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## Resilience and Trauma in the Southern Border Conflict Region of Saudi Arabia

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### Abstract

*Objective:* People living in and near war zones are relatively likely to experience trauma, with increased exposure to war being associated with increased risk for post-traumatic stress disorder (PTSD) as well as depression, anxiety disorders, and mood disorders. However, resilience has been found to be a protective factor against both trauma and depression. This study examined the prevalence of post-traumatic stress disorder diagnosis and symptoms, depression, anxiety and resilience in a sample of Saudi residents living at the southern border.

*Method:* A cross-sectional questionnaire survey was used to collect data online from 367 Saudis (92% male). The DSM-5 Post-traumatic Diagnostic Scale, Hospital Anxiety and Depression Scale and the 10-item Connor-Davidson Resilience Scale were used to measure the key psychological variables. The relationships among the psychological measures were examined using Pearson's correlation coefficients. To test group differences, Chi-square for contingency, independent samples *t*-tests and one-way analysis of variance were used (146 respondents with scores indicating post-traumatic stress disorder versus otherwise).

*Results:* The majority of respondents (72%) reported at least one traumatic event at some point in their lives. Almost 40% fully met the PTSD DSM-5 symptom criteria for PTSD diagnosis; 45% and 60% reported anxiety and depression respectively, and a significant correlation was found between post-traumatic stress disorder and anxiety ( $r = .52; p < 0.001$ ) and depression ( $r = .49; p < 0.001$ ) respectively. The mean resilience score was 19.84 (range: 0–40), and it was negatively associated with post-traumatic stress disorder, with educational attainment appearing to enhance resilience.

*Conclusion:* Future research using mixed methods should be conducted to find ways to protect Saudis in conflict regions from negative mental health outcomes, particularly post-traumatic stress disorder symptoms.

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PTSD; Post-traumatic stress disorder; Resilience; War zone; Saudi Arabia.

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## 1. Introduction

People who spend time in war zones often suffer adverse mental health consequences. They are relatively likely to experience traumatic events that might lead to the development of mental

health problems, such as post-traumatic stress disorder (PTSD), anxiety and depression (Murthy & Lakshminarayana, 2006).

The World Health Organization (WHO) reported that 10% of people internationally who experience traumatic events related to war and conflict have serious mental health problems (WHO, 2015). However, traumatic events are not limited to wars and conflicts; trauma can also occur from such factors as intimate partner violence, unexpected death of a loved one, life-threatening illness and pregnancy-related trauma. It is moreover possible to suffer from multiple traumas. Accordingly, the focus of this study is on trauma from any cause experienced by individuals living in a war zone.

Since the beginning of the 21<sup>st</sup> century, many Arab countries, such as Iraq, Syria and Yemen, have been engaged in wars and/or armed conflicts, and many of those people have experienced various symptoms of psychopathology (Al-Ghzawi et al., 2014). Conflict-related violence has been frequent and protracted in many of these areas, and high rates of psychological problems have been reported there (Al-Ghzawi et al., 2014). Al-Ghzawi et al. (2014) examined nine studies on the influences of war and/or conflict on mental health in several Arab countries and found that PTSD was one of the most common psychological outcomes among war-related trauma victims.

In particular, a study conducted by Ahmad et al. (2000) on 45 Iraqi families, randomly sampled from two war zones, found PTSD symptoms in 60% of the individuals. Another study in Iraq (Al-Hadethe et al., 2014) on 403 male and female secondary-school students had similar findings regarding adolescents, with 61% fully meeting the PTSD criteria (65% of the females and 58% of the males). Macksoud and Aber (1996) studied 224 Lebanese adults regarding the number and type of war-related traumas experienced during wartime, as well as the relationship between traumatic incidents and mental health problems. Their analysis revealed that the number of traumatic incidents was strongly related to PTSD symptoms and depression. About a decade later, the influences of war and traumatic events in Lebanon were studied in a random sample of 658 Lebanese (Karam et al., 2008). The results indicated that exposure to war and a previous history of major depression were the main predictors of current mental health problems, such as PTSD. This concludes a review of PTSD and its symptoms linked to conflict zones in two countries – Iraq and Lebanon – near Saudi Arabia.

