BSc in Psychology

Prevalence of Post-Traumatic Stress Disorder (PTSD) and Burnout symptoms among Icelandic First Responders

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Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in style of an article for submission to a peer-review journal.

Abstract

First responders are defined by their role in early response to critical incidents, which are traumatic stressors that can be both physical and psychological. The aims of the current study were to examine prevalence of PTSD and burnout amongst Icelandic first responders, evaluate if these symptoms differed between first responders when compared by occupation and determine if there is a relationship between work-related traumatic events, PTSD and burnout symptoms. The sample consisted of 231 police officers, 88 ambulance personnel, 75 fire fighters and 106 volunteers. The findings indicated that 12.5% of first responders met the clinical cut-off criteria for probable PTSD, 13.2% met the clinical cut-off criteria for emotional exhaustion and 16.4% for depersonalization. Police officers had the highest prevalence and severity of PTSD and burnout symptoms compared to other first responder group. Work-related traumatic events were associated with higher levels of PTSD and burnout symptoms. These results demonstrate the need for both interventions that provides first responders with skills to cope with CI as that may prevent PTSD and burnout from developing, as well as an intervention that assist those that have developed PTSD and/or burnout to recover.

Keywords: Critical incidents, first responders, PTSD, post-traumatic stress disorder, burnout

Útdráttur

Fyrstu viðbragðsaðilar er sú starfsstétt sem bregst við alvarlegum atburðum. Því verður starfsstéttin oft fyrir alvarlegum atburðum sem eru streituvaldandi á borð við umferðarslys og ofbeldi. Þá geta fyrstu viðbragðsaðilar orðið fyrir því að starfa í lífshættulegum aðstæðum eða orðið vitni að slíkum aðstæðum. Markmið þessarar rannsóknar var þríþætt. Í fyrsta lagi að kanna algengi áfallastreituröskunar og kulnunar á meðal fyrstu viðbragðsaðila. Í öðru lagi að skoða hvort einkenni áfallastreituröskunar og kulnunar væru breytileg eftir viðbragðsaðilum. Í þriðja lagi, að rannsaka sambandið á milli tíðni aðkomu að streituvaldandi atburðum í starfi, áfallastreituröskunar og kulnunar. Gögnum var aflað með því að senda út spurninglista til fyrstu viðbragðsaðila hér landi í gegnum tölvupóst. Úrtak rannsóknarinnar samanstóð af 231 lögreglumanni, 85 sjúkraflutningsmönnum, 75 slökkviliðsmönnum og 106 sjálfboðaliðum. Niðurstöður rannsóknarinnar leiddu í ljós að lögreglumenn voru líklegri til þess að bera með sér alvarlegri áfallastreitu- og kulnunareinkenni samanborið við aðra viðbragðsaðila. Þá fannst jákvætt samband á milli tíðni aðkomu fyrstu viðbragðsaðila að streituvaldandi atburðum í starfi, áfallastreituröskunar og kulnunar. Niðurstöðurnar undirstrika að þörf sé á að veita fyrstu viðbragðsaðilum viðeigandi inngrip til þess að koma í veg fyrir að þeir þrói með sér einkenni áfallastreituröskunar og kulnunar í starfi, ásamt því að aðstoða þá sem þjást af áfallastreituröskun og kulnun.

Efnisorð: Streituvaldandi atburðir, fyrstu viðbragðsaðilar, áfallasreituröskun, kulnun

Prevalence of PTSD and Burnout symptoms among Icelandic First Responders

First responders are defined by their role in early response to critical incidents (CI). This group has high exposure to critical incidents (Marmar et al., 2006). CI's are traumatic stressors, both physical and psychological such as motor vehicle crashes, violence, exposure to life threat, either directly or as a witness as well as exposure to bodily remains (Haugen, Evces, & Weiss, 2012; McCaslin et al., 2006; Thormar, 2010). CI's have been defined as incidents that are sufficiently disturbing to overwhelm or threaten the individual's usual coping method (Alexander & Klein, 2001). First responder occupations have throughout history included police officers, firefighters and ambulance workers as well as search and rescue personnel (Haugen et al., 2012). First responders are both paid professionals and volunteers who take action to safeguard the health and safety of those victimized (Haugen et al., 2012). Volunteers can be either core volunteers or non-core volunteers. Core volunteers belong on a daily basis to a volunteer organization and respond regularly to critical incidents, are often highly trained whereas non-core volunteers often respond to single events because of their civil duty and can lack training and preparation (Thormar, 2015).

