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NEUROPSYCHOLOGICAL AND/OR PSYCHOLOGICAL FACTORS OF CHILDREN'S TRAUMATIC BEHAVIOR UNDER THE AGE OF 10 YEARS

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Abstract. Many children become disabled during their entire lives (Alisic et al., 2014; Cohen, 2009; Draper, 2007). The historic UN Convention on the Rights of the Child, ratified by almost all the governments of the world, states that all children have the right to a safe environment and to protection from injury. The traumatic situation has several psychological factors contributing to the injury and to the characteristic consequences (Shi, 2015). These factors relate to the children's living conditions and social situations in which children participate (Bonander, 2017; Gregorovski, 2013; Loeb et al., 2011). **The aim of the research** is to reveal micro-social factors which lead to re-injuries in children aged 5–10: peculiarities of (pseudo) hyperactivity disorders, interaction between adults who are taking care of the children, daily traditions in families of injured children. ***Research methods and participants.*** The research sample (n=350) was drawn from the general population in Russia. The youngest participant was 5 years old and the oldest was 10. Research was conducted in Tyumen, Russia, Regional Clinical Hospitals, schools, and kindergartens in 2016–2019. ***Conclusions.*** True hyperactivity disorders were revealed in no more than 5% of children. Thus, here we deal with pseudo-hyperactivity. To reduce the risk of injury in children it is necessary to differentiate between two types of pathogenic factors influencing trauma: minimal brain dysfunction in children (biological) and parental behavior (social).

Keywords: re-traumatization, children's injuries, interdisciplinary interaction, psychological factors, family circumstances.

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INTRODUCTION

According to the World Health Organization's forecast, mortality rates will increase globally by 2030 (Mathers, 2008). According to the World Report on Child Injury Prevention, millions of children need medical care in hospitals every year due to non-fatal injuries (World Health Organization, 2008). Some authors suggest that only a holistic (biopsychosocial) perspective on the understanding of health can reduce mortality (Von Kanel, 2008). The scientists should develop practical predictors of psychological outcomes of child traumas to prevent re-traumatization in children. The limited research to date assessing risk for ongoing distress after trauma exposure has identified some indicators of risk but no reliable way to gauge whether a given family's child will recover on his or her own or will require some intervention. More research is needed in this area, including the development of well-validated risk assessment tools that can be feasibly implemented in diverse settings and for diverse traumatic events and that will help identify the high-risk children and who are in need of clinical services (Dehon, 2006; Sumner, 2015). If a child is active, emotional, difficult to control, naughty, this does not prevent him/her from developing within the framework of the norm and becoming a full member of society (he/she knows how to communicate with peers, make friends, etc.), in this case his/her increased activity is not connected with a medical diagnosis of attention deficit hyperactivity disorder (ADHD). A simple way to distinguish attention deficit hyperactivity disorder from a child with increased mobility is to analyze the child's behavior in different situations. Often a child behaves badly close to their parents – the child is overactive and emotional, naughty and hysterical. But, according to the reviews of the teachers of the kindergarten or nanny, the child is quite calm and stable (Bonander, 2016). This difference in the behavior of the child is a signal for parents: it is they who must adjust their behavior in relation to this child. With attention deficit hyperactivity disorder (ADHD), the child behaves the same under different conditions: in any place, in any company, under any circumstances, he/she exhibits the main symptoms (Shaw, 2011; Bonander, 2016). When a child has attention deficit hyperactivity disorder, it cannot be collective, it cannot adequately respond to attempts to communicate with it, it is difficult for it to understand communication, it cannot learn, etc. Even with careful observation of the child, the parent or the guardian will not be able to determine if he/she is really sick. (Faraone, 1996).

Attention deficit hyperactivity disorder can be correctly determined only by a child psychiatrist or child psychologist (Morein-Zamir, 2008).

We should know what kind of treatment is necessary to be effective for children and how to work with parents. We need to determine whether commonly-used treatment and intervention approaches, such as supportive therapy and play therapy, are effective and, if so, for whom. Similarly, the use of medication to address trauma-related symptoms and reactions in trauma-exposed youth is very poorly understood. Progress in these areas would enable us to add more evidence-based treatments to our repertoire. We also need intervention development that targets risk-enhancing and buffering influences on children's trauma reactions. As interventions are developed and evaluated, we need to understand how to match the type, intensity, and duration of the treatment to the needs of children and families over time. Finally, we need to understand whether current treatments can be used with children and families across diverse types of trauma, diverse developmental levels, and in diverse environments and cultural contexts, or whether they need adaptation.

Two particular gaps in intervention are noteworthy. First, we have almost no information on the effectiveness of interventions for the early or acute phase of trauma recovery. Second, there are gaps in our treatments for those exposed to pervasive, widespread, or chronic trauma (Shi, 2015).

