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The Immediate Mental Health Effects of the 2020 Artsakh War on Armenians: A Cross-Sectional Study

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ABSTRACT

Background: *While previous studies show the long-term and transgenerational effects of war on mental health, immediate effects on mental health are relatively understudied. The 44-day 2020 Artsakh War (September 27-November 10, 2020) resulted in an estimated 5,000 Armenian casualties, displacement of half the Artsakh population, and ongoing captivity of Armenian prisoners of war. This is the first study post-war to quantify depression, anxiety, and post-traumatic stress disorder (PTSD) levels among the Armenian population.*

Methods: *We conducted a cross-sectional study from February 3-May 31, 2021. Using Google Forms, we implemented a 75-item survey, including depression (PHQ-9), anxiety (GAD-7), and PTSD (PCL-5) questionnaires. We used six binary (yes/no) questions to define direct-exposure (DE) and no direct exposure (NDE) groups. We used independent samples t-tests to compare mean scores between groups.*

Results: *There were 825 participants from 32 countries, 48% from the United States and 33% from Armenia and Artsakh. All participants from Artsakh (100%), 89.2% from Armenia, and 46.6% from the United States were directly exposed to the war. The DE (n=529) group exhibited significantly higher PHQ-9 (p=0.0001), GAD-7 (p=<0.0001), and PCL-5 (p=0.0001) mean scores, than the NDE (n=296) group. Those who sustained a physical injury (n=20) had the highest average clinically relevant PTSD score (mean=39.5, SD=24).*

Conclusion: *Our results suggest an association between direct exposure to war in Artsakh and increased depression, anxiety, and PTSD severity, suggesting an immediate need for mental health resources. Those who lost a loved one, had a loved one get injured, and had a loved one participate in the 2020 Artsakh War had higher PHQ-9, GAD-7, and PCL-5 mean scores relative to those who did not. Implications of this study include the development of targeted evidence-based psychotherapeutic methods based on specific direct exposure factors.*

Keywords

War, Mental health, Depression, PTSD, Armenian.

Introduction

Artsakh, also called Nagorno-Karabagh, is an ethnically Armenian mountainous region in the highlands of northeastern Armenia [1]. Armenians have lived in Artsakh for over 2000 years and over

95% of the population is ethnically Armenian [2]. The remaining 5% of minorities include Assyrians, Kurds, and Greeks [3]. Among multiple annexations of enclaves following the collapse of the Soviet Union, Joseph Stalin annexed Nagorno-Karabagh to Azerbaijan in 1923, despite the region's overwhelming Armenian-majority population. Due to its fragile political status and Armenian-majority population, the Republic of Artsakh receives economic and military support from the Republic of Armenia [4]. Armenia is a land-locked country in the South Caucasus [5]. The spoken language is Armenian, and the country has an estimated 99.5% literacy rate [6]. With 98% of the population being Armenian, Armenia is one of the most monoethnic countries in the world with roots dating back to the Bronze Age [5,7]. The genetic continuity in the Armenian population is an ideal opportunity for genetic and epigenetic observations [7,8]. As of 2019, the estimated population of Armenia was 2.95 million [9]. Armenia declared independence in 1991 following the collapse of the Soviet Union [5]. Having faced the 1915 Armenian Genocide, the 1988 Spitak Earthquake, the Soviet Union collapse, and the 1988-1994 Artsakh War, the country struggled to establish economic and political stability [9]. Consequently, more than half a million people emigrated from Armenia between 1991 to 2019 [10]. Now, the estimated number of Armenians outside of Armenia is more than three times the population in Armenia [10]. Post-emigration, Armenians have established particularly large communities in the United States, France, and Russia [11].