Research has shown that consistent exposure to traumatic stressors increases the likelihood of post-traumatic stress disorder (Haugen et al., 2012; Skogstad, Fjetland, & Ekeberg, 2015; Skogstad et al., 2013). Post-traumatic stress disorder, or PTSD, is a trauma and stressor related disorder according to DSM-5 diagnostic features (Pai, Suris, & North, 2017). According to DSM-5, PTSD requires an exposure to a CI such as threatened death, serious injury or sexual violence (American Psychological Association, 2013). In the general population it is estimated that 51% of women and 61% of men are exposed to a CI over the course of their life (Kessler et al., 1999) whereas 84% of first responders are exposed to CI in their lifetime (Kilpatrick et al., 2013).

Studies have shown that life-time prevalence of PTSD in the general population varies from 2-9 % and is higher among women and younger persons (Davidson, Tharwani, &

Connor, 2002; de Vries & Olff, 2009; Skogstad et al., 2013). Studies on prevalence of PTSD among first responders varies from 5-40 % (Berger et al., 2012; Carlier, Lamberts, & Gersons, 1997; Perrin et al., 2007; Psarros et al., 2018; Skogstad et al., 2013; Skogstad et al., 2015; Thormar et al., 2010). Prevalence of PTSD among ambulance personnel, fire fighters and core and non-core volunteers is estimated to be around 14-28 % (Berger et al., 2012; Carlier, Lamberts, & Gersons, 1997; Perrin et al., 2007; Psarros et al., 2018; Skogstad et al., 2013; Skogstad et al., 2015; Thormar, 2015) which is higher than it is among police officers where it is estimated to be 6-19 % (Carlier et al., 1997; Haugen et al., 2012; Perrin et al., 2007; Robinson, Sigman, & Wilson, 1997; Skogstad et al., 2013).

It has been hypothesized that the reason for higher prevalence of PTSD among ambulance personnel compared to police officers is that they have closer contact with victims, increased guilt towards victims when attempts to help fail, greater pressure and stress in everyday work settings (Berger et al., 2012; Jonsson & Segesten, 2004). It has also been speculated that these differences may be due to different roles on the scene (Thormar et al., 2010). For example, fire fighters enter unsafe scenes, ambulance personnel provide first aid and police officers secure the scene. Police officers are also constantly on watch for danger during their duty hours which can lead to more psychologically resilient workforce (Berger et al., 2012).

One of the limitation with previous studies is that different investigators used different measures to assess prevelance and severity of PTSD. This may explain the wide range in prevelance of PTSD reported among first responders. For example Bennett et al (2005) used Post-traumatic Diagnostic Scale to assess PTSD prevalence while Perrin et al (2007) used PTSD Checklist – Civilian Version to assess prevalence. Another limitation is that previous studies focused on PTSD after major disasters (Hagh-Shenas, Goodarzi, Dehbozorgi, & Farashbandi, 2005; Perrin et al., 2007). Consequently, little is known about

the impact of CI´s that first responders encounter routinely during their regular work on PTSD prevalence and severity. Lastly, it is unclear if PTSD differs between first responders when compared to occupations, with rare exception, most studies focused on specific group of first responders, mostly police officers.

Burnout

Burnout is a psychological syndrome that involves prolonged response to stressors in the workplace (Maslach, 2003). Those prolonged stressors involve chronic strain that results from incongruence or misfit between the worker and the job (Maslach, 2003). Individuals crisis relationship might vary from engagement to burnout, where engagement is an energetic state and burnout is the state of exhaustion, where the individual is skeptical about the value of work and ability to cope (Maslach, Jackson, & Leiter, 1997).