Finally, we need to determine how to disseminate the evidence-based treatments we already have so that they are readily accessible to mental health professionals across the country. Practical, flexible, and feasible tools that professionals can use to augment their current practice are greatly needed (Worrell, 2006). A significant number of children are exposed to traumatic life events. A traumatic event is one that threatens injury, death, or the physical integrity of self or others and also causes horror, terror, or helplessness at the time it occurs. Traumatic events include sexual abuse, physical abuse, domestic violence, community and school violence, medical trauma, motor vehicle accidents, acts of terrorism, natural and human-made disasters, suicides, and other traumatic losses. In community samples, more than two thirds of children report experiencing a traumatic event by age 16. However, estimates of trauma exposure rates and subsequent psychological sequelae among children and youth have varied depending on the type of sample, type of measure, informant source, and other factors.

Potentially traumatic events affect large numbers of children. In 2006, 7.9 million U.S. children received emergency medical care for unintentional injuries (from motor vehicle crashes, falls, fires, dog bites, near drowning, etc.), and more than 400,000 for injuries sustained due to violence. Race and ethnicity, poverty status, and gender affect children's risk of exposure to trauma. For example, significantly more boys than girls are exposed to traumatic events in the context of community violence, and serious injury disproportionately affects boys, youths living in poverty, and Native American youths.

It is more common than not for children and adolescents to be exposed to more than a single traumatic event. Children exposed to chronic and pervasive trauma are especially vulnerable to the impact of re-traumatization. When children and families come to the attention of helping professionals, the identified trauma may not be the one that is most distressing to the child. For this reason, gathering a thorough, detailed history of trauma exposure is essential (Sumner, 2015). After exposure to a trauma distress is almost universal. Children vary in the nature of their responses to traumatic experiences. The reactions of individual may be influenced by their developmental level, cultural factors, previous trauma exposure, available resources, and preexisting child and family problems. However, nearly all children and adolescents express some kind of distress or behavioral change in the acute phase of recovery from a traumatic event. Not all short-term responses to trauma are problematic, and some behavior changes may reflect adaptive attempts to cope with a difficult or challenging experience.

Many of the reactions displayed by children and adolescents who have been exposed to traumatic events are similar or identical to behaviors that mental health professionals see on a daily basis in their practice. These include the development of new fears, separation anxiety (particularly in young children), sleep disturbance, nightmares, sadness, loss of interest in normal activities, reduced concentration, decline in schoolwork, anger, somatic complaints, and irritability.

Functioning in the family, peer group, or school may be impaired as a result of such symptoms. Therefore, when working with children who may display these types of reactions, the clinician must make a careful assessment of possible exposure to trauma (Ylvisaker et al., 2005). In addition to injury characteristics, environmental factors have been considered. When injury severity, family psychiatric history, socioeconomic status, and family

functioning were examined simultaneously, only family functioning was significantly associated with ADHD symptoms, with poor family functioning associated with more severe ADHD symptoms (Megan E., Narad, 2018).

METHODS AND PARTICIPANTS

Participants: a total of 350 people, including 50 children with repeated (≥ 2) injuries (experimental group), 50 children with one injury (comparison group), 50 children without injuries (control). The average age of the participants was 6.8 years (74.2 percent of boys and 25.8 percent of girls).The youngest participant was 5 years old, and the oldest was 10 years old. Of the 200 adults (aged 25–75 years), these were parents, grandparents, guardians and teachers. The study was conducted in Tyumen, Russia, in the regional clinical hospital, in schools and kindergartens. Children and adults participated in interviews and testing from 2016 to 2019. The research program was supported by the Russian Foundation for basic research, project number 19-31-27001.

Instruments of the research: standard neuropsychological tests A. V. Semenovich, detection hyperactivity criteria according to P. Baker and M. Alvord's tests, B. S. Volkova and N. V. Volkov's questionnaire, psychological portrait of a parent/teacher by G. V. Rezapkina tests. And author's techniques: standardized interviews: "How do I see my child in our family", "Subjective evaluation of parents of their type of education". For the convenience of statistical analysis, encoded responses were used in accordance with the methods used. In the methodology "Subjective assessment by parents of their type of upbringing", parents evaluate on a scale from 0 to 7 points, which corresponds to their relationship with the child. To assess risk factors in accordance with the parenting style, we used the logic described in the methodology "Analysis of family relationships" (Eidemiller and Justickis, 2008). The evaluation method is a subjective scale, as in the Dembo-Rubinstein method (Prikhozhan, 1988).