In 1988, a majority vote declared Artsakh's independence from Azerbaijani rule, initiating a grueling war from 1988 to 1994 [12]. On December 10, 1991, Artsakh civilians voted to declare independence, and Artsakh has remained an independent, unrecognized republic since [13]. While international efforts towards rebuilding the Artsakh region post the 1994 ceasefire continued for more than 26 years, the region remained in an uncertain frozen conflict situation [1,12]. The failure of the international community to recognize Artsakh as an independent state prolonged its ambiguous political status for nearly three decades, creating barriers for the political and economic development [1,12,14]. The region was relatively peaceful until 2016, when a four-day war rekindled the tense situation [1,15]. Civilians living along the border reported sniper attacks and shelling of residences [16]. Residency in conflict zones is associated with increased anxiety, depression, and PTSD, exacerbated by indiscriminate conflict eruptions [15]. The Berd Women's Resource Center reported that more than 86% of women in Movses, a small village in the conflict zone, suffer from mental health disorders including depression and anxiety [16].

On March 23, 2020, the United Nations (UN) made an "Appeal for a Global Ceasefire following the Outbreak of Coronavirus" [13]. As of June 2020, 170 countries had signed an agreement to the ceasefire, including Armenia [17]. Despite this appeal, on September 27, 2020, Artsakh civilians were awakened to an offensive war with Azerbaijan [17]. This war was drastically different than the previous, as it was initiated during a pandemic, and weapons of warfare included missiles, internationally banned cluster bombs and white phosphorous, an incendiary weapon that causes severely painful burn injuries, damaging skin, muscles and organs [18-20]. Medical centers in Artsakh and Armenia shifted their focus from COVID-19 to treating war casualties, while population displacement exacerbated COVID-19 rates [21]. By October 8th, half of the Artsakh population had been displaced to Armenia, gathering in crowded bomb shelters, while those who remained hid in crowded basements [2,21]. Civilian settlements, medical centers (including a maternity hospital), 76 schools, 25 energy infrastructure equipment, historical artifacts, and churches, were destroyed [22]. Reports estimate between 4,000-5,000 Armenian casualties, with hundreds of soldiers missing or in captivity as prisoners of war (POWs) [22,23]. During war, videos of Armenian soldiers being tortured in captivity began circulating on social media [24]. The Human Rights Watch investigation of these videos cited evidence for physical abuse, humiliation, and international humanitarian law violations as defined by the Geneva Convention [24,25]. Three humanitarian ceasefires were violated until November 10th, with a ceasefire brokered by the Russian Federation under a controversial agreement, giving Azerbaijan control of seven Artsakh districts [26]. The 44-day war lasted until November 10, 2020.

It would be remiss to disregard the transgenerational mental health effects of the Armenian Genocide. Historians estimate that 1.5 million Armenians were killed by the Ottoman Empire. Rape, torture, and starvation are recorded in literature [27,28]. Studies suggest an inheritance of genocide-related depression and anxiety in descendants of Armenian genocide survivors, and feelings of anger and despair [8,29]. Approximately 90% of Armenians in the United States are offspring of Genocide survivors [30]. World Health Organization (WHO) studies found that the prevalence of psychological disorders in Armenia was higher than in Russia or Western Europe [31]. Of former Soviet Union territories, Armenia was ranked first for disability-adjusted years-of-life for neuropsychiatric disorders [36]. The psychological effects of war on mental health have been well established in literature [32,33]. Increasingly, modern warfare includes explosive injuries associated with traumatic brain injury (TBI), which is linked with a greater PTSD risk [35]. Despite the numerous traumatic events Armenians have survived, the effects of these events on mental health are understudied [27]. This is due in part to a lack of solidified governmental mental health or emergency preparedness programs in Armenia [6]. Another reason is the negative societal perceptions of mental health, only recently becoming a legitimate aspect of medical practice in Armenia [6]. Given the recency of the war, our study is the first to investigate the mental health effects of the 2020 Artsakh War.

