A 3-year retrospective study of 866 children and adolescent outpatients followed in the Nice Pediatric Psychotrauma Center created after the 2016 mass terror attack.

Morgane Gindt (✉ gindt.m@pediatrie-chulnval.nice.fr)

Hôpitaux Pédiatriques de Nice CHU- Lenval

Amaud Fernandez

Hôpitaux Pédiatriques de Nice CHU- Lenval

Radia Zeghari

Hôpitaux Pédiatriques de Nice CHU- Lenval

Marie-Line Ménard

Hôpitaux Pédiatriques de Nice CHU- Lenval

Ophélie Nachon

Hôpitaux Pédiatriques de Nice CHU- Lenval

Aurélien Richez

Hôpitaux Pédiatriques de Nice CHU- Lenval

Philippe Auby

Hôpitaux Pédiatriques de Nice CHU- Lenval

Michèle Battista

Hôpitaux Pédiatriques de Nice CHU- Lenval

Florence Askenazy

Hôpitaux Pédiatriques de Nice CHU- Lenval

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Abstract

Background

The mass terrorist attack in Nice, France, in July 2016 caused deaths and injuries in a local population, including children and adolescents. The Nice Pediatric Psychotrauma Center (NPPC) was opened to provide mental health care to the pediatric population (0–18 years) who experienced traumatic events.

Objectives

To report clinical findings and provide considerations focusing on 1) Traumatic events; 2) Psychiatric diagnoses; 3) Needed care of pediatric population; 4) Recommendations based on the experience of NPPC

Methods

In this retrospective study, we conducted quantitative and qualitative data collection and analysis of new and follow-up consultations, primary and comorbid diagnoses, and the kind of trauma (terrorist attack versus other kinds of trauma). Ethics approval was obtained from the local Ethics committee.

Results

866 children and adolescents were followed in the NPPC. A high number of children and adolescents impacted by the terrorist attack required follow-up consultations (average of 30 consultations per week). After exposure to the mass terrorist attack, the first care-seeking requests continued to occur three years later, although at a slower rate than in the first and second years. New consultations for other kinds of trauma were observed over time. We found a high rate of Post-Traumatic Stress Disorder (PTSD; 71%) in this population with a high rate of comorbidities (67%), mainly sleep disorders (34.7%) and mood and anxiety disorders (16.2%).

Discussion

This study supports previous findings on the significant impact of mass trauma in the pediatric population showing even a higher level of PTSD and a high rate of comorbidities. This may be explained by the brutality of the traumatic event, particularly for this age group. The findings of this study have implications for early interventions and long-term care for children and adolescents to prevent the development of chronic PTSD into adulthood.

What Is Known – What Is New

Exposure to traumatic events has long-term consequences, even in adulthood. However, the management of children who have suffered psychotrauma and the specific centers for such care are poorly described in the literature. The analyzed cohort is large and emphasizes the usefulness of care dedicated to psychotrauma.

Introduction

The mass terrorist attack in Nice (France), on the evening of the Bastille Day, on July the 14th, 2016, is one of several terrorist attacks that occurred in public places across European countries in recent years [1, 2]. At the time of this incredibly violent event, more than 30,000 people were present in the area, including many babies, children and adolescents [3]. Eighty-six people died in the attack, including ten children, the youngest being four years old [4]. At least fifty-five children and adolescents were bereaved because of this crime. This type of attack constitutes one of the highest existing traumatic stressors, with malevolent intent, extreme violence and harmfulness against unprepared victims. Terrorist attacks generate collective stress and maximal media coverage in the following period [5].

The most common diagnosis reported after traumatic events is Post-Traumatic Stress Disorder (PTSD) [6]. Re-experiencing symptoms, behavioral or emotional avoidance symptoms, cognition and mood alteration and arousal symptoms are the four main classes of PTSD symptoms [7]. Some of these symptoms could affect the child's learning capacities and quality of life [8–10]. Moreover, children with PTSD could present an intense feeling of shame about the event, display regressive behavior (*i.e.*, enuresis, encopresis, attachment problems with the caregiver and crying) or even report several psychosomatic complaints [11, 12]. These different symptoms could alter their social and affective development. PTSD in children and adolescents could also lead to an alteration of personality, a high level of anxiety and a significant drop in self-esteem [13, 14].