In most cases we interviewed with parents, doctors, psychologists, educators. Projective tests for children: "Drawing a nonexistent animal" by Dukarevich, "Family sociogram" by Eidemiller (Rajgorodskij, 2000; Eidemiller, 2008). Projective methods for children made it possible to determine (according to the author's norms of interpretation for each method) the presence of signs in the child. Those characteristics that

were identified during data processing were encoded 1, their absence was designated 0.

Measured parameters. In children: the total number of injuries, activity (physical), psycho-emotional state, individual characteristic features, of nervous systems assessment, self-confidence, anxiety, hostility, interests, fears, aggression, decision-making, the ability to assess potentially dangerous situations.

In adults: psycho-emotional state, parent's style of upbringing, family relationships, ability to understand children, priority values, level of subjective control, affection, parent's attitude to the child's injuries.

THE RESULTS

The statistical significance of the differences between the three groups of children (experimental group, comparison group, control) was evaluated. In accordance with the purpose of the article, several scales were selected that, when processing the results, showed the presence of statistically significant differences (see Table 1).

The data obtained during the study were processed using the software system STATISTICA 10. *Statistical significance was set at $p<0.05$* (Mann-Whitney U-test).

Table 1. *Characteristics of children from the examined groups (Mean±Standard Deviation).*

Characteristic	*Method*	*Children groups*		
		1.with re-injuries (n=50)	*2.with one injury (n=50)*	*3.without injuries (n=50)*
1. Parental hyperprotection	Subjective evaluation of parents of their type of education	5.82±0.47	4.62±0.621	3.64±0.951
2. Children's needs	Subjective evaluation of parents of their type of education	3.36±0.16	4.24±0.291	5.14±0.211
3. Duties in children	Subjective evaluation of parents of their type of education	3.42±0.22	4.33±0.481	5.36±0.341

Table 1 *cont.*

Characteristic	*Method*	*Children groups*		
		1.with re-injuries (n=50)	*2.with one injury (n=50)*	*3.without injuries (n=50)*
4. Requirements to the child	Subjective evaluation of parents of their type of education	2.94±0.34	4.48±0.281	5.38±0.371
5. Sanctions toward a child for misconduct	Subjective evaluation of parents of their type of education	5.33±0.21	4.52±0.351	3.95±0.291
6. Child anxiety	Kinetic drawing of his family	0.50±0.08	0.30±0.021	0.25±0.031
7. Feeling of inferiority in the family	Drawing a nonexistent animal	0.30±0.06	0.20±0.041	0.15±0.021
8. Emotional rejection	Family sociogram	0.61±0.11	0.42±0.081	0.25±0.111

For analysis, we divided the characteristics under discussion into 2 groups: 1 group (1, 2, 3, 4, 5) and 2 group (6, 7, 8). In group 1, we included characteristics that determine the state of relations with parents. Obviously, there is a careless attitude of parents to the children who made up the experimental group. In children (experimental group) there is a noticeable number of states of destabilization and personality dysfunction. Parents protect their children (1) (experimental group) but needs and requirements are not met (2), responsibilities and requirements are not high (3.4). Please note that in children with 1 injury, the values are intermediate. This indicates serious contradictions in relations with parents in the group of children (experimental group).

In group 2, we included characteristics of the personal state of children. This can be described as disorientation and stress. Noted in the experimental group of children were high anxiety in the child, a feeling of emotional rejection, as well as a feeling of inferiority arising in these children. Under these conditions, children find themselves in a state of conflicting imbalance.

There was both increased activity (hyperactivity) and a chronic desire to remove the contradiction given by parents (high search activity). Thus,

we are not talking about diseases, but about the state of increased motor activity (pseudo-hyperactivity) in children of the experimental group.

DISCUSSION

The true hyperactivity disorder was revealed in no more than 5–7% of children, whom their parents and sometimes pediatricians consider hyperactive. Thus, mainly we deal with pseudo-hyperactivity, so to reduce the risk of injury it is necessary to differentiate between two types of pathogenic factors: minimal brain dysfunction (biological) and parental behavior (social) (Eidemiller and Justickis, 2008; Shaw et al., 2011; Jacobson et al., 2018). In more than 90% of cases, pathogenic factors were revealed in the parent-child relationship.

Unlike children with false hyperactivity, children with true hyperactivity disorder have some kind of mental dysfunction as a rule. Behavioral disorders in these children are connected with poor movement, coordination, insufficient fine motor skills, impaired mutual movement coordination and moderate ataxia, emotional lability, some developmental delay, difficulties in perception and assimilation of educational material, speech defects, mild neurological disorders (Draper and Ponsford, 2007; Faraone et al., 1996). The pathogenesis of hyperactivity disorder is probably based on adequate information processing leading to the fact that various visual, sound, and emotional stimuli become