Methods

Study design and participants

We followed a descriptive, cross-sectional study design with a convenience sampling method. We used a 75-item survey to collect participant demographics, including a 36-point mental health questionnaire with three standardized, validated mental-

health surveys; the 9-item Patient Health Questionnaire-9 (PHQ-9), the 7-item General Anxiety Disorder-7 item scale (GAD-7), and the 20-item Post-traumatic Stress Disorder Checklist of the most recent Diagnostic and Statistical Manual of Mental Disorders (PCL-5). Three members of our team translated English questionnaires into Eastern Armenian. Ten members of our team evaluated the feasibility of the questionnaires.

Measures

The PHQ-9 is a reliable and valid measure of depression severity, with scores of 5, 10, 15, and 20 representing lower-limits of mild, moderate, moderately severe, and severe depression, respectively [8,34]. The GAD-7 is a self-report questionnaire used to measure the severity of generalized anxiety disorders, with scores 5, 10, and 15 representing the lower cutoffs for mild, moderate, and severe anxiety, respectively [8]. The PCL-5 is a measure of self-reported symptoms of PTSD [35]. The 20-items in the PCL-5 are each scored from 0 to 4, with a total severity score range of 0-80 and a score of 31 or above typically considered clinically relevant [36].

Population Selection and Study Implementation

Ancestrally Armenian participants were recruited through social media outlets and word-of-mouth. Participants accessed the survey through an online platform, Google Forms, with translations available in both English and Eastern Armenian. Electronic flyers and survey links were posted on platforms such as Facebook and Instagram. The survey was accessible from February 3 – May 21, 2021, a study period of approximately four months.

Analyses

The direct exposure (DE) group was defined as having experienced at least one of the following related to the 2020 Artsakh War;

1) Injury of a loved one
2) Loss of finances
3) Loss of home
4) Loss of a loved one
5) Participation of loved one in 2020 war
6) Sustaining a war-related physical injury

Participants who did not experience any of the six exposures were the no direct exposure (NDE) group. Analyses for participant demographic characteristics were presented for total, DE, and NDE groups. Independent samples t-tests were conducted to compare PHQ-9, GAD-7, and PCL-5 mean scores between the overall DE and NDE groups, the female DE and NDE groups, and the male DE and NDE groups. We also compared the means of the 'Yes' and No' answer groups for each of the six questions used as an indicator of direct exposure to war. We used the Welch's test to compare the means of groups with unequal variance. We used the Mann-Whitney (Wilcoxon Rank-Sum) test to compare mean scores between groups if the sample size was less than 30. For all tests, we reported p-values at the 0.05 alpha level.

Results

There were 825 total participants, with the average age of 32.9 years (Table 1). 79.8% of participants were female and 20.2% male. During the 2020 Artsakh War, more than a third (33.3%) of participants were present in Armenia (19.2%) and Artsakh (14.1%), and almost half (48.5%) in the United States. A third of participants lost a loved one during the War, 11.3% reported losing their home, and 16.3% relocated. More than half of participants reported difficulty completing daily life tasks and/or engaging in social settings. The DE group scored higher on all three mental health surveys compared to the NDE group. The DE group's higher average score correlates to more severe cases of depression, anxiety, and PTSD (Table 1).

We found a statistically significant difference ($p<0.001$) in depression severity between the females DE and NDE groups, with PHQ-9 mean scores of 11.4 (SD=6.86) and 9.05 (SD=6.75), respectively. Similarly, we found a statistically significant difference ($p=0.0027$) in depression severity between the male DE and NDE groups, with PHQ-9 mean scores of 10.5 (SD=7.06) and 7.5 (SD=5.94), respectively (Table 2). For males and females combined, the total DE and NDE groups had moderate and mild depression severity levels, respectively (Tables 1 and 2). Both male and female DE groups had PHQ-9 mean scores within the moderate depression score range, whereas their respective NDE groups scored in the mild depression range (Table 2, Figure 2).