PTSD in young children is often seen with comorbid disorders, almost in 75% of them [15]. The most frequent are: Oppositional Defiant Disorder (ODD), Separation Anxiety and Attention Deficit Hyperactivity Disorder (ADHD). It has been reported that developing comorbid disorders influences the severity of PTSD symptoms and their sustainability [16–19]. Nevertheless, a comparison of estimates of the burden of PTSD with the estimated cost of treating all adults with PTSD with the recommended treatments shows the potential for substantial economic gains to be made through extension and investment in effective evidence-based treatments [20].

After this event, a Pediatric Psychotrauma Center was created in January 2017 in Nice (Nice Pediatric Psychotrauma Center - NPPC) to offer psychotrauma assessment and specific care for children and adolescents exhibiting psychological symptoms [21]. NPPC offers personalized and multidisciplinary pediatric care. The staff comprises a large panel of professionals, physicians (child and adolescent psychiatrists and pediatricians), psychologists, occupational therapists, nurses and social workers. NPPC is one of the two leaders of the PACACorsica Psychotrauma Center, and part of the 15 centers in France labeled "Psychotrauma". Ever since, our missions are multiple: emergency psychotraumatic care; medium

and long-term psychotraumatic care; training students in psychology, medicine, sophrology; University teaching (Psychology department, Medicine Department, university degree in Psychotrauma); vocational training for child and adolescent psychiatrists, psychologists, social workers, educational professionals, justice departments, emergency unit volunteers etc.; research activities involving several international scientific collaborations and scientific communications.

This study aims to highlight the specificity of the care pathways for children and adolescents who are victims of trauma.

Methods

From January 2017 to December 2019, qualitative and quantitative data were retrospectively collected from the NPPC patient's active file and medical records (at the Children's Hospitals of Nice CHU-Lenval): 1) Potential traumatic events (DSM 5), 2) DSM-5 diagnoses, 3) Request of new consultations and 4) Number of follow-up consultations.

The study has been carried out per the 1964 Declaration of Helsinki and its later amendments and declared to the French National Commission on Informatics and Liberty (CNIL). Ethics approval was obtained from the University Côte d'Azur local Ethics committee (CERNI; n° 2021-064).

Statistics

Descriptive analyses (percentage, mean and standard deviation) were performed on the number of requests for new and follow-up consultations as well as for the primary diagnoses, comorbidities and the kind of trauma. Repeated measures ANOVA were used to perform analyses. We compared the number of consultation requests for the terrorist attack and the other kind of trauma per year. We analyzed the evolution over the years of the number of follow-up consultations for the terrorist attack and other kinds of trauma.

Results

During the three years since the creation of NPPC, 866 patients consulted in the NPPC (Table 1). The mean age of this pediatric population is 10 years and 4 months [standard deviation = 4.7; ranging from 6 months of age to 19 years]. The distribution of the age variable follows the normal distribution (chi-square test = 122, $df = 8$, $p < .001$) Caseload is made up of 51% girls and 49% boys.

Table 1
NPPC follow-up consultations per year.

	2017	2018	2019
Terrorist Attack	251	308	312
Other kind of trauma	75	129	217
Total	326	437	529

A/ Reasons For Consultation

Among 866 patients, 529 consulted for the terrorist attack and 337 for other kinds of trauma (Fig. 1), the most frequent being road accidents (15%), mourning (14%), migration (12.5%), physical and sexual assault (12.5% and

10.5%).

The majority of these patients were diagnosed with PTSD (71%) or with acute stress disorder (9%) by clinicians.

The complete list of diagnoses is presented in Table 2.

Table 2: Main diagnoses (DSM-5) from 2017 to 2019 (N = 866). % (n)

PTSD	71% (615)
Acute stress disorder	9% (78)
Others	8,80% (76)
Anxiety disorder	7,30% (63)
Neurodevelopmental disorders	2,40% (21)
Major depressive disorder	1,50% (13)

Children and adolescents with PTSD have a high comorbid rate (67%). Table 3 summarizes the main comorbidities. Sleep-wake disorders, anxiety and neurodevelopmental disorders are the three most common comorbidities, accounting for 75%.