In terms of the relationship between PTSD and depression and anxiety, Benjamin et al. (2009) argued that some 30% to 50% of people diagnosed with PTSD suffer from severe depression. Several other studies have found that PTSD symptoms were significantly associated with both depression and anxiety (Brady & Clary, 2003; Hashemian et al., 2006; Karakaya et al., 2004). The

evidence suggests that PTSD, whether predicted by exposure to war and armed conflict or other traumatic events, might be comorbid with depression and anxiety.

Resilience is an individual characteristic that can be defined as the ability to cope with and recover from trauma and stress (Sikorska, 2014; Siriwardhana & Stewart, 2013). Similarly, Martino et al. (2019) defines resilience as the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress. Noting that resilience is a behavior that results from a highly traumatic experience, Riccio et al. (2018, p. 1) argue that traumatic events of different natures can reveal to the person “subject skills” hitherto unknown to them. Resilience has been conceptualised as personal strength, flexibility, a capacity for mastery, and the ability to resume usual functioning after experiencing a major stressor that challenged the person’s coping skills (Richardson, 2002). Apart from referring to the ability to overcome trauma, such as that resulting from war-related deaths, natural disasters and cultural upheaval, resilience functions as a defence against mental health problems (Bonnano, 2004). Furthermore, individuals with a secure attachment style tend to show high levels of resilience and lower levels of negative emotions (Craparo et al., 2018). In addition, the affective context, family and cultural, which influences interpretation of events, can also predict the outcome of an experience (Di Giuseppe et al., 2020; Martino et al., 2019). Cultural factors might influence the extent of resilience, and Fernando (2012) found ethnic differences in resilience among populations in war zone experiencing trauma. However, a study of 75 Iraqis and a control group of 35 non-Iraqi Arabs recruited from Iraqi and Arab communities found no group differences in resilience (Martin & Yankay, 2014). In sum, a lack of resilience is a significant predictor of mental health problems, such as PTSD or depression (Lazarus & Folkman, 1984), and its influence might vary by ethno-cultural characteristics. In addition, gender differences in resilience have been found in that women tend to score higher on psychological distress and on emotion-focused coping styles than do men (Boardman et al., 2008; Leadbeater et al., 1999; Matud, 2004). Boardman et al. (2008) also found that the heritability of resilience in men is higher than that in women. The authors speculate that men have greater opportunity to express resilience and are more likely to be rewarded for exhibiting traditional signs of resilience, implying that gender socialisation interacts with genetic factors to either diminish resilience for women, or help men to actualise some genetic potential that confers resilience. Another study showed statistically significant interactions with males but not females (Stratta, et al., 2013), while no difference was reported in resilience between men and women by Averill et al. (2018). In sum, it is unclear whether males or females have higher levels of resilience.

To assess the relationship between resilience and mental health, most studies do not measure resilience directly. Instead, they use scales and constructs that might indicate the presence of resilience, such as: a sense of coherence (Ghazinour, 2003); social support (Hooberman et al.,

2010); lack of mental health problems (Turner et al., 2003); and a sense of control over one's life (Sundquist et al., 2000). Siriwardhana et al. (2014) conducted a systematic review of 23 quantitative and qualitative studies on resilience and mental health outcomes among traumatised people. Just two of the qualitative studies attempted to associate resilience with mental health problems, and three of them used a measure of resilience.

Generally, resilience is positively related to mental health. For example, Araya et al. (2011) found that, in a sample of 859 Ethiopian women, resilience was positively related to social support, task-oriented coping and quality of life. Further, Almedom et al. (2007) found that, among 265 Eritreans, urban and rural individuals in noncombat areas were more resilient than those living in a war zone.

Several studies have investigated group differences in the association between resilience and PTSD symptoms. Arnetz et al. (2013) compared the relationship between resilience and PTSD symptoms in 75 Iraqi refugees and 53 non-Iraqi immigrants. They found no difference in the influence of resilience on PTSD symptoms. Beiser and Adebajo (2010) compared 45 adults in a war-affected village and 55 adults in a non-affected village in Nigeria. They found that three factors – stress, not feeling safe, and perceived lack of social support – predicted mental health problems. This highlights the need for epidemiological and qualitative research on resilience against stress, fear, and social isolation, specifically in developing countries and in resource-poor settings. Apart from cultural and socio-economic status, another group difference is gender. Some studies found that females had a greater likelihood than did males of suffering from PTSD caused by trauma (Brewin et al., 2000; Nemeroff et al., 2006) and that the rate of PTSD was higher in females than in males. Even when females and males were exposed to the same type of traumatic event, females were found to have about twice the risk that males had of developing PTSD (Green & Kimerling, 2004; Kessler, 2000).