A similar pattern was found in our analyses of anxiety as measured by the GAD-7 mean scores. There was a statistically significant difference ($p=0.026$) in anxiety scores between the female DE and NDE groups, with GAD-7 mean scores of 9.7 (SD=5.76) and 8.6 (SD=6.34), respectively (Table 2). Female DE and NDE groups both scored within the mild anxiety disorder range (Table 2, Figure 2). Likewise, we observed a statistically significant difference ($p=0.035$) between male DE and NDE groups, with GAD-7 mean scores of 8.6 (SD=6.54) and 6.6 (SD=5.67), respectively (Table 2). Male DE and NDE groups both scored within the mild anxiety disorder range (Table 2, Figure 2). For males and females combined, the total DE GAD-7 score (mean=9.5, SD=5.90) was higher ($p=0.00080$) than the NDE (mean=8.1, SD=6.22) group. While there was a statistically significant difference between the groups, both the DE and NDE group had a mean score within the mild anxiety disorder range (Table 2).

Analyses of PTSD showed a statistically significant difference ($p=0.00070$) between the female DE and NDE groups, with mean PCL-5 scores of 28.4 (SD=23.18) and 22.8 (SD=20.74), respectively. We observed a statistically significant difference ($p<0.0001$) in PTSD severity between the male DE and NDE groups, with PCL-5 mean scores of 28.6 (SD=20.08) and 22.79 (SD=20.74), respectively (Table 2). Although there was a statistically significant difference ($p=0.0001$) between the total DE (mean=28.5, SD=20.60) and NDE (mean=20.8, SD=9.72) PCL-5 mean scores, neither group exhibited PCL-5 mean scores greater than the cutoff for clinically relevant PTSD (Table 2). Overall, our results showed that the DE groups exhibit significantly higher levels of depression, anxiety, and PTSD compared to the NDE groups (Table 2).

Table 1: Demographic Characteristics of Survey Population

	TOTAL	DE	NDE
	Mean (SD) N (%)	***Mean (SD)*** n (%)	***Mean (SD)*** n (%)
	N=825	n=529	n=296
Age (Years)	***32.91 (10.97)***	***33.48 (10.89)***	***31.88 (11.05)***
13-18	30 (3.64)	21 (3.97)	9 (3.05)
19-30	373 (45.21)	217 (41.02)	156 (52.69)
31-50	361 (43.76)	252 (47.64)	109 (36.83)
51+	61 (7.39)	39 (7.41)	22 (7.44)
Sex			
Male	167 (20.24)	87 (16.45)	80 (27.03)
Female	658 (79.76)	442 (83.55)	216 (72.97)
Location During 2020 Artsakh War			
United States of America (USA)	400 (48.49)	187 (35.35)	213 (71.96)
Armenia	158 (19.15)	140 (26.47)	18 (6.08)
Artsakh*	116 (14.06)	116 (21.93)	0 (0)
Europe**	27 (3.27)	15 (2.85)	12 (4.07)
Germany	22 (2.67)	17 (3.21)	5 (1.69)
United Kingdom	22 (2.67)	10 (1.89)	12 (4.06)
Canada	20 (2.42)	9 (1.70)	11 (3.72)
Australia	19 (2.30)	7 (1.32)	12 (4.05)
Russia	15 (1.82)	14 (2.65)	1 (0.34)
France	11 (1.33)	4 (0.76)	7 (2.36)
Other***	15 (1.82)	10 (1.90)	5 (1.70)
Depression, Anxiety, PTSD Questionnaire Scores			
PHQ-9	***10.32 (6.95)***	***11.25 (6.99)***	***8.64 (6.56)***
0-4 (none to minimal)	185 (22.42)	88 (16.63)	97 (32.77)
5-9 (mild)	256 (31.03)	167 (31.57)	89 (30.07)
10-14 (moderate depression)	166 (20.12)	112 (21.17)	54 (18.24)
15-19 (moderately severe depression)	114 (13.82)	81 (15.31)	33 (11.15)
20-27 (severe depression)	104 (12.61)	81 (15.31)	23 (7.77)
GAD-7	***9.00 (6.06)***	***9.53 (5.90)***	***8.06 (6.22)***
0-4 (no anxiety)	220 (26.67)	111 (20.97)	109 (36.84)
5-9 (Mild anxiety)	247 (29.94)	176 (20.97)	71 (23.98)
10-14 (Moderate anxiety)	193 (23.39)	129 (24.38)	64 (21.63)
15-21 (Severe anxiety)	165 (20.00)	113 (21.37)	52 (17.57)
PCL-5	***25.74 (20.62)***	***28.52 (20.60)***	***20.76 (19.72)***
0-30 (not indicative of PTSD)	524 (63.52)	208 (70.26)	216 (72.96)
31-80 (indicative of probable PTSD)	301 (36.48)	213 (40.31)	88 (29.77)