Table 3
Main comorbidities (DSM-5) associated to PTSD (N = 412). % (n)

Main PTSD comorbidities	
Sleep-wake disorders	34,70% (143)
Anxiety disorders	27,60% (114)
Neurodevelopmental disorders	12,90% (53)
Somatic symptom and related disorders	8,00% (33)
Disruptive, impulse control and conduct disorders	6,10% (25)
Others	3,80% (16)
Elimination disorders	3,00% (13)
Dissociative disorders	2,50% (10)
Feeding and eating disorder	1,20% (5)

B/ Request For Consultation

Regarding new consultation requests (see Fig. 2), the repeated measures analysis of variance, performed between group (attack versus other kind of trauma) and time (2017 vs. 2018 vs. 2019) was significant ($F(2, 204) = 27, p < .001$). In 2017, the number of new visits was significantly greater for the terrorist attack group (mean = 4.3, SD = 2.7) than for the other kind of trauma group (mean = 1.1, SD = 1.3; $F(1, 102) = 62.8, p < .001$). The same results were obtained for the year 2018, with more new patients for the terrorist attack group (mean = 3.4, SD = 3.3) than for the other kind of trauma group (mean = 1.6, SD = 1.7; $F(1, 102) = 11.7, p < .001$). In 2019, the number of new consultants was greater for the other kind of trauma group (mean = 2.9, SD = 2.5) than for the terrorist attack group (mean = 1.5, SD = 1.8; $F(1, 102) = 11.4, p < .001$).

C/ Follow-up consultations

Regarding the interaction between group and time for follow-up consultations, the result was significant ($F(2, 204) = 4.15, p < .05$, see Fig. 3). In 2017, the majority of follow-ups involved patients who experienced the terrorist attack (mean = 18, SD = 8.6) compared with other kinds of trauma (mean = 3, SD = 2.7; $F(1,52) = 138.6, p < .001$). Similar results were found for 2018 and 2019. The number of follow-ups was significantly greater for the terrorist attack (mean = 25 and 32, SD = 11.8 and 3.3) than for the other kind of trauma (mean = 8.8 and 22, SD 6.4 and 10.4; $F(1,52) = 74, p < .01$ and $F(1,52) = 17.4, p < .001$). For the terrorist attack group, there was an increase in follow-up consultations from 2017 to 2018 ($F(1, 52) = 23.4, p < .001$) and from 2018 to 2019 ($F(1, 52) = 58.8, p < .001$). The same results were obtained for other kinds of trauma with an increase between 2017 and 2018 ($F(1,52) = 15.5, p < .001$) for follow-up consultations and between 2018 and 2019 ($F(1, 52) = 75.6, p < .001$).

Discussion

This paper aims to present data related to the activity of the Nice Pediatric Psychotrauma Center (NPPC) three years after the unit's inception.

866 children and adolescents were treated at the NPPC. For the great majority, the traumatic event, which led to seeking consultation, was related to the terrorist attack on the 14th of July in 2016. Patients with other types of traumatic events (road accidents, mourning, migration, etc.) were also treated at the NPPC. The primary diagnoses recorded were PTSD (71%), but other diagnoses such as acute stress disorders, major depression disorder, and anxiety disorder were also recorded. In fact, patients with PTSD had a high comorbid rate such as sleep-wake disorders, anxiety and neurodevelopmental disorders. These results are coherent with the literature. Indeed, studies evaluating the long-term impact of traumatic events in children and adolescents, such as natural disasters, indicate a significant rate of PTSD associated with other anxiety disorders or mood disorders [22–24].

The evolution of the number of new and follow-up consultations was also recorded. From 2017 to 2018, most new requests and follow-ups at the NPPC were related to the terrorist attack of 2016. However, in 2019, new requests were related to other types of traumatic events. Both numbers of new requests and follow-ups increased significantly over the years. This can be explained by several factors, including the notoriety of the center, both for professionals and the public, as well as the integration of the NPPC into the care pathways offered by the children's hospital. Indeed, the creation of this center has allowed children and families who are victims of a road accident, requiring a visit to the hospital (emergency department, intensive care unit or somatic department) to have access to a team trained in psychotrauma from the very beginning.