Burnout is an well-known problem in western countries among working populations (Ogungbamila & Fajemirokun, 2016; Taris, Stoffelsen, Bakker, Schaufeli, & van Dierendonck, 2005). Burnout is more common in occupations that requires work in close relations with others (Alexander & Klein, 2001; Maslach, 2003). Studies on burnout in the working population show that prevalence of burnout varies from 7-28 % (Ahola et al., 2005; Lindblom, Linton, Fedeli, & Bryngelsson, 2006; Schaufeli, 1998). Furthermore, studies show that prevalence of burnout varies from 17-23 % for women and from 5-12 % for men (Lindert, Müller-Nordhorn, & Soares, 2009). Moreover, burnout has also shown to be higher in younger groups than in older (Lindblom et al., 2006; Ogungbamila & Fajemirokun, 2016).

Research on prevalence of burnout in first responder occupations are lacking, therefore, it is hard to evaluate prevalence of burnout among first responders. Studies that have been conducted have mostly been on police officers (Bano & Talib, 2017; Basinska & Wiciak, 2012; Donald et al., 2005; McCarty & Skogan, 2013; Ogungbamila & Fajemirokun, 2016). Studies have shown that police officers tend to have high scores on emotional

exhaustion and depersonalization (Backteman-Erlanson, Padyab, & Brulin, 2013; Hawkins, 2001; Schabracq, Winnubst, & Cooper, 2003). Research has also shown that police officers are more fatigued with work, more disengaged, more exhausted, show more stress and less job satisfaction compared to other first responders (Basinska & Wiciak, 2012; Donald et al., 2005). Furthermore, police officers have high prevalence of stress (8-48 %) which has shown to stimulate burnout (Bano & Talib, 2017; Collins & Gibbs, 2003; Walvekar, Ambekar, & Devaranavadagi, 2015).

Burnout can have serious consequences for police officers and there is evidence that burnout influences interaction with the public and the attitude of police officers with regards to use of violence (Kop, Euwema, & Schaufeli, 1999), quality of service (Hawkins, 2001), actual behavior in conflict situations (Kop, & Bakker, 2004), family conflict (Mikkelsen & Burke, 2004) and spouse violence (Johnson, Todd, & Subramanian, 2005). Burnout has also been linked to job performance, motivation, staff turnover and health (McCarty & Skogan, 2013) as well as medication use and thoughts of suicide (Mikkelsen & Burke, 2004).

The present study

The literature on PTSD has mainly focused on PTSD in response to major disasters and have scales, such as the Impact of Events Scale, which were not developed to assess PTSD. In addition, it is difficult to evaluate if the prevalence in PTSD symptoms, PTSD severity and burnout differs between first responders when compared by occupation as majority of the studies included only police officers.

To address these limitations, the present study, included different groups of first responders or police officers, ambulance personnel, fire fighters and volunteers. PTSD symptomatology was assessed with PCL-5. The PCL-5, is a self-report measurement for PTSD which is an effective tool to identify PTSD diagnostic status (Armour et al., 2015; Keane et al., 2014; Sveen, Bondjers, & Willebrand, 2016; Wortmann et al., 2016).

The aims of the current study were threefold. First, to examine prevalence of PTSD and burnout among first responders. Second, to evaluate if prevalence and symptom severity of PTSD and burnout differ between first responders when compared by occupation. Based on the scarce literature we hypothesize that PTSD would be highest among ambulance personnel and burnout highest among police officers. Third, to evaluate the relationship between work related traumatic events, PTSD and burnout symptoms. It was hypothesized that those with higher levels of PTSD would also report higher levels of burnout and that those with higher levels of work-related traumatic events would report higher levels of PTSD symptoms and burnout.

Method

Participants

Participants were first responders in emergency services in Iceland. In February, all first responders in Iceland were invited to participate in the study, 620 police officers, 823 fire and rescue officers and 2500 volunteers from rescue units. Total of 3.943 emergency responders. Participants had to be 18 years or older and fluent in Icelandic. Participation was voluntary and participants did not get any compensation. This study is a cooperation between senior leadership of National Police Commissioner in Iceland, Federation of Fire Fighters and Ambulance personnel in Iceland and Icelandic Association for Search and Rescue.

A total of 505 first responders completed the questionnaire online, 409 men (81%) and 95 women (18,1 %) and one participant did not disclose his gender. Majority of the first responders were police officers, 231(45,7 %) followed by volunteers 106 (21%), ambulance personnel 88 (17,4%) and 75 fire fighters (14,9 %). Age was reported in 14 age bins, with the most common age category was 40-43 years (13,3%) and 44-47 years (13,3%). Majority of participants were stationed in the capital area of Iceland (38,4%) and the most common period of employment was 11-20 years (33,1%).