**One participant listed "In Artsakh and Armenia" and was added to the Artsakh country grouping*
***Europe Category: Belgium (7), Czech Republic (1), Denmark (2), Estonia (1), Europe (1), Greece (2), Italy (1), Netherlands (2), Poland (1), Sweden (3), Cyprus (5), Switzerland (1)*
****Other Category: China (1), Iran (1), Ukraine (1), Singapore (1), South Korea (1), Georgia (2), Azerbaijan (1), Israel (1), Kuwait (1), Lebanon (3), Argentina (1), Jordan (1)*

Table 2: Comparison of PHQ-9, GAD-7, and PCL-5 Mean Scores by Direct Exposure among Males and Females.

		DE			NDE			P-VALUE
		N (%)	**MEAN**	**SD**	**N (%)**	**MEAN**	**SD**	
PHQ-9	Total	529 (64.12%)	11.25	6.99	296 (3.88%)	8.64	6.56	0.00010
	Male	87 (52.10%)	10.52	7.06	80 (47.90%)	7.53	5.94	0.0027*
	Female	442 (67.17%)	11.40	6.86	216 (32.83%)	9.05	6.75	<0.0001*
GAD-7	Total	529 (64.12%)	9.53	5.90	296 (35.88%)	8.06	6.22	0.00080
	Male	87 (52.10%)	8.61	6.54	80 (47.90%)	6.59	5.67	0.035
	Female	442 (67.17%)	9.71	5.76	216 (32.83%)	8.61	6.34	0.026
PCL-5	Total	529 (64.12%)	28.52	20.60	296 (35.88%)	20.76	9.72	0.00010
	Male	87 (52.10%)	28.55	20.08	80 (47.90%)	15.03	15.50	<0.0001*
	Female	442 (67.17%)	28.38	23.18	216 (32.83%)	22.79	20.74	0.0007