After such a mass trauma, our experience at the NPPC highlights the obligation to build a clinical team that can take care of a massive influx of children and ensure a long-term follow-up. As suggested in the PTSD Guideline Development Group and the National Collaborating Centre for Mental Health, Social and Psychological Care ranges from providing immediate comfort and practical help to longer-term psychological support, which may need to be provided for 18–24 months or even longer [25]. In addition, after a mass trauma, the NPPC experience highlights the need for specialized pediatric consultations and targeted communication to ensure population awareness of these resources [3]. Moreover, the first consultations always occur, which was unexpected and is an exciting finding to report, even if their number decreases over time, up to three years after the event. Several hypotheses may explain this phenomenon, including the appearance of delayed symptoms or avoidance behaviors. The difficulty in accessing care must be taken into account as soon as possible after the traumatic event in order to avoid therapeutic wandering and to promote a proactive organization of care. PTSD and comorbidities can persist for decades [6]. According to these authors, trauma-focused treatment and monitoring for chronic medical illnesses are essential components of recovery programs.

In most European countries, scientific societies related to stress and psychotrauma have been created to promote good clinical practices and develop training in psychotrauma [26]. Guidelines for the management of trauma exist: for example, World Health Organization [27] and American Academy of Child and Adolescent Psychiatry [28] recommend early interventions for children and adolescents to reduce PTSD clinical manifestation. Early-onset chronic stress does not heal naturally, and its effects appear to exacerbate over time [29]. Therefore, intervening early is crucial to minimize and reduce long-term negative effects [30]. Early intervention aims to avoid PTSD chronicity. The chances of responding favorably to therapy decrease once the PTSD become chronic [31, 32].

The analysis of the NPPC activity also highlights the need to take care of any trauma in the pediatric population. Due to the improved visibility of the NPPC after three years, requests for initial consultations have increased each year steadily. To respond to the increasing number of requests and follow-up consultations, new health care and social professionals, including those with additional background, joined the NPPC team.

Potentially traumatic experiences are common in children and adolescents: 65% of children aged 6–12 experience a trauma; this percentage reaches 81.5% for those aged 16–18 [33], and that more than a third had experienced multiple traumas [34]. Among the children followed in NPPC, road accidents, mourning, traumatic migration, physical and sexual assault are the most frequent traumatic events, apart from the terrorist attack of July 14th 2016.

During the first three years of activity of NPPC, we observed 9% of acute stress reactions and 71% of PTSD, in line with the literature, reporting a prevalence of PTSD between 20 to 50% after traumatic exposure [35–39]. Several factors are implicated in the development of PTSD. Interpersonal and repeated events cause three times more PTSD than non-interpersonal and single events [40]. Age is also known to have an influence on the development of trauma disorder: the risk of PTSD after a potentially traumatic event is about 39% for preschool children and 27% for adolescents [15].

Among the comorbidities associated with PTSD in our population, sleep disturbances are common, whether they are nightmares or difficulty falling asleep. These results are consistent with studies carried out on the association between psychotrauma and sleep disorders in children [41–44]. Moreover, symptoms of PTSD may be internalizing and externalizing in trauma-impacted children [45, 46]. Externalized behavioral symptoms may lead to oppositional defiant disorder, conduct disorder and aggression, while internalized behavioral symptoms refer to somatic complaints, depression or anxiety [47]. In children, comorbid PTSD disorders are estimated at 75% [48]. It can be depression, separation anxiety, generalized anxiety with panic attacks, attention deficit disorder or mood disorders [49, 50; 15]. A comorbid disorder appears to influence PTSD symptomatology intensity and maintenance [18–20].

Following AACAP recommendation, Psychologists of NPPC provide Cognitive-Behavioral Therapy (CBT) and Eye Movement Desensitization and Reprocessing (EMDR), which appears to reduce significantly the fear and general worry in adolescents. CBT exhibits the most significant results [51, 52]. CBT can be performed with both children and adults, and has proven to be efficacious for a large spectrum of

psychiatric disorders, especially for the treatment of anxiety disorders [53, 54]. Moreover, exposure to a traumatic event as a child is consistently associated with more severe health and mental health problems than adult exposure [55, 56]. The risk of chronicization of this pathology is around 25% in children [57–60], and relapse rate is as large as 40% [61, 62].