Education might be important to resilience, in terms of coping skills, and level of insight and self-esteem. Therefore, through its influence on resilience, education might be indirectly linked to reducing trauma. Highlighting the risk factors of trauma-related PTSD, Brewin et al.'s (2000) meta-analysis found that educational attainment was negatively related to PTSD symptoms. Similarly, Zang and Hunt (2013) found that traumatised individuals with low educational attainment had a higher risk of experiencing PTSD symptoms than did their more educated counterparts. It can be concluded that gender and education are important moderators in the relationship between resilience and trauma-related outcomes such as PTSD.

## 1.2 Objectives

Despite the large body of literature on resilience, PTSD and war-related trauma, we know of no studies that investigated these relationships in the Saudi context. Because this topic is important

to our understanding of resilience among Saudis, and Saudis are vulnerable to experiencing armed conflicts, this study's objective was to investigate PTSD and its relationship to resilience in Saudi Arabia. Traumatic events are prevalent in this region and should be investigated with respect to resilience, PTSD symptoms, anxiety and depression. Further, based on the results of previous research, we explored differences in resilience and its influence on psychological outcomes by gender, marital status and educational attainment. The study was conducted in the Jizan region of the southern border of the Kingdom. This area was chosen because it is the region of Saudi Arabia that is nearest the Yemen border where there has been an ongoing conflict, since 2015, between two factions. The Jizan region also has a large population, with almost 1.5 million in Jizan City.

## 2. Methods

### 2.1 Participants

This study's participants were 367 Saudis living in the Jizan region (state) at the Kingdom's southern border. The DSM-5's Criterion A was used to determine whether a potential participant had experienced a traumatic event at some point in their lives. This criterion consists of four different forms of exposure: directly experiencing, witnessing, hearing about, and repeated or work-related exposure to, a trauma. Of the 389 Saudis living in Jizan who participated in the online questionnaire, 367 individuals met the criteria for inclusion. Ages ranged from 18 to 60 years ( $M_{age} = 36.58$ ,  $SD_{age} = 9.89$ ) and the sample was overwhelmingly male (92%,  $n = 338$ ; female: 8%,  $n = 29$ ). Local research assistants in Jizan recruited the participants using a random sampling technique. The study was approved by the Research Ethics Committee at Taif University in Saudi Arabia. Table 1 shows the demographic variables.

**Table 1.** Descriptive statistics of the sample ( $n = 367$ ).

Variable	n (%)	Mean ( <i>SD</i> )
Age (in years)		36.58 (9.89)
Gender		
<b>Male</b>	<b>338 (92.1)</b>	
Females	29 (7.9)	
Marital status		
Unmarried	<b>89 (24.3)</b>	
Married	278 (75.7)	
Educational attainment		
<b>High school</b>	<b>136 (37.0)</b>	
Undergraduate	<b>205 (55.9)</b>	
Postgraduate	26 (7.1)	

## 2.2 Measures

### 2.2.1 DSM-5 Post-traumatic Diagnostic Scale (A-PDS-5)

Post-traumatic stress symptoms were measured using the Arabic version of the DSM-5 version of the Posttraumatic Diagnostic Scale, PDS-5, a 24-item self-report index based on the DSM-5 to assess the severity of PTSD symptoms during the past month (Foa et al., 2016). Four PDS-5 questions in turn screen for PTSD, address distress and problems caused by PTSD symptoms, and determine the onset and duration of symptoms.

The remaining 20 questions are based on the DSM-5's symptom clusters, as reported in Table 2 below (Appendix A): (1) Intrusion (items 1–5), (2) Avoidance (items 6 and 7), (3) Changes in cognition and mood (items 8–14), and (4) Arousal/Reactivity (items 15–20). The response options are on a five-point scale of severity based on frequency, where zero = *not at all* and 4 = *six or more times per week*.

