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BRIEF

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Post-Traumatic Stress Disorder among Yemeni Children as a Consequence of the Ongoing War

by Fawziah al-Ammar

1 Introduction

Beginning with the eruption of violent conflicts in Yemen in 2014, only to increase with the onset of the air raids of the Saudi-led coalition (SLC) in spring 2015, Yemeni citizens have been exposed to extraordinary physical, psychological and emotional challenges. Due to these challenges, the majority of Yemenis face and may suffer from varying aspects of a range of psychological disorders; but children, due to the

Executive Summary

Since the beginning of the war in Yemen, Yemeni citizens have been exposed to extraordinary physical, psychological and emotional challenges. This brief finds that school children have been experiencing severe symptoms of PTSD since the breakout of violent conflict and war. Of the 902 children surveyed in this study, 712 (79%) reported experiencing PTSD symptoms. This is a high rate compared to results from similar studies in other countries experiencing conflict.

Yemeni school children are thus in dire need of help to overcome the difficulties they might face in the future. On the individual level, psychological intervention programs should therefore be conducted to positively influence cognitive strategies in children who display symptoms. On the general level, strengthening communities, teaching people how to cope with trauma, and providing training in stress management would be good starting points of intervention.

neurological system, are even more sensitive and susceptible to shocks. Hence, this brief aims to illustrate the psychological impact of war on Yemeni school children.

Operation 'Decisive Storm' (meant to last only three months and thereafter renamed 'Operation Restoring Hope'), launched by the SLC on 26 March 2015, has resulted in the destruction of houses, schools and hospitals and a breakdown of essential social infrastructure. Civilians, especially in Sana'a, Sa'da, al-Hudayda and other parts of northern Yemen, could become victims of airstrikes at any time. In such a context, people are often traumatized by frequently hearing airplanes soaring overhead, being exposed to the sound of exploding bombs and rockets nearby, and seeing buildings crashing down and dead bodies lying in the street.¹ The war – still ongoing at the time of the publication of this brief – not only causes severe damages to Yemen's physical infrastructure: It also has disastrous effects on the health and wellbeing of civilians, of which children are the most vulnerable group.²

According to UNICEF, 2.9 million Yemenis were internally displaced or returnees (from internal displacement), 1.6 million of them children, by December 2017.³ During the first year of the war, the capital Sana'a was hit by SLC airstrikes several times a day. Family members and teachers began noticing unusual behavior among children, such as bed-wetting, refusing to be alone or leave the house, or a decrease in school performance. These observations prompted the author to conduct empirical research about post-traumatic stress disorder (PTSD) symptoms among almost 1,000 internally displaced Yemeni school children in Sana'a City.

This brief⁴ summarizes initial findings of the research that was based on the internationally recognized Child PTSD Symptoms Scale (CPSS). The author conducted the field work in spring 2016, when the children had been exposed to displacement, regular airstrikes, death and destruction for one year.⁵ The results display a severe prevalence of posttraumatic stress symptoms among the students.

1 Trauma is a psychological and emotional response to a terrifying event or an experience, defined as "a powerful psychological shock that has damaging effects"; see Colman, Andrew A. (2015): *A Dictionary of Psychology*, Oxford, p. 755.

2 For an overview of mental health and psychosocial services in Yemen before the conflict and the impact of the war on the respective infrastructure, see Sanaa Center for Strategic Studies et al. (2017): *The Impact of War on Mental Health in Yemen. A Neglected Crisis*. Available at sanaacenter.org/files/THE_IMPACT_OF_WAR_ON_MENTAL_HEALTH_IN_YEMEN.pdf (31.01.2018).

3 UNICEF (December 2017): *Yemen Humanitarian Situation Report*. Available at: https://www.unicef.org/appeals/files/UNICEF_Yemen_Humanitarian_Situation_Report_Year_End_2017.pdf (30.01.2018).

4 The author would like to thank Dr. Iris Glosemeyer and Marie-Christine Heinze for their valuable comments on earlier drafts of this brief.