Study Limitations

One limitation of this study is the lack of comparison of key diagnoses and comorbidities by kind of traumatic event: terrorist attack versus other traumatic events, versus multiple events. Another limitation is that the specificity of the care pathways implemented at NPPC according to developmental age and according to the specific clinical picture of each child is not described and statistically analyzed.

Conclusion

Nice Pediatric Psychotrauma Center's unique experience underlines the necessity of a specific emergency psychological response and the need for multidisciplinary follow-up specialized consultations for children, adolescents, and their families after traumatic events. Standardized and regular assessments appear necessary to personalize the childcare according to age, development and symptoms. Additional studies are needed to further assess the impact of specific care compared to non-specific care.

Abbreviations

ADHD
Attention Deficit Hyperactivity Disorder
CBT
Cognitive-Behavioral Therapy
CNIL
French National Commission on Informatics and Liberty
DSM-5
Diagnostic and Statistical Manual of Mental Disorders
EMDR
Eye Movement Desensitization and Reprocessing
NPPC
Nice Pediatric Psychotrauma Center
ODD
Oppositional Defiant Disorder
PTSD
Post-Traumatic Stress Disorder

Declarations

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Availability of data and material: The excel data can be sent to the corresponding author on request.

Code availability: Not applicable

Authors' contributions: All authors participated in the writing of the article. Statistics were realized by Morgane Gindt and Aurélien Richez. All authors participated in the proofreading of this article.

Ethics approval: The study has been realized in accordance with the 1964 Declaration of Helsinki and its later amendments and has been declared to the French National Commission on Informatics and Liberty (CNIL). Ethics approval was obtained from the University Côte d'Azur local Ethics committee (CERNI n° 2021-064).

Consent to participate: All participants received an information note about the processing of their personal data in an anonymous way. In accordance with French law, they had a period of one month to object to this processing and to the publication of the results. For this study, the principle of non-opposition was retained for data processing. Therefore, there was no written consent. However, verbal consent was obtained from the parents and the child.

Consent for publication: All participants received an information note about the processing of their personal data in an anonymous way. In accordance with French law, they had a period of one month to object to this processing and to the publication of the results.

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References

1. Haas H, Fernandez A, Bréaud J, Dupont A, Tran A, Solla F (2017) Terrorist attack in Nice: the central role of a children's hospital. *Lancet* 389(10073):1007.
2. Chauvelin L, Gindt M, Olliac B, Robert P, Thümmeler S, Askenazy F (2019) Emergency organization of child psychiatric care following the terrorist attack on July 14, 2016, in Nice, France. *Disaster Med Public Health Prep* 13(2):144-146.
3. Askenazy F, Chauvelin L, Gindt M, Thümmeler S (2017) Réponse pédopsychiatrique d'urgence à la suite de l'attentat terroriste du 14 juillet 2016 à Nice, en France. *Arch Pediatr* 24(12):1220-1227.