For this study, PTSD severity was measured by summing the responses to the 20 PDS-5 symptom items (1–20) for a total score ranging from zero to 80. The clinical PTSD symptom severity cut-off scores were applied to create severity categories: 0–10 = *minimal*, 11–23 = *mild*, 24–42 = *moderate*, 43–59 = *severe* and 60–80 = *very severe*.

To be diagnosed with PTSD, an individual must present a minimum of one stressor (Criterion A: Overall), one Intrusion symptom (Criterion B), one Avoidance symptom (Criterion C), two symptoms of Changes in cognition and mood (Criterion D), and two Arousal/Reactivity symptoms (Criterion E).

A score of 28 was used as the cut-off score to indicate a diagnosis of possible PTSD, such that scores between zero and 27 indicated a diagnosis of no PTSD, and scores between 28 and 80 indicated a diagnosis of possible PTSD (Foa et al., 2016).

Alghamdi and Hunt (2020) assessed the reliability of the Arabic version of the PDS-5 and found Cronbach's reliability coefficients as follows: Intrusion: 0.85, Avoidance: 0.71, Changes in cognition and mood: 0.80, Arousal/Reactivity: 0.87 and Overall: 0.78. In the current study, the Cronbach's reliability coefficients met the criterion for acceptable reliability ( $> 0.60$ ) as follows: Intrusion: 0.85, Avoidance: 0.79, Changes in cognition and mood: 0.86, Arousal/Reactivity: 0.84, and Overall: 0.93.

### 2.2.2 Hospital Anxiety and Depression Scale (HADS)

Anxiety and depression were measured using the 14-item HADS (Zigmond & Snaith, 1983). Seven items measure anxiety symptoms and seven items measure depressive symptoms. Each item has a choice of four responses that are scored from 0 to 3.

The HADS has been widely used in population and patient studies (e.g., Caci et al., 2003; Costantini et al., 1999; Crawford et al., 2001) and translated into various languages for different populations (Caci et al., 2003; Crawford et al., 2001; El-Rufaie & Absood, 1995). The reliability of the Arabic version of the HADS was assessed by El-Rufaie and Absood (1995); Cronbach's alpha was 0.87 on the seven anxiety items and 0.78 on the seven depression items. In the current study, Cronbach's reliability coefficients were  $\alpha = 0.85$  and  $\alpha = 0.76$  on anxiety and depression respectively. Table 3 (Appendix A) presents the items.

### 2.2.3 Connor-Davidson Resilience Scale (CD-RISC)

Resilience was measured using the 10-item Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills & Stein, 2007). The 10-item CD-RISC is a shortened version of the 25-item CD-RISC that uses 10 items comprising one of its dimensions. It has been translated into various different languages (Campbell-Sills & Stein, 2007; Wang et al., 2010). This self-administered questionnaire has response options on a five-point scale, where 0 = *not true at all* and 4 = *true almost all the time*. For this study, the responses were summed for a total score ranging from zero to 40, with higher scores indicating more resilience. The Arabic version of the scale was obtained from the developers of the scale, Connor-Davidson. In the current study, Cronbach's reliability coefficient was 0.83. Table 4 (Appendix A) shows the 10-item CD-RISC.

## 2.3 Procedure

A native Arabic speaker, the researcher collected the data in Arabic through the internet by distributing online a link to the three scales: the Arabic Post-traumatic Diagnostic Scale (A-PDS-5) items; the Hospital Anxiety and Depression Scale (HADS) items; and the 10-item CD-RISC. To represent the Saudi population, participants were recruited using snowball sampling from the Jizan area. On the study's webpage, the purpose of the study was described to participants, and an explanation of the procedure for collecting data was provided. Participants indicated their consent to participate in the study by reading the information provided and clicking on the 'agreement' button, which enabled respondents to continue to the online survey. To ensure that the respondents had experienced a traumatic event at some point during their lives, they confirmed their trauma histories by completing screening items.

### 3. Results

#### 3.1 Statistical analysis

All of the analyses were performed using SPSS v22.0 software. The relationships among the PDS-5, HADS (anxiety), HADS (depression) and resilience were examined using Pearson's correlations. Significant differences between groups were detected using analysis of Chi-square for contingency, independent samples t-tests and one-way analysis of variance (ANOVA). In addition, Fisher's Least Significant Difference (LSD) post-hoc comparison of mean scores was used for detecting differences between groups.