Measures

Demographic questionnaire was used to assess demographic characteristics, including questions about age, gender, marital status, education and period of employment.

Work-related traumatic events. The question "How often the past year have you experienced critical incident that has caused you dysphoria?" was used to access information about work-related traumatic events on the job. The answer possibilities were "1 time", "2-3 times", "4-5 times", "6-10 times" and "11 times or often".

P**ost-traumatic Stress Disorder Checklist 5 (PCL-5)** (Weathers et al., 2013) was used to measure severity of trauma symptoms. An Icelandic version, translated by Berglind Guðmundsdótir, Agnes B. Tryggvadóttir and Guðlaug Friðgeirsdóttir, was used in this study. PCL-5 is a 20 item self-report scale on a five-point Likert-scale, ranging from 0 ("not at all") to 4 ("extremely"). PCL-5 was constructed from the DSM-5 criteria for PTSD. Total score is ranging from 0 to 80, higher scores indicate more severe PTSD symptoms. The cut-off score is 33 points, which estimates diagnosis of PTSD. PCL-5 is a psychometrically sound instrument to assess trauma symptoms and has shown to have strong test-retest reliability, internal consistency, convergent and discriminant validity (Blevins, Weathers, Davis, Witte, & Domino, 2015; Ibrahim, Ertl, Catani, Ismail, & Neuner, 2018). In the present study, the scale had good reliability ($\alpha = .95$).

Maslach Burnout Inventory (MBI) (Maslach et al., 1997) was used to access burnout symptoms among participants. An Icelandic version, translated by Rúnar Helgi Andrasson and Sigurður Levy, was used in this study. MBI consists of 22 items on a seven-point Likert scale, ranging from 0 ("never) to six ("everyday). MBI has three subscales: emotional exhaustion (9 items), personal accomplishment (8 items) and depersonalization (5 items). Only the emotional exhaustion and depersonalization were used in this study. MBI is a psychometrically sound instrument with high reliability and validity (Maslach & Jackson,

1981; Pisanti, Lombardo, Lucidi, Violani, & Lazzari, 2013). In the present study, the subscales had good reliability: Emotional exhaustion (α = .89) and depersonalization (α = .81).

Procedure

Participants in this study were recruited through the senior leadership of National Police Commissioner in Iceland, Federation of Fire Fighters and Ambulance personnel in Iceland and Icelandic Association for Search and Rescue. Email addresses were obtained from contacts from each leadership. In February 2019, all first responders in Iceland were sent link to the questionnaire via e-mail. In the email, participants were provided with information about the purpose of the study, that their confidentiality was assured, and they could discontinue the survey at any time. In addition, participants were provided information about where they could seek professional help if they experienced any distress after answering the questioner and contact information if they had any questions about the study. Furthermore, participants were told that the average response time was 30-45 minutes and that answers could be saved and continued later. By clicking the link, individuals were consenting that they understood given information to participate in the study.

Data analysis

The computer program Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The online survey Question Pro was used to collect data from the online questioner. Data from Question Pro was transported into an SPSS dataset were the data was analyzed. Using the recommended cut-off score of 33 for the PCL-5 participants with the score of 33 or higher were classified as having probable PTSD and those with the score of 33 or lower were classified as not having probable PTSD. Using recommended cut-off scores for the burnout scale of emotional exhaustion participants with the score of 27 or greater were classified as being high on emotional exhaustion, those with scores between 17-27 were

classified has having moderate levels of exhaustion and those below 17 were classified as low on emotional exhaustion. Using recommended cut-off scores for the burnout scale of depersonalization participants with the score of 13 or greater were classified as being high on depersonalization, those with scores between 7-12 were classified has having moderate levels of depersonalization and those below 12 were classified as low on depersonalization. Chi-square test was used to examine if the participant scored below or above cut-off points on PTSD and the two burnout subscales. One-way analyses of variance (ANOVA) was used to examine if severity of PTSD, emotional exhaustion and depersonalization differed among the first responder groups. Lastly, Pearson correlation was used to examine the relationship between PTSD, emotional exhaustion, depersonalization and number of work-related traumatic events.