5 This study validates CPSS in the Yemeni context for the first time and also contributes to the literature about PTSD in a situation of ongoing trauma. See, for example Hoffman, Yaakov S.G. et al. (2011): 'The challenge of estimating PTSD prevalence in the context of ongoing trauma: The example of Israel during the Second Intifada', in: *Journal of Anxiety Disorders* 25, pp. 788-93. See also Gil, Sharon et al. (2015): 'Risk factors for DSM 5 PTSD symptoms in Israeli civilians during the Gaza war', in: *Brain and Behavior* 5/4, pp. 1-9.

2 Methodology

2.1 Child PTSD Symptoms Scale (CPSS)

Post-traumatic stress disorder (PTSD) is an anxiety disorder that may result from a strong emotional reaction to an extraordinarily stressful event.⁶ Based on the criteria of the Diagnostic Statistics Manual for Mental Health Disorders (DSM-IV),⁷ the CPSS was designed to measure the symptoms severity of PTSD. CPSS is a widely used child self-reporting measure of PTSD among youth aged 8 to 18. The scale measures the frequency of symptoms of stress disorders, addressing how often a child has suffered from a particular symptom over the past two weeks prior to the date of data collection. The response options for the CPSS on a five-point scale are: (0) not at all, (1) once a week / less, (2) 2-3 times a week / somewhat, (3) 4-5 times a week / a lot, (4) 6 or more times a week / almost always. Respondents rate the frequency of occurrence of 17 items, which results in a scale ranging from 0 to 68 (the higher the score, the more severe are the symptoms of PTSD).⁸

2.2 Procedures and Sample

The sample in this study is comprised of displaced students in public schools in Sana'a City. The process of data collection began in

December 2015 by framing the population of the study to include 11 educational districts and 123 schools. The data collection was conducted during April and May 2016, targeting 10,000 students who had either been displaced by airstrikes within Sana'a or who had fled to Sana'a from other affected governorates (mainly Ta'iz, Sa'da, Hajja, Lahj and Aden). The final sample, on which this study is based, comprised almost 1,000 displaced students and thus meets the requirements of a representative sample. The data was collected in 19 schools in two districts in Sana'a City: al-Saba'in 2 and al-Safiya.

A total of 902 students responded to the Arabic version of the PTSD questionnaire. The sample consists of 466 boys (52%) and 436 girls (48%). The average age of the sampled students is 14.05 years (standard deviation / SD = 1.8). The majority of the respondents come from large families with an average size of eight members (SD = 3.3). The family income levels range from low to moderate.⁹ About two-thirds of the participants were in eighth and ninth grade (31.5% in grade eight and 31.5% in grade nine). Another major group of students (18.2%) was in seventh grade, while the remaining 151 students (17%) attended other school grades.¹⁰

⁶ King, Daniel W. et al. (1998): 'Confirmatory factor analysis of the clinical-administrated PTSD scale: Evidence for the dimensionality of posttraumatic stress disorder', in: *Psychological Assessment* 10/2, pp. 90-6.

⁷ *The Diagnostic and Statistical Manual of Mental Disorder* (2000), 4th ed. (DSM-IV), Washington D.C.

⁸ In order to be able to use the CPSS in the Yemeni context, two translators (Arabic/English) with a background in psychology translated the questionnaire into Arabic and – for control reasons – back into English.

⁹ Information on family income was based on a four-point scale (1) no income, (2) we are in need / have low or irregular income, (3) we have moderate income, and (4) we have a good income. To note: It is difficult to obtain accurate information about family income from children.

¹⁰ A total of 9% of the students attended grades three to six, and 7% attended grades ten to twelve.

2.3 Statistical Methodology

The average score for Yemeni children on PTSD was computed using CPSS measures based on the DSM-IV criteria. Based on the data collected by the author and the results of a Principal Component Analysis¹¹, the 17 PTSD symptoms were clustered into three components: social-emotional symptoms, cognitive symptoms, and behavioral symptoms.¹² The average, standard deviation, and score range for the three components were computed separately, as well as for the entire sample. The most critical PTSD symptoms among the respondents are presented in this brief. Moreover, we took a comparative perspective on the severity of symptoms and analyzed them according to cutoff scores and gender.