#### 3.2 Traumatic events

Experiencing a traumatic event was assessed using the DSM-5's trauma history screening questions. The results are presented in Table 5 below. The respondents could report more than one type of traumatic experience. The most common type of trauma was seeing someone die suddenly or get badly hurt or killed, but transportation accidents, such as automobile accidents, were almost as frequent. Having a life-threatening illness was the least common type of experience, but almost 40% of the sample reported 'Seeing very violent events during my presence in the southern border area (e.g. military projectiles, rockets)'.

**Table 5.** Types of traumatic experiences ( $n = 367$ )<sup>a</sup>.

Type of traumatic experience	Number of cases	Percentage
1. Seeing someone die suddenly or get badly hurt or killed	267	72.8
2. Transportation accident	242	67.0
3. The sudden death of a close family member or a friend	162	44.1
4. Seeing very violent events during my presence in the southern border area (e.g. military projectiles, rockets)	142	38.7
5. Life-threatening illness	25	6.8

<sup>a</sup> Respondents could report more than one type.

#### 3.3 The prevalence of PTSD, anxiety and depression

Of the sample, 39.8% ( $n = 146$ ) fully met the diagnostic criteria of PTSD; 54% of respondents ( $n = 198$ ) reported minimal symptoms; 25.1% ( $n = 92$ ) reported mild symptoms, 15.5% ( $n = 57$ ) had moderate symptoms, 4.4% ( $n = 16$ ) had severe symptoms, and 1.1% respondents ( $n = 4$ ) reported very severe symptoms.

Table 6 shows that the proportion of males who fully met the diagnostic criteria of PTSD was significantly higher than that of the females ( $\chi^2 = 27.575, p < 0.001$ ). In terms of marital status, the proportion of married individuals who fully met the diagnostic criteria of PTSD was significantly higher than that of the unmarried ( $\chi^2 = 60.848, p < 0.001$ ).

Regarding the symptom clusters, 67% of the respondents reported Intrusion, 54% reported Avoidance, 56% reported Changes in cognition and mood, and 56% reported Arousal/Reactivity.

The prevalence of anxiety and depression in the sample was 45% and 59.9% respectively, using a cut-off score of eight to indicate the presence of anxiety and a cut-off score of six to indicate depression, as suggested by El-Rufaié and Absood (1995) regarding the Arabic version of the HADS.

**Table 6.** Prevalence of PTSD by gender and marital status ( $n = 367$ ).

Group	PTSD symptom severity					Total
	Minimal	Mild	Moderate	Severe	Very severe	
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Entire sample	198 (54)	92 (25.1)	57 (15.5)	16 (4.4)	4 (1.1)	367 (100)
<b>Gender</b>						
Male	83 (25)	34 (10)	67 (20)	24 (7)	130 (38)	338 (92)
Female	2 (7)	1 (3)	1 (3)	9 (31)	16 (56)	29 (8)
Total	85 (23)	35 (10)	68 (18)	33 (9)	146 (4)	367 (100)
<b>Marital status</b>						
Married	83 (30)	24 (9)	64 (23)	21 (8)	86 (31)	278 (76)
Unmarried	2 (2)	11 (12)	4 (5)	12 (13)	60 (67)	89 (24)
Total	85 (23)	35 (10)	68 (18)	33 (9)	146 (40)	367 (100)

### 3.4 Resilience

The mean score on the CD-RISC (range: 0–40) was 19.84 (SD = 6.44) among the 146 respondents (130 males and 16 females) who met the PTSD diagnostic Criteria A.

The results of the independent samples *t*-tests indicated no significant differences between females and males on all variables (all *p*-value were over .05), with the exception of resilience, where significant differences between genders were found ( $p = .03$ ) and presented in Table 4 below.

**Table 7.** Gender differences on the total PDS-5, the symptom clusters, HADS (anxiety), HADS (depression) and CD-RISC among the respondents who met the PTSD diagnostic criteria ( $n = 146$ ; males = 130, females = 16).