Results

Table 1 shows that women were more likely to be volunteers (31,1 %) and single (26,4 %). Ambulance personnel were more likely to be in a relationship (93,2 %), fire fighters were more likely to be older (65,3 %) while police officers had longer period of employment (17,3 %).

The results of the Chi-square test for first responders regardless of occupation showed that 12.4% of the first responders met the cut-off criteria for probable PTSD. For emotional exhaustion, 13.2% met the cut-off criteria for burnout and 15.2% met the cut-off criteria for moderate levels of burnout. For depersonalization, 16.4% met the cut-off criteria for burnout and 18.48 % met the cut-off criteria for moderate levels of burnout.

For probable diagnosis of PTSD diagnosis, the results of the Chi-square test for first responders according to occupation was marginally significant $\chi 2(3) = 6.70$; $p = .08$. Of the first responders, police officers had the highest percentage (16 %) of officers that were above

cut-off score while ambulance personnel had the lowest percentage (7,9 %) of all the first responders (see Table 2).

Table 1

Background characteristics for first responders

N= 500, n (%)	Police officers *n = 231*	Ambulance personnel *n = 88*	Firefighters *n = 75*	Volunteers *n = 106*	*p* value
Gender					.001
Male	182 (79,1)	78 (88,6)	74 (98,7)	73 (68,9)	
Female	48 (20,9)	10 (11,4)	1 (1,3)	33 (31,1)	
Age					.001
<43 years	124 (53,7)	56 (63,6)	26 (37,4)	63 (59,4)	
>43 years	107 (46,3)	32 (36,4)	49 (65,3)	43 (40,6)	
Marital status					.001
Single	25 (10,9)	6 (6,8)	7 (9,3)	28 (26,4)	
Relationship	206 (89,1)	82 (93,2)	68 (90,7)	78 (73,6)	
Period of employment					.006
0-10 years	69 (29,9)	42 (47,7)	20 (26,7)	44 (41,8)	
11-30 years	122 (52,8)	42 (47,7)	43 (57,3)	46 (43,8)	
>31 years	40 (17,3)	4 (4,5)	12 (16)	15 (14,3)	

The results for the one-way ANOVA revealed that there was a significant difference on severity of post-traumatic symptoms between different first responder groups F (1,475) = 3.47, p = 0.02. Follow up analyses showed that police officers reported higher levels of PTSD than all the other groups that did not differ from each other (see Table 2).

Table 2

Post-traumatic stress symptoms among first responders

Mean (SD) or %	Police officers *n = 231*	Ambulance personnel *n = 88*	Firefighters *n = 75*	Volunteers *n = 106*	*p* value
PCL-5 total score	16,5 (15,4)	12,1 (13,4)	11,4 (14,1)	13,4 (14,2)	.016*
PCL-5 cut-off score 33	16 %	7,9 %	8 %	9,4 %	.082

Note: PTSD Checklist (PCL-5), range = 0-80, cut-off 33.
* $p < .05$

To examine if the differences between the groups on demographic characteristics accounted for the above differences in PTSD symptoms between the first responder groups, general linear model (GLM) was used entering marital status, age and gender along with first responder groups into the analysis. The results revealed that the main effect for first responder groups was significant, F (4,472) = 4,34, p = .037, even after controlling for the covariates. The covariates or age (p = .22), gender (p = .78) and marital status (p = .26) were not significantly associated with PTSD symptoms.

For burnout Chi-square test for emotional exhaustion was significantly associated with first responder occupations, χ^2 (6, N = 404) = 21,88, $p < .001$, as was the Chi-square test for depersonalization χ^2 (6, N = 430) = 53,01, $p < .001$. As shown in Table 3, police officers were more likely to meet the cut off criteria for high levels of burnout on both emotional exhaustion and depersonalization than any other first responder group. In addition, they were more likely to meet the cut off criteria for moderate depersonalization than any other first responder group.

The results for the one-way ANOVA for severity of emotional exhaustion and depersonalization showed that the first responders groups differed of emotional exhaustion, F (1,426) = 12.04, p<.0001, and on depersonalization F (1,426) = 26.82, p<.0001. Follow up analyses showed that police officers reported significantly higher levels of emotional exhaustion and depersonalization than other first responder groups. Ambulance personnel,

fire fighters and volunteers did not differ on emotional exhaustion or depersonalization (see Table 3).