3 Analysis

3.1 Ranking the Symptoms

The results of this study are alarming, as the majority of the sample group reported PTSD symptoms. More than three-quarters of the school children still felt upset when thinking about the past traumatic event, felt as if they were repeating the traumatic experience when exposed to triggers such as pictures, and had become overly careful and jumpy. Unsurprisingly, the children also reported that they found it difficult to concentrate, for example in class.

3.2 Symptom Types

Based on the data described above and the outcome of the Principal Component Analysis, three groups of symptoms among Yemeni school children were identified: social-emotional, cognitive and behavioral disorders.

3.2.1 Social-Emotional Symptoms

The term 'social-emotional symptoms' refers to social and emotional distress that individuals continue to experience after a traumatic event. In our sample, the average of the total scores for the six items of social-emotional disorder (with a possible maximum of 24 points) is high ($M = 10.45$, $SD = 6.63$). About two-thirds of the sample suffer from a combination of the following symptoms:

- 1) 646 (72%) students are 'unable to have strong feelings (for example being unable to cry or unable to feel happy)'.
- 2) 627 (70%) are 'having trouble falling or staying asleep'.
- 3) 604 (67%) students have 'much less interest in doing things they used to do'.
- 4) 568 (63%) school children hold a doubtful view about their future, 'feeling as if their future plans or hopes will not come true'.
- 5) 563 (62%) respondents suffer from 'not feeling close to people around them'.
- 6) 551 (61%) respondents complain about being unstable in their emotions by 'feeling irritable or having fits anger'.

¹¹ "Principal component analysis (PCA) is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components", in Wikipedia (26.01.2018): 'Principal component analysis', in: *Wikipedia: The Free Encyclopedia*. Available at https://en.wikipedia.org/wiki/Principal_component_analysis (30.01.2018).

¹² The three components were found based on the results of the empirical study done by the author to validate the CPSS scale in the Yemeni context. The results support three components which are similar to the factors that are described by Breslau, Naomi et al. (1999): 'Short screening scale for DSM-IV posttraumatic stress disorder', in: *The American Journal of Psychiatry* 156/6, pp. 908-911.

Table 1: Occurrence of Symptoms (n=902)

Number on CPSS Scale	Symptom	Number of Students Reporting Symptoms	Percentage of Sample
1	Having upsetting thoughts or images about the event that came into your head when you didn't want them to	649	72%
2	Having bad dreams or nightmares	621	69%
3	Acting or feeling as if the event was happening again (hearing something or seeing a picture about it and feeling as if I am there again)	707	79%
4	Feeling upset when you think about it or hear about the event (for example, feeling scared, angry, sad, guilty, etc.)	751	83%
5	Having feelings in your body when you think about or hear about the event (for example, breaking out into a sweat, heart beating fast)	574	64%
6	Trying not to think about, talk about, or have feelings about the event	639	71%
7	Trying to avoid activities, people, or places that remind you of the traumatic event	572	63%
8	Not being able to remember an important part of the upsetting event	549	61%
9	Having much less interest in doing things you used to do	604	67%
10	Not feeling close to people around you	563	62%
11	Not being able to have strong feelings (for example, being unable to cry or unable to feel happy)	646	72%
12	Feeling as if your future plans or hopes will not come true (for example, you will not have a job or get married or have children)	568	63%
13	Having trouble falling or staying asleep	627	72%
14	Feeling irritable or having fits of anger	551	61%
15	Having trouble concentrating (for example, losing track of a story on the television, forgetting what you read, not paying attention in class)	667	74%
16	Being overly careful (for example, checking to see who is around you and what is around you)	737	82%
17	Being jumpy or easily startled (for example, when someone walks up behind you)	705	78%

3.2.2 Cognitive Symptoms

The term 'cognitive symptoms' refers to mental activities of individuals who have faced a traumatic event. The seven items grouped under 'cognitive symptoms' received the highest mean ($M = 11.42$, $SD = 6.36$) among the three components of disorders identified among Yemeni school children:

- 1) 707 (79%) respondents reported their suffering as *'acting or feeling as if the event was happening again (hearing something or seeing a picture about it and feeling as if they are there again)'*.
- 2) 649 (72%) of the participants are *'having upsetting thoughts or images about the event that come into their heads when they didn't want them to'*.
- 3) 639 (71%) respondents were *'trying not to think about, talk about, or have feelings about the event'*.
- 4) 621 (69%) of the respondents are *'having bad dreams or nightmares'*.
- 5) 574 (64%) respondents reported that they suffer from both symptoms of *'having feelings in their body when they think about or hear about the event; i.e. breaking into a sweat, heart beating fast'*.
- 6) 572 (63%) are *'trying to avoid activities, people, or places that remind them of the traumatic event'*.
- 7) 549 (61%) respondents experienced amnesia and reported *'not being able to remember an important part of the upsetting event'*.