**The Welch's Two-Sample t-test was used to compare means of the two groups.*

Figure 1. Map of Artsakh after the 2020 War

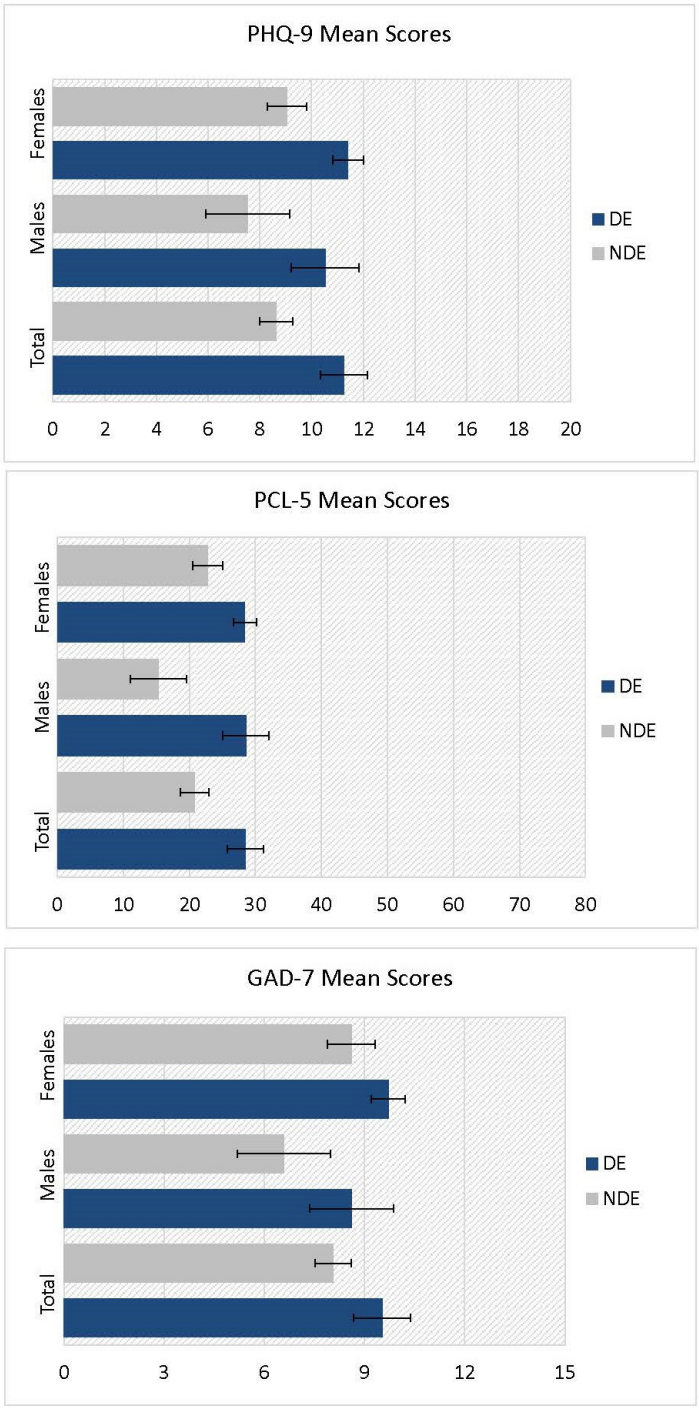
Source: www.nationalia.info [44]
Legend on the right refers to contents in the circle.

Table 3: PHQ-9, GAD-7, PCL-5 Questionnaire Results by Self-Reported Answers (Yes/No) to Questions Evaluating Exposure to War.

	YES			NO			
PHQ-9							
With relation to the 2020 War in Artsakh:	N (%)	Mean	SD	N (%)	Mean	SD	P-Value
1) Did any of your loved ones get injured?	285 (34.55)	12.04	7.00	540 (65.45)	9.41	6.75	0.00010
2) Did you lose your finances?	213 (25.82)	11.76	7.15	612 (74.18)	9.81	6.81	0.00040
3) Did you lose your home?	93 (11.27)	9.36	5.33	732 (88.73)	8.88	6.13	0.88
4) Did you lose a loved one?	273 (33.10)	10.20	6.00	552 (66.90)	8.41	5.99	<0.0001
5) Did any of your loved ones participate?	507 (61.46)	9.58	0.26	318 (38.54)	8.06	0.34	0.00050
6) Did you have any physical injury?*	20 (2.42)	13.25	7.76	805 (97.58)	10.24	6.92	0.067
GAD-7							
With relation to the 2020 War in Artsakh:	N(%)	Mean	SD	N (%)	Mean	SD	P-Value
1) Did any of your loved ones get injured?	285 (34.55)	10.11	5.87	540 (65.45)	8.415	6.07	0.00010
2) Did you lose your finances?	213 (25.82)	9.36	5.90	612 (74.18)	8.88	6.11	0.32
3) Did you lose your home?	93 (11.27)	9.20	5.33	732 (88.73)	9.12	6.13	0.88
4) Did you lose a loved one?	273 (33.10)	10.20	6.00	552 (66.90)	8.41	5.99	<0.0001
5) Did any of your loved ones participate?	507 (61.46)	9.58	5.93	318 (38.54)	8.08	6.14	0.00050
6) Did you have any physical injury?*	20 (2.42)	10.45	6.40	805 (97.58)	8.97	6.05	0.31
PCL-5							
With relation to the 2020 War in Artsakh:	N(%)	Mean	SD	N(%)	Mean	SD	P-Value
1) Did any of your loved ones get injured?	285 (34.55)	32.95	20.75	540 (65.45)	21.93	19.52	<0.0001
2) Did you lose your finances?	213 (25.82)	30.00	20.60	612 (74.18)	24.26	20.43	0.00040
3) Did you lose your home?	93 (11.27)	28.08	20.18	732 (88.73)	25.44	20.67	0.24
4) Did you lose a loved one?	273 (33.10)	32.23	20.56	552 (66.90)	22.53	19.89	<0.0001
5) Did any of your loved ones participate?	507 (61.46)	28.70	20.57	318 (38.54)	21.03	19.82	<0.0001
6) Did you have any physical injury?*	20 (2.42)	39.50	24.00	805 (97.58)	25.40	20.43	0.0079