Table 3

Burnout symptoms among first responders

Mean (SD) or %	Police officers *n = 231*	Ambulance personnel *n = 88*	Firefighters *n = 75*	Volunteers *n = 106*
Emotional exhaustion total score	15,9 (11,5)	9,9 (8,6)	8,9 (8,1)	10,9 (9,2)
High score > 27	16,8 %	5,6 %	5,3 %	3,7 %
Moderate score 17-26	14,7 %	10,2 %	9,3 %	10,3 %
Low score 0-16	52,8 %	73,8 %	69,3 %	49 %
Depersonalization total score	8,2 (6,2)	4,5 (5,3)	4,2 (4,0)	2,9 (4,2)
High score > 13	23,3 %	10,2 %	4 %	3,7 %
Moderate score 7-12	24,2 %	10,2 %	12 %	5,6 %
Low score 0-6	45,4 %	71,5 %	68 %	57,5 %

Note: Maslach Burnout Inventory (MBI), two subscales: Emotional exhaustion and Depersonalization. Higher scores for Emotional exhaustion and Depersonalization indicate more burnout.

To examine if the differences between the groups on demographic characteristics accounted for the above differences in burnout between the first responder groups GLM was computed separately for emotional exhaustion and depersonalization entering marital status, age and gender along with first responder groups into the analyses.

For emotional exhaustion the results showed that the main effect for first responders groups was significant, F (4,399) = 20,24, p = .001, even after controlling for the covariates but the covariates or age (p =.98), gender (p =.26) and marital status (p =.98) were not significantly related to emotional exhaustion. Similarly, first responder groups were significantly associated with depersonalization, F (4,424) = 61.75, p = .001, even after controlling for the covariates. Age (p =.001) and gender (p =.049) were also significantly related to depersonalization with older men and women reporting higher levels of depersonalization.

Pearson correlation was computed to examine the relationship between emotional exhaustion, depersonalization, PTSD and number of work-related traumatic events. There was a positive correlation between PTSD and both the burnout subscales. Those high on PTSD reported higher levels of emotional exhaustion and depersonalization (see table 4). Also, there was a positive correlation between work-related traumatic events, PTSD, emotional exhaustion and depersonalization. Those who had experienced work-related traumatic events more often reported higher levels of PTSD, emotional exhaustion and depersonalization.

Table 4

Correlation for PTSD and burnout

	Emotional exhaustion	Depersonalization	PTSD	Work-related traumatic events
Emotional exhaustion	1	0.64**	0.64**	0.21**
Depersonalization		1	0.40**	0.21**
PTSD			1	0.33**
Work-related traumatic events				1

** $p < .001$.

Discussion

The present study examined prevalence and severity of PTSD and burnout symptoms among first responders during their routine work, determined if PTSD and burnout differed among first responder groups (i.e., police officers, ambulance personnel, fire fighters and volunteers) and examined if work-related traumatic events were related to PTSD and burnout symptoms. The main findings where that police officers had highest prevalence of PTSD and burnout. Furthermore, police officers reported more severe symptoms of PTSD and burnout than any other first responder group.

Prior studies have shown that prevalence of PTSD among ambulance personnel, fire fighters and core and non-core volunteers is estimated to be around 14-28 % (Berger et al.,

2012; Carlier, Lamberts, & Gersons, 1997; Perrin et al., 2007; Psarros et al., 2018; Skogstad et al., 2013; Skogstad et al., 2015; Thormar, 2015) which is higher than it is among police officers where it is estimated to be 6-19 % (Carlier et al., 1997; Haugen et al., 2012; Perrin et al., 2007; Robinson, Sigman, & Wilson, 1997; Skogstad et al., 2013). Research on burnout among first responders is lacking, therefore, it is hard to evaluate prevalence. Studies that have been conducted show that police officers have higher scores on emotional exhaustion and depersonalization compared to other first responders (Bano & Talib, 2017; Basinska & Wiciak, 2012; Donald et al., 2005; McCarty & Skogan, 2013; Ogungbamila & Fajemirokun, 2016).