3.2.3 Behavioral Symptoms

The third component of distress identified among displaced Yemeni school children is concerned with how these are affected

emotionally and consequently exhibit certain behavioral disorders in their daily lives. This component consists of four items, with a mean score of 8.38 of 16 possible points ($SD = 4.40$). The four items that received the highest percentages among all measures of the PTSD scale all belong to this component.

- 1) 751 (83%) of the students feel *'upset when they think or hear about the event (e.g. scared, sad, guilty, etc.)'*. This is the highest percentage throughout all 17 symptoms on the CPSS scale.
- 2) 737 (82%) respondents report that they are *'being overly careful (checking to see who is around them, and what is around them)'*. This is the second highest percentage of symptoms throughout the three major components.
- 3) 705 (78%) respondents described themselves as *'being jumpy or easily startled (e.g. when some walks up behind them)'*.
- 4) 667 (74%) respondents are *'having trouble concentrating (e.g. losing track of a story on television, forgetting what they read, not paying attention in class)'*.

3.3 PTSD Symptoms Severity

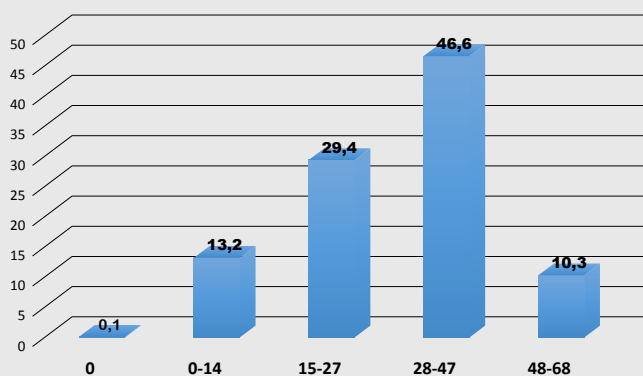
As shown above, the absolute majority of the children targeted in our research had experienced PTSD symptoms at least once. Practitioners and researchers who deal with PTSD symptoms establish certain cutoffs to distinguish between different levels of trauma symptoms.¹³ For the Yemeni sample, a five-point scale was applied to the total score, ranging from 0 to 68. The different levels of PTSD symptoms, depending on occurrences

¹³ McCarthy, Stephen (2008): 'Post-traumatic stress diagnostic scale (PDS)', in: *Occupational Medicine* 58/5, p. 379.

per week, are thus: (0) no symptoms, (1-14) mild, (15-27) moderate, (28-47) moderate to severe, and (48-68) severe.

The results show how severely the students are affected: There are 93 (10.4%) students who face severe symptoms in their daily lives with a frequency of 48 to 68 occurrences per week; 420 (46.8%) of the students face moderate to severe symptoms (28 to 47 occurrences); and 265 (29.5%) suffer from moderate symptoms (15 to 27 occurrences). Only 119 (13.3%) fall into the mild level of suffering from PTSD symptoms (up to 14 times per week), and there is only one student (0.1%) among the sample group who never experienced any PTSD symptom. The following graph shows the frequency of traumatic symptoms categorized according to the five levels described above.