4. Solla F, Carboni J, Fernandez A, Dupont A, Chivoret N, Brézac G,... Bréaud J (2019) Severe casualties from Bastille Day Attack in Nice, France. *Eur J Trauma Emerg Surg* 45:857–864.
<https://doi.org/10.1007/s00068-0180901-3>
5. Askenazy F, Gindt M, Chauvelin L, Battista M, Guenolé F, Thümmeler S (2019) Early phase psychiatric response for children and adolescents after mass trauma: lessons learned from the truck-ramming attack in Nice on July 14th, 2016. *Front psychiatry* 10.
6. Alisic E, Zalta AK, van Wesel F, et al. (2014) Rates of post-traumatic stress disorder in trauma-exposed children and adolescents: meta-analysis. *Br J Psychiatry* 2004:335-40.
7. Diagnostic, A. P. A. statistical manual of mental disorders: DSM-5 2013. *Washington, DC: American Psychiatric Association*.
8. Goenjian AK, Roussos A, Steinberg AM, Sotiropoulou C, Walling D, Kakaki M, Karagianni S (2011) Longitudinal study of PTSD, depression, and quality of life among adolescents after the Parnitha earthquake. *J Affect Disord* 133(3):509-515.
9. Hornor G. (2012) Emotional maltreatment. *J Pediatr Health Care* 26(6):436-442.
10. Kavanaugh BC, Dupont-Frechette JA, Jerskey BA, Holler KA (2017) Neurocognitive deficits in children and adolescents following maltreatment: Neurodevelopmental consequences and neuropsychological implications of traumatic stress. *Appl Neuropsychol Child* 6(1):64-78.
11. Alisic E, Van der Schoot TA, van Ginkel JR, Kleber RJ (2008) Looking beyond posttraumatic stress disorder in children: Posttraumatic stress reactions, posttraumatic growth, and quality of life in a general population sample. *J Clin Psychiatry* 69(9):1455-1461.
12. Sawaguchi T, Kamo T. (2018) Some Attentional Points in the Clinical Aspects of Trauma Care. *Nihon Eiseigaku Zasshi* 73(1):57-61.
13. Herringa RJ. (2017) Trauma, PTSD, and the developing brain. *Curr Psychiatry Rep* 19(10):69.
14. Salmon K, Bryant RA. (2002) Posttraumatic stress disorder in children: The influence of developmental factors. *Clin Psychol Rev* 22(2):163-188.
15. Dube A, Moffatt M, Davison C, Bartels S. (2018) Health outcomes for children in Haiti since the 2010 earthquake: a systematic review. *Prehosp Disaster Med* 33(1):77-88.
16. Dvir Y, Ford JD, Hill M, Frazier JA. (2014) Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harv Rev Psychiatry* 22(3):149.
17. La Greca AM, Silverman WK, Wasserstein SB. (1998) Children's predisaster functioning as a predictor of posttraumatic stress following Hurricane Andrew. *J Consult Clin Psychol* 66(6):883.
18. Lai BS, La Greca AM, Auslander BA, Short MB. (2013) Children's symptoms of posttraumatic stress and depression after a natural disaster: Comorbidity and risk factors. *J Affect Disord* 146(1):71-78.
19. Meewisse ML, Olff M, Kleber R, Kitchiner NJ, Gersons BP. (2011) The course of mental health disorders after a disaster: Predictors and comorbidity. *J Trauma Stress* 24(4):405-413.
20. Ferry FR, Brady SE, Bunting BP, Murphy SD, Bolton D, O'Neill SM. (2015) The Economic Burden of PTSD in Northern Ireland. *J Trauma Stress* 28(3):191-7. doi: 10.1002/jts.22008. Epub 2015 May 19.

PMID: 25990825.

