in the past 30 days, rating momentary stress and associated impairment for individual calls may have presented a challenge for some dispatchers. Future research should take this limitation under consideration and also inquire about the length of subsequent impairment. Perhaps our largest limitation is the failure to include the full version of the SASRQ. The lack of the full measure may have resulted in an underestimation of the rate of ASD in this population as well as limited interpretation regarding overall symptom occurrence and associated impairment.

CONCLUSION

Overall, our findings identify emergency dispatchers as an at-risk population for stress induced psychopathology that includes ASD as well as the occupational impairment variables of STS and burnout. The dispatcher population may represent an at-risk population for subclinical levels of mental health symptoms that contribute to interpersonal, occupational, and social difficulties. Given the subclinical level of these symptoms, preventative and therapeutic interventions may be particularly helpful for this population.

Future research should continue to assess this population and examine the duration of functional impact and well-being of emergency dispatchers. In future studies, our research team will attempt to identify contributing factors to stressful reactions, examine motivation for high occupational turn-over rates, as well as examine moderators and mediators that may unveil protective factors. Future research should also better differentiate between symptoms of ASD and STS as well as examine the factor structure of the PRO-QOL. Although this measure is frequently used, continued validation is necessary especially in highly trauma-exposed populations.

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