Graph 1: Percentage of Respondents per Level (Five Levels)

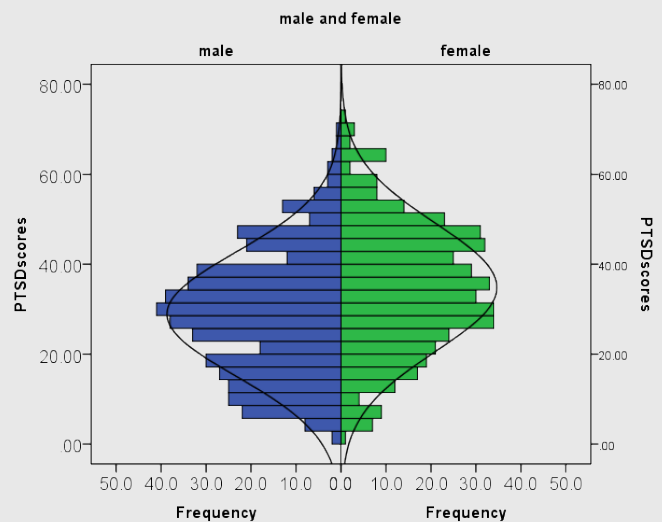


3.4 Gender and PTSD Symptoms

The frequency of PTSD symptoms disaggregated according to gender is shown in Graph 2. The male / female ratio of the sample is close to normal which confirms that the sample of the study is representative. Some differences in PTSD symptoms according to gender stand out: Specifically, in terms of

the total score, females have a higher score (M = 34, SD = 14.25) than males (M = 27, SD = 13.74). Therefore, we can conclude that girls report experiencing PTSD symptoms more frequently than boys. This result may well be influenced by Yemeni methods of child-rearing and other social, cultural and psychological factors, which allow more space for the display and articulation of emotions to females rather than males.

Graph 2: Frequency of PTSD Among Male and Female Students



Graph 2 above shows that the scores of boys and girls in the Yemeni context differ on all five levels. In total, the graph shows that girls report symptoms more frequently than boys, whether they have a low or a high score. Even though boys report experiencing symptoms less frequently than girls, both groups hold high indicators for PTSD symptoms: Those 14% of females who reported experiencing severe levels of PTSD hold a very high score (>54) while 10% of the male students reach a similar score (>52). Students experiencing moderate to severe levels of PTSD (28-47) form the biggest group: 52% of the female and 42% of the male participants are rated in this level. Among those experiencing moderate levels of

PTSD, males (33%) report experiencing symptoms more frequently than females (26%). And while 18% of the boys report experiencing mild levels of PTSD symptoms, only around 7.9% of the girls are in this group.

Ultimately, the majority of the sample is clustered into two levels: The largest group of respondents reported experiencing moderate to severe symptoms of PTSD, while those experiencing moderate levels come second. Those respondents who experienced either severe or mild levels of PTSD hold the smallest percentage in total.

3.5 Results in Comparative Perspective

Throughout the sample, the total CPSS score has an average of 30.12 points (SD = 13.9, range = 87), and is thus much higher than what has been reported in other cases, such as the average of PTSD for children in North Mississippi (M = 13.8, SD = 11.72)¹⁴ or for Sudanese children who suffered from traumatizing experiences (M = 6.5, SD = 2.2).¹⁵

In comparison to PTSD symptoms among families in Iraqi Kurdistan (87%), however, the percentage of PTSD symptoms among the Yemeni school children (78.6%) was almost 10% lower.¹⁶ It ought to be noted, however, that the children interviewed for this study have gone through two further years of war

and conflict since. In other regions that experienced armed conflict, the percentage of PTSD symptoms is much lower: Among children in Palestine the percentage is 41%, and only 20.4% among Afghani respondents in the Nangarhar province, aged 15 years and above.¹⁷ Only 17.1% of Kosovo Albanians who were aged 15 years and above suffered from PTSD symptoms,¹⁸ while 9% of the entire Israeli population showed symptoms of PTSD during the Second Intifada.¹⁹ Even when considering potential methodological differences, therefore, the PTSD rate among the Yemeni sample is very high.

4 Conclusion

This brief sheds light on the mental health of Yemeni students in displaced Sana'ani communities. It demonstrates that these children have been experiencing severe symptoms of PTSD since the breakout of violent conflict and war. The ongoing violence is causing serious psychological consequences in different aspects of the daily lives of a population living in long-term conflict.