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b><i>t</i>-value</b>	<b><i>p</i>-value</b>
A-PDS-5 <sup>a</sup>				
Males	25.00	13.97	0.12	0.18
Females	26.43	10.49		
Intrusion				
Males	5.63	3.90	0.53	0.59
Females	6.18	4.21		
Avoidance				
Males	3.11	1.99	2.30	0.56
Females	2.93	2.20		
Changes in cognition and mood				
Males	9.24	5.57	0.29	0.87
Females	9.68	6.83		
Arousal/Reactivity				
Males	8.00	5.09	0.28	0.18
Females	7.62	4.24		
Anxiety				
Males	10.13	3.81	0.65	0.26
Females	10.18	4.50		
Depression				
Males	8.41	3.04	1.71	0.66
Females	7.00	3.28		
Resilience				
Males	19.70	6.19	0.88	0.03*
Females	21.18	8.28		

<sup>a</sup> = Arabic Post-traumatic Diagnostic Scale for DSM-5.

\* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

### 3.5 Bivariate correlations

The bivariate correlations between the overall PDS-5, the symptom clusters, anxiety, depression and resilience are shown in Table 8. Resilience was significantly negatively related to all the PDS-5 variables ( $p < .05$ ), while anxiety was significantly positively related, as was depression (all  $p$ -values were below .05). Anxiety and depression were significantly positively correlated ( $p < .001$ ).

**Table 8.** Bivariate (Pearson's) correlation coefficients between the key variables in the study ( $n = 367$ ).

Variable	Resilience	Depression	Anxiety
PDS-5 <sup>a</sup>	-.23*	.49**	.52**
Intrusion	-.26**	.48**	.59**
Avoidance	-.18**	.37**	.47**
Changes	-.36**	.52**	.63**
Arousal/Reactivity	-.29**	.55**	.67**
Resilience		.45**	-.43**
Depression			.74**

<sup>a</sup> Arabic Post-traumatic Diagnostic Scale for DSM-5.

\* =  $p < .05$ , \*\* =  $p < .001$ .

### 3.6 Differences in PTSD, anxiety, depression and resilience by marital status and educational attainment

Table 9 shows that the differences in marital status were not significant regarding all the variables tested (all  $p$ -values were over .05).

**Table 9.** Differences in the total PDS-5<sup>a</sup>, the symptom clusters, HADS (anxiety), HADS (depression), and CD-RISC by marital status ( $n = 146^b$ ; married = 86, unmarried = 60).

Variable	Mean	SD	t-value	p-value
PDS-5				
Married	26.63	14.36	0.63	0.71
Unmarried	25.18	12.51		
Intrusion				

Married	6.15	4.20	1.70	0.10
Unmarried	5.03	3.42		
Avoidance				
Married	3.34	2.15	1.83	0.06
Unmarried	2.73	1.74		
Changes in cognition and mood				
Married	9.01	5.38	0.71	0.68
Unmarried	9.70	6.14		
Arousal/Reactivity				
Married	8.12	5.14	0.48	0.35
Unmarried	7.71	4.80		
Anxiety				
Married	10.58	3.78	1.38	0.88
Unmarried	9.68	3.98		
Depression				
Married	9.32	2.73	0.54	0.54
Unmarried	6.73	2.93		
Resilience				
Married	19.36	5.90	1.09	0.15
Unmarried	20.55	7.13		

<sup>a</sup> Arabic Post-traumatic Diagnostic Scale for DSM-5.

<sup>b</sup> 146 respondents met the PTSD diagnostic criteria.

\* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Table 10 presents the ANOVA results of the relationship between educational attainment and the total PDS-5, the symptom clusters, HADS (anxiety), HADS (depression), and CD-RISC. There were significant education differences regarding the overall PDS-5, Intrusion, Change in cognition and mood, and Anxiety, with higher levels of education being associated with lower levels of PTSD on these measures (all  $p$ -value were below .05). However, there were no significant differences in Arousal/Reactivity, depression and resilience by educational attainment (all  $p$ -value were over .05).

**Table 10.** The relationship of education attainment to the total PDS-5<sup>a</sup>, the symptom clusters, HADS (anxiety), HADS (depression) and CD-RISC (n = 146<sup>b</sup>; high school = 66, undergraduate = 74, and postgraduate = 6).