**Due to a small sample size in the 'Yes' group (less than n=30), the Mann-Whitney (Wilcoxon Rank-Sum) test was used to compare the means of the two groups.*
PHQ-9 scores of 5, 10, 15, and 20 represent lower-limits of mild, moderate, moderately severe, and severe depression, respectively.
The GAD-7 scores of 5, 10, and 15 represent the lower cutoffs for mild, moderate, and severe anxiety, respectively.
The PCL-5 has a total severity score range of 0-80 and a score of 31 or above is typically considered clinically relevant.

Figure 2: PHQ-9, GAD-7, and PCL-5 Mean Scores by Direct Exposure and Sex.



PHQ-9 scores of 5, 10, 15, and 20 represent lower-limits of mild, moderate, moderately severe, and severe depression, respectively.
The GAD-7 scores of 5, 10, and 15 represent the lower cutoffs for mild, moderate, and severe anxiety, respectively.
The PCL-5 has a total severity score range of 0-80 and a score of 31 or above is typically considered clinically relevant.

The groups that answered "Yes" for questions regarding losing a loved one, a loved one getting injured, and a loved one participating in the 2020 Artsakh War had significantly higher depression, anxiety, and PTSD severity levels relative to the groups that answered "No" (Table 3). The PHQ-9 mean scores for those who had a loved one get injured, lost one's finances, lost a loved one, and had a loved one participate in the 2020 Artsakh War were significantly higher than the groups that did not have these exposure factors, representing moderate and mild depression severity, respectively (Table 3). Anxiety levels were also higher for the groups that had a loved one be injured, lost a loved one, and had a loved one participate in the war (Table 3). A loved one's injury, loss of finances, loss of a loved one, and sustaining a physical injury during the war were associated with a clinically relevant threshold for PTSD (Table 3). The group that responded "Yes" for sustaining a physical injury with relation to the Artsakh 2020 War had the highest clinically relevant PCL-5 mean score for PTSD (Table 3).

Discussion

While war has been an unfortunate reality for many countries throughout history, its discussion is quick to seize post-war. However, for those who lived through the traumatic experience, the impact remains an invisible but palpable scar. Studies of semi-homogenous populations have found increased rates of anxiety and PTSD years after war [37]. A longitudinal study found that 1988-1994 Artsakh War veterans experienced PTSD symptoms two decades later [34]. Furthermore, youth impacted by war are likely to endure lifelong adversity, and are at risk for poverty, displacement, and loss of access to healthcare and education [38]. This is relevant since military service is mandatory for males age 18 to 27 in Armenia [39].