Of the 902 participants who reported their feelings about consequences of traumatic events, 712 (79%) met criteria of PTSD symptoms. This is a high rate compared to samples in other countries, as shown above. This data

¹⁴ Stewart, Regan W. et al. (2015): 'The Child PTSD symptom scale: An investigation of its psychometric properties', in: *Journal of Interpersonal Violence* 32/15, pp. 1-20.

¹⁵ Paardekooper, Brechtje et al. (1999): 'The psychological impact of war and the refugee situation on South Sudanese children in refugee camps in Northern Uganda: An exploratory study', in: *Journal of Child Psychology and Psychiatry* 40/4, pp. 529-36.

¹⁶ Ahmed, Abdulbaghi et al. (2000): 'Posttraumatic stress disorder in children after the military operation "Anfal" in Iraqi Kurdistan', in: *European Child & Adolescent Psychiatry* 9, pp. 235-43.

¹⁷ Murthy, R.S. et al. (2006): 'Mental health consequences of war: A brief review of research findings', in: *World Psychiatric* 5/1, pp. 25-30.

¹⁸ Ibid.

¹⁹ Hoffman et al. (2011).

thus indicates a high risk of psychological problems that Yemeni school children may suffer in their daily lives now as well as in the future. The results also show a high average of responses in the component of cognitive symptoms, indicating a risk to the intellectual development of the students. This is followed by the component of social-emotional symptoms. That the behavioral symptoms component has the lowest average among the three types of symptoms could be a sign of successful social coping strategies.

While the sample was limited to children who had been exposed to internal displacement and regular bombings, the results of this research might justify the assumption that many school children in Yemen, who have been exposed to similarly critical situations, suffer from similar symptoms.

Previous studies on PTSD in comparable contexts have demonstrated that the effect of PTSD can be permanent and still diagnosable 40 to 50 years after the traumatic event.²⁰ Thus, Yemeni school children are in dire need of help to overcome the difficulties they might face in their lives sooner or later. Additionally, of course, adult Yemenis are in need of psychological and emotional support as well.

On the individual level, psychological intervention programs should therefore be conducted to positively influence cognitive strategies in children who display symptoms. Cognitive process therapy, for example, can help manage the regulation of emotional feeling and intrusive thoughts, images, and arousal symptoms. Investigating other psychological symptoms among children such as involuntary bed-wetting, depression, and anxiety is also important.

On the general level, strengthening communities, teaching people how to cope with trauma, and providing training in stress management would be good starting points of intervention. Involvement of individuals (and/or group counseling), such as school psychologists and religious leaders, could also be culturally appropriate as could be respective radio broadcasts.

All in all, this study demonstrates that the need to act is urgent and that the consequences of inaction could affect Yemeni society for decades to come.

²⁰ The World Bank (October 2003): *Mental Health and Conflict*, Social Development Notes – Conflict Prevention and Reconstruction 13, p. 1. Available at <http://documents.worldbank.org/curated/en/612811468778224144/pdf/279940PAPER0Conflict0Prevention0no1013.pdf> (31.01.2018).

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Fawziah al-Ammar received her PhD in Educational Psychology from the Institute of Education, International Islamic University Malaysia (IIUM) in 2008. Her specific academic area is related to educational and psychological assessment. Her M.A. from Sana'a University was completed in Educational Measurement. Since 2012, she has been working as assistant professor at 'Amran University, where she headed the Department of Psychology from 2015-17. At the same time, she works as a part-time lecturer at the Gender-Development Research & Studies Center (GDRSC) at Sana'a University. She is also involved in an ongoing project with the Sana'a Center for Strategic Studies, Columbia Law School Human Rights Clinic and Columbia University's Mailman School of Public Health on mental health in Yemen.

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About CARPO

CARPO was founded in 2014 by Germany-based academics trained in the fields of Near and Middle Eastern Studies, Political Science and Social Anthropology. Its work is situated at the nexus of research, consultancy and exchange with a focus on implementing projects in close cooperation and partnership with stakeholders in the Orient. The researchers in CARPO's network believe that a prosperous and peaceful future for the region can best be achieved through inclusive policy making and economic investment that engages the creative and resourceful potential of all relevant actors. Therefore, CARPO opens enduring channels for interactive knowledge transfer between academics, citizens, entrepreneurs, and policy makers.

About this project

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