Variable	Mean	SD	F-value	p-value	Group differences
PDS-5					
High School	27.78	14.35	2.97	0.05	1>3*
Undergraduate	25.44	13.02			
Postgraduate	14.16	2.04			
Intrusion					
High School	6.37	4.59	3.02	0.05	1>3*
Undergraduate	5.31	3.25			
Postgraduate	2.83	0.98			
Avoidance					
High School	2.86	1.85	2.16	0.11	
Undergraduate	3.39	2.17			
Postgraduate	2.00	0.00			
Changes in cognition and mood					
High School	10.06	6.68	3.20	0.04	1>3*
Undergraduate	9.02	4.66			
Postgraduate	4.16	1.83			
Arousal/Reactivity					
High School	8.48	4.31	1.39	0.25	
Undergraduate	7.71	5.64			
Postgraduate	5.16	1.83			
Anxiety					
High School	10.72	3.69	5.67	0.004	1>2* and 1>3*
Undergraduate	10.14	3.87			
Postgraduate	5.33	2.94			
Depression					
High School	8.34	3.01	0.29	0.746	
Undergraduate	8.25	3.20			
Postgraduate	7.33	2.65			
Resilience					
High School	18.42	6.035	7.34	0.001	
Undergraduate	20.45	6.46			
Postgraduate	28.00	2.60			

<sup>a</sup> Arabic Post-traumatic Diagnostic Scale for DSM-5.

<sup>b</sup> 146 respondents met the PTSD diagnostic criteria.

\* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

#### 4. Discussion

The results of the current study showed that about 73% of the respondents reported at least one traumatic experience during the past month. Nearly 40% of the 367 respondents ( $n = 146$ ) met the DSM-5's Criterion A for PTSD, while 38.7% reported seeing very violent occurrences near their homes in the Kingdom's southern border area. This result confirms Srinivasa and Rashmi's (2006) finding that people in war zones are likely to be exposed to traumatic incidents. It also supports the findings of Al-Hadethe et al.'s (2014) study on traumatic events experienced by the residents of Baghdad city during the war time in Iraq. Further, this finding lends support to cross-cultural studies which reported that severely traumatic events lead to PTSD (Cloitre et al., 2018; Shevlin et al., 2018; Somma et al., 2019). In addition, this percentage might have increased since the data were collected because the respondents have remained in this war zone.

In terms of diagnosis, the current study results indicated that 39.8% fully met the diagnostic criteria of PTSD. The high rate of PTSD symptoms in the current study might be associated with the severity, type and/or persistence of the traumatic experiences of the respondents, since residents near war zones tend to have protracted exposure to traumatic events, which increases their likelihood of developing PTSD symptoms (Ahmad et al. 2000; Al-Ghzawi et al., 2014; Al-Hadethe et al., 2014; Benau, 2020). Relatedly, a 2015 WHO report found that 10% of the people who experience traumatic incidents associated to war and conflict show serious mental health problems (WHO, 2015). However, as noted above, traumatic experiences are not limited to wars and conflicts, but might occur due to a variety of factors, and it is possible for people to suffer from multiple traumas.

Regarding anxiety and depression, 45% of the respondents reported anxiety while 59.9% reported depression. Those who fully met the PTSD diagnostic criteria were likely to report experiencing both anxiety and depression. This finding supports previous studies, such as Brady and Clary (2003), Karakaya et al. (2004) and Hashemian et al. (2006), which found that depression and anxiety tend to correlate with PTSD. However, some studies have observed that comorbidity with PTSD was merely an artefact of symptom overlap (Brewin et al., 2009; Franklin & Zimmerman, 2001). Furthermore, the findings of the previous studies might be a result of their sample selection, sample size and/or study design elements or their PTSD, anxiety and depression measures. In addition, because the data are collected at one point in time in the current study, it is difficult to distinguish whether the participants developed PTSD symptoms first, followed by anxiety and depression, or whether their anxiety and depression led to PTSD symptoms. A longitudinal study would be required to evaluate which symptoms of PTSD,

depression, or anxiety appear first after a traumatic incident, or whether there is in fact a bidirectional relationship between the three variables.