The hypothesis that PTSD would be highest among ambulance personnel was not confirmed. The findings indicated that police officers had the highest levels of PTSD symptoms among first responders. These results are inconsistent with prior studies that indicated that PTSD was highest among ambulance personnel, fire fighters and volunteers (Berger et al., 2012; Carlier, Lamberts, & Gersons, 1997; Perrin et al., 2007; Psarros et al., 2018; Skogstad et al., 2013; Skogstad et al., 2015; Thormar, 2015). Researchers have hypothesized that the reason for higher levels of PTSD symptoms in ambulance personnel than in police officers may be related to closer contact to victims, increased guilt when their attempts to help fail (Berger et al., 2012; Jonsson & Segesten, 2004) and they have different roles on the scene (Thormar et al., 2010). For example, fire fighters enter unsafe scenes, ambulance personnel provide first aid and police officers secure the scene. Another possible reason for these discrepant findings could be that previous studies focused on PTSD following major disasters, but the present study focused on daily activities of first responders.

The hypothesis that burnout would be highest among police officers was confirmed. As far as we are aware this is the first study to compare burnout among first responders based on occupation. The results showed that both prevalence and severity of burnout or emotional

exhaustion and depersonalization was highest among police officers compared to other first responders that did not differ from each other. These results are consistent with prior studies that have shown that police officers tend to have high scores on emotional exhaustion and depersonalization (Backteman-Erlanson, Padyab, & Brulin, 2013; Hawkins, 2001; Schabracq, Winnubst, & Cooper, 2003). Possible explanations could be that police officers are constantly on watch for danger during work hours which can lead to more psychologically resilient work force (Berger et al., 2012). Another explanation, it is a known problem amongst police officers to underreport psychological problems or not report such problems at all (Perrin et al., 2007). This is also an known problem among other first responders (Alexander, 1993; Alexander & Klein, 2001; Marchand et al., 2015; Skogstad et al., 2013).

There is evidence that burnout influences quality of service (Hawkins, 2001), attitude and interaction with regards to use of violence (Kop, Euwema, & Schaufeli, 1999), family conflict (Mikkelsen & Burke, 2004) and spouse violence (Johnson, Todd, & Subramanian, 2005). Furthermore, research have also linked burnout to medication use and thoughts of suicide (Mikkelsen & Burke, 2004).

The hypothesis that higher levels of PTSD would be associated with higher levels of burnout was confirmed. It should be noted that because of the correlational nature of the study it is not clear what comes first.

The hypothesis that number of traumatic work-related events would be associated with higher levels of burnout and PTSD was confirmed. First responders are group that are highly affected by critical incidents. According to DSM-5, PTSD requires an exposure to a CI such as threatened death, serious injury or sexual violence (American Psychological Association, 2013). Research have shown that consistent exposure to critical incidents increases the likelihood of post-traumatic stress disorder, burnout and other psychiatric disorders (Haugen et al., 2012; Skogstad, Fjetland, & Ekeberg, 2015; Skogstad et al., 2013).

In summary, unlike previous studies that have mainly focused on PTSD and burnout after major catastrophic events the results of the present study show that PTSD and burnout is a serious problem for first responders during their routine activities, particularly, among police officers. Interventions are needed that assist first responders to cope with their work-related traumatic events in order to reduce the probability of PTSD and burnout.

There were a few limitations to the study. The response rate was only 12,8 %. Possible reason for this explanation is that the questioner was quite long and time-consuming. It might have been better to have higher response rate for generalizability of the results on first responders in Iceland. It is expected that more first responders will respond over time. Another limitation is that the study was conducted using self-reported scales since there is always a risk of self-report bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Skogstad et al., 2013).

Despite the limitations, this study has strengths. This study is the first of its kind in Iceland and one of the few that focuses on PTSD and burnout in routine settings among first responders. Demonstrating that PTSD and burnout are not only common after major disasters but also during day to day work activities. These results demonstrate the need to provide interventions that prevent PTSD and burnout from developing and to help those that develop PTSD and/or burnout to recover. Future studies should use longitudinal designs in order to increase our understanding of risk factors that cause PTSD and protective factors that prevent PTSD and burnout from developing.

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