We found that 100.0% of participants living in Artsakh and 89.2% in Armenia were directly exposed to war. Notably, 46.6% of respondents living in the United States were in the DE group, possibly a result of injury or loss of a loved one. Among the groups that had clinically relevant levels of PTSD were groups who had a loved one be injured and groups that sustained a physical injury during the Artsakh 2020 War. Those that sustained a physical injury with relation to the war had the highest average score for PTSD. This is important in the context of this war as unusually severe physical injuries were observed, including the illegal use of white phosphorus. A recent study of 93 burn victims at the National Burn Center of Yerevan showed strong evidence of the use of white phosphorus, including cavitary burn lesions, acute hypocalcemia, and fluorescence of wounds [18]. Reports following three French surgical mission trips documented additional evidence for white phosphorus burns [19]. In addition to enduring chronic pain and severe infection, survivors of chemical burns victims often live with lifelong mental and physical disability [20]. Such injuries also impact the ability to reintegrate into society.

We found higher levels of depression among groups who had a loved one get injured, lost finances, lost a loved one, or had a loved one participate in the 2020 Artsakh War. We also observed higher

levels of anxiety for groups who had a loved one get injured, lost a loved one, and had a loved one participate, suggesting a greater contributory role in depression severity relative to factors such as loss of home, participation of a loved one in the war, or sustaining a physical injury. These results also indicate which specific direct exposures may have the most profound immediate effects on anxiety severity. Further, a family history of depression and number of traumatic experiences are risk factors for anxiety disorders [40].

Despite the high needs of the population, stigma and lack of resources remain barriers to Armenians seeking treatment. A psychiatric illness diagnosis can make obtaining a driver's license or well-paying job exceedingly difficult, exacerbating access to care [41]. Of those who do seek support, resources are insufficient. The WHO-Assessment Instrument for Mental Health Systems report revealed that mental health services in Armenia were insufficient to serve the needs of the population [42]. Additionally, a 2013 WHO health-system crisis preparedness review reported concerns regarding the lack of Ministry of Health emergency management strategies [43]. In Armenia, approximately 3% of public health expenditure is on mental health with 88% of care administered through psychiatric hospitalization [6]. Our study further highlights the need of mental health services and has potential to reduce stigmatization of these issues.

This study has several limitations. Since we used a convenience sample, our results are not representative of all Armenian populations. In addition, we did not utilize non-electronic methods of participation. Additionally, we did not control for direct familial exposure to previous traumatic events. While we translated surveys from English to Armenian, a formal validation process of the Eastern Armenian questionnaire did not occur. In this war, daily actions on the battlefield were widely circulated on the internet. Gruesome torture videos of Armenian soldiers and civilians appeared on various social media outlets. While it can be reasoned that the mental health effects of exposure to these videos were significant, empirical studies have not been conducted. Lastly, this study was not conducted in a clinical setting, and clinical diagnosis cannot be implied.

The use of an anonymous, self-administered questionnaire strengthened our study as it may have encouraged openness to answering sensitive mental health questions. The evidence provided in this study clearly shows the devastating mental health impacts of war on Armenian civilians in Artsakh, as well as Armenians in the diaspora. These findings of significantly higher depression, anxiety, and PTSD mean scores between DE and NDE groups have implications for the well-being of Armenian society. These results highlight specific types of exposure that are more likely to be correlated with depression, anxiety, and PTSD. A study incorporating a two-way ANOVA test is imperative to investigate sex differences in mental health outcomes between DE and NDE groups. A future study should consider the incremental effect of numerous direct exposure factors. Given the complex relationship between trauma in war and mental health outcomes, we recommend multivariate regression analyses.

This study was the first to measure the effects of the 2020 Artsakh War on the mental health of the Armenian population in Armenia, Artsakh, and the diaspora. Detailed analyses of direct exposure have potential to guide the development of targeted psychotherapeutic methods to serve those directly exposed to war in accordance with specific exposure factors. This study aims to set a strong foundation for further community-based participatory research efforts towards providing timely and quality mental health resources for the Armenian population, as well as other communities directly affected by war. Mental health organizations, human rights groups, and global health organizations are encouraged to use this data for evidence-based participatory research projects with those directly affected by the war, as well as high-quality trauma care for the population in Artsakh and Armenia, particularly for the soldiers.

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Data Sharing

A complete deidentified dataset is available here: https://data.mendeley.com/datasets/fv6y4t55m8/3.

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