This study's results found a correlation between resilience and PTSD that was significantly negative, which supports Connor et al. (2003). The results also revealed significant differences in resilience regarding gender, with women reporting higher levels of resilience than men. This result is supported by some previous studies (Boardman et al., 2008; Matud, 2004) which found that women tend to use emotion-focused coping styles to foster resilience. While a review of the literature revealed that extremely traumatic events led to resilience and that individuals with a secure attachment style tend to show high levels of resilience (Riccio et al., 2018), the findings of the current study might be a consequence of the less traumatic events experienced between men and women in the current study. Moreover, men continue to face ongoing traumatic events in the war zone to a greater extent than do women. In addition, cultural factors might affect the extent of resilience insofar as the citizens of this area may have fatalistic beliefs which influence their coping strategies, and this may be playing a significant role in mental health problems. Therefore, further research should take into consideration the culture and realign factors.

The results also revealed significant differences in resilience regarding educational attainment. In particular, those respondents with postgraduate education appeared less likely to be influenced by their exposure to traumatic events, and perhaps the events were less traumatic to them than to those respondents with less education. Thus, lower levels of education are related to lower resilience, as well as to a possible lack of coping skills, less insight and lower self-esteem, which impedes recovery from trauma. Resilience helps people to overcome stress, trauma and threats to safety and life, and it can help as a defence against mental health problems (Bonnano, 2004). Therefore, we suggest developing more ways to strengthen and support the mental health of people in war zones through healthcare interventions.

The results of this study also revealed that lower levels of education are associated with higher level of PTSD. Several previous studies have examined PTSD among individuals directly involved in or exposed to war (Neria et al., 2007, 2010). The higher proportion of PTSD symptoms among the respondents with high-school as compared to college-level education might reflect better coping skills among people with higher levels of education, as Dohrenwend (2000) reported. Brewin et al. (2000) reported that a lack of education was a risk factor for PTSD symptoms following trauma exposure. Therefore, lower levels of education might be correlated with lower resilience and poorer coping skills that make it difficult for people to recover from trauma. It follows that educational and mass media resources could be used to help people living in war zones or conflict areas. In addition, education might be important to a person's level of

insight, self-esteem and resilience as well. Therefore, trauma could be reduced indirectly through enhancing education and strengthening resilience.

#### **4.1 Limitations**

One limitation of this study was the difficulty of obtaining objective data, such as the clinical assessment data of the PTSD Symptom Scale Interview Version of the DSM-5 (PSS-I-5), and the lack of qualitative data. Future studies should take a mixed methods approach to enhance the quality of the results. The use of mixed methods research in psychological studies might play a significant role in the development of the PTSD field because results obtained from different methods have the potential to improve our understanding of traumatic experiences and related symptoms. Qualitative data from an interview study could, for example, provide more insight about the perceived nature of the trauma risks experienced, in terms of the number, severity, timing, chronicity and pervasiveness and interaction of the risks. This qualitative data can in turn be used to explore the more quantitative findings. This would require an explanatory sequential design involving two phases: (1) an initial quantitative survey instrument phase, followed by (2) a qualitative data collection phase, which builds directly on the results from the quantitative phase. In this way, the quantitative results are explained in more detail through the qualitative data (Wisdom & Creswell, 2013).

A second limitation was the small number and representation of the female respondents. Future studies should focus on finding ways to encourage female participation, perhaps by compensating women in some way, to improve our understanding of women's experiences and gender differences.

A third limitation was the lack of indication of trauma type and time-frame for the trauma to have occurred in, which made it impossible to determine whether the reported traumas (operationalised in the present study as 'any trauma experienced during the lifetime') were or were not war- or conflict-related. Considering trauma type and timing so as to focus on conflict and war would clarify the results in future studies.

#### **4.2 Conclusion**

This study found that experiencing traumatic events in the Jizan region of Saudi Arabia was commonplace, with more than one-third of those experiences considered by participants to be very violent events. It is therefore unsurprising that the prevalence of PTSD, depression and anxiety were relatively high. The resilience results indicated that the people of this region might be able to enhance their resilience and coping skills through education and mental health support, therefore research and support for vulnerable people are needed. Future research might

investigate resilience strategies using qualitative and quantitative methods to enhance clinical assessment and identify protective factors.

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