21. Goenjian AK, Steinberg AM, Walling D, Bishop S, Karayan I, Pynoos R (2020) 25-year follow-up of treated and not-treated adolescents after the Spitak earthquake: course and predictors of PTSD and depression. *Psychol Med* 1:13
22. Alisic E, Jongmans MJ, van Wesel F, Kleber RJ. (2011) Building child trauma theory from longitudinal studies: A meta-analysis. *Clin Psychol Rev* 31(5):736-747.
23. Geronazzo-Alman L, Guffanti G, Eisenberg R, Fan B, Musa GJ, Wicks J, Hoven C (2018) Comorbidity classes and associated impairment, demographics and 9/11-exposures in 8,236 children and adolescents. *J Psychiatr Res* 96:171-177.
24. Hoven CW, Duarte CS, Lucas CP, Wu P, Mandell DJ, Goodwin RD, Susser E (2005) Psychopathology among New York City public school children 6 months after September 11. *Arch gen psychiatry* 62(5):545-551.
25. National Collaborating Centre for Mental Health. (2005) Post-traumatic stress disorder. In *Post-Traumatic Stress Disorder: The Management of PTSD in Adults and Children in Primary and Secondary Care*. Gaskell.
26. Schäfer I, Hopchet M, Vandamme N, Ajdukovic D, El-Hage W, Egretieu L, ... Murphy D. (2018) Trauma and trauma care in Europe. *Eur J Psychotraumatol* 9(1):155-163.
27. World Health Organization. (2013) Guidelines for the management of conditions that are specifically related to stress. World Health Organization.
28. AACAP. (1998) Practice parameters for the assessment and treatment of children and adolescents with posttraumatic stress disorder. *J Am Acad Child Psychiatry* 37(10):4S–26S. doi: 10.1097/00004583-19981000100002.
29. Halevi G, Djalovski A, Vengrober A, Feldman R. (2016) Risk and resilience trajectories in war-exposed children across the first decade of life. *J Child Psychol Psychiatry* 57(10):1183-1193.
30. Whitson ML, Connell CM. (2016) The relation of exposure to traumatic events and longitudinal mental health outcomes for children enrolled in systems of care: Results from a national system of care evaluation. *Am J Community Psychol* 57(3-4):380-390.
31. Davidson JRT, Connor KM. (2001) Natural course of PTSD and its long-term treatment. *Eur Neuropsychopharmacol* 11(11):S148-S149.
32. Masten AS, Narayan AJ. (2012) Child development in the context of disaster, war, and terrorism: Pathways of risk and resilience. *Annu Rev Psychol* 63:227-257.
33. Skar AMS, Jensen TK, Harpviken AN. (2021) Who Reports What? A Comparison of Child and Caregivers' Reports of Child Trauma Exposure and Associations to Post-Traumatic Stress Symptoms and Functional Impairment in Child and Adolescent Mental Health Clinics. *Res Child Adolesc Psychopathol* 49(7):919-934.
34. Landolt MA, Schnyder U, Maier T, Schoenbucher V, Mohler-Kuo M. (2013) Trauma exposure and posttraumatic stress disorder in adolescents: A national survey in Switzerland. *J Trauma Stress* 26(2):209-216.

35. Chossegros L, Hours M, Charnay P, Bernard M, Fort E, Boisson D, ... Laumon B. (2011) Predictive factors of chronic post-traumatic stress disorder 6 months after a road traffic accident. *Accid Anal Prev* 43(1):471-477.
36. Huemer J, Erhart F, Steiner H. (2010) Posttraumatic stress disorder in children and adolescents: a review of psychopharmacological treatment. **Child Psychiatry Hum Dev** 41(6):624-640.
37. Kearney CA, Wechsler A, Kaur H, Lemos-Miller A. (2010) Posttraumatic stress disorder in maltreated youth: A review of contemporary research and thought. *Clin Child Fam Psychol Rev* 13(1):46-76.
38. Scrimin S, Moscardino U, Capello F, Altoè G, Steinberg AM, Pynoos RS. (2011) Trauma reminders and PTSD symptoms in children three years after a terrorist attack in Beslan. *Soc Sci Med* 72(5):694-700.
39. Ularntinon S, Piyasil V, Ketumarn P, Sitdhiraksa N, Pityaratstian N, Lerthattasilp T, ... Pimratana W. (2008). Assessment of psychopathological consequences in children at 3 years after tsunami disaster. *J Med Assoc Thai* 91(Suppl 3):S69-S75.
40. Woolgar F, Garfield H, Dalgleish T, Meiser-Stedman R. (2021) Systematic Review and Meta-analysis: Prevalence of Posttraumatic Stress Disorder (PTSD) in trauma-exposed preschool-aged children *J Am Acad Child Adolesc Psychiatry*.
41. Caldwell BA, Redeker N. (2005) Sleep and trauma: An overview. **Issues Ment Health Nurs** 26(7):721-738.
42. Charuvastra A, Cloitre M. (2009) Safe enough to sleep: sleep disruptions associated with trauma, posttraumatic stress, and anxiety in children and adolescents. *Child Adolesc Psychiatr Clin N Am* 18(4):877-891.
43. Kovachy B, O'Hara R, Hawkins N, Gershon A, Primeau MM, Madej J, Carrion V. (2013) Sleep disturbance in pediatric PTSD: current findings and future directions. *J Clin Sleep Med* 9(5):501-510.
44. Wamser-Nanney R, Chesher RE. (2018) Trauma characteristics and sleep impairment among trauma-exposed children. **Child Abuse Negl** 76:469-479.
45. Beers SR, De Bellis MD. (2002) Neuropsychological function in children with maltreatment-related posttraumatic stress disorder. *Am J Psychiatry* 159(3): 483-486.
46. De Bellis MD, Hooper SR, Spratt EG, Woolley DP. (2009) Neuropsychological findings in childhood neglect and their relationships to pediatric PTSD. *J Int Neuropsychol Soc* 15(6):868-878.
47. Hodgdon HB, Liebman R, Martin L, Suvak M, Beserra K, Rosenblum W, Spinazzola J. (2018) The effects of trauma type and executive dysfunction on symptom expression of polyvictimized youth in residential care. *J Trauma Stress* 31(2):255-264.
48. Bouvard M. (2008) Échelles et questionnaires d'évaluation chez l'enfant et l'adolescent. Volume 2. Elsevier Health Sciences France.
49. Basu A, Farkas DK, Jiang T, Koenen KC, Lash TL, Sørensen HT, Gradus JL. (2019). Incident psychiatric comorbidity following stress disorder diagnoses in Danish school-aged children: prospective population-based study. *Br J Psychiatry* 1-6.

50. Davis L, Siegel LJ. (2000) Posttraumatic stress disorder in children and adolescents: A review and analysis. *Clin Child Fam Psychol Rev* 3(3):135-154.
51. Bisson JI, Ehlers A, Matthews R, Pilling S, Richards D, Turner S. (2007) Psychological treatments for chronic post-traumatic stress disorder: Systematic review and meta-analysis. *Br J Psychiatry* 190(2):97-104.
52. Stein DJ, Ipser J, McAnda N. (2009) Pharmacotherapy of posttraumatic stress disorder: a review of metaanalyses and treatment guidelines. *Cns spectr* 14(1 Suppl 1):25-31.
53. Legerstee JS, Tulen JH, Dierckx B, Treffers PD, Verhulst FC, Utens EM. (2010) CBT for childhood anxiety disorders: differential changes in selective attention between treatment responders and non-responders. *J Child Psychol Psychiatry* 51(2):162-172.
54. Mavranouzouli I, Megnin_ Viggars O, Daly C, Dias S, Stockton S, Meiser_ Stedman R, ... Pilling S. (2020) Research Review: Psychological and psychosocial treatments for children and young people with post- traumatic stress disorder: a network meta- analysis. *J Child Psychol Psychiatry* 61(1):18-29.
55. Neigh GN, Gillespie CF, Nemeroff CB. (2009) The neurobiological toll of child abuse and neglect. *Trauma Violence Abuse* 10(4):389-410.
56. Ogle CM, Rubin DC, Siegler IC. (2013) The impact of the developmental timing of trauma exposure on PTSD symptoms and psychosocial functioning among older adults. *Dev Psychol* 49(11):2191.
57. Bonanno GA, Diminich ED. (2013) Annual Research Review: Positive adjustment to adversity–trajectories of minimal–impact resilience and emergent resilience. *J Child Psychol Psychiatry* 54(4):378-401.
58. Holbrook TL, Hoyt DB, Coimbra R, Potenza B, Sise M, Anderson JP. (2005) Long-term posttraumatic stress disorder persists after major trauma in adolescents: new data on risk factors and functional outcome. *J Trauma Acute Care Surg* 58(4):764-771.
59. Koren D, Arnon I, Klein E. (2001) Long term course of chronic posttraumatic stress disorder in traffic accident victims: a three-year prospective follow-up study. *Behav Res Ther* 39(12):1449-1458.
60. Yang P, Wu MT, Hsu CC, Ker JH. (2004) Evidence of early neurobiological alternations in adolescents with posttraumatic stress disorder: a functional MRI study. *Neurosci Lett* 370(1):13-18.
61. Solomon Z, Mikulincer M. (2006) Trajectories of PTSD: a 20-year longitudinal study. *Am J Psychiatry* 163(4):659-666.
62. Tarrier N, Sommerfield C. (2004). Treatment of chronic PTSD by cognitive therapy and exposure: 5-year follow-up. *Behav Ther* 35(2):231-246.

Figures

Figure 1

Other kinds of trauma from 2017 to 2019 (N=337)

Figure 2

Number of new visits according to the type of trauma.

Figure 3

number of follow-up visits according to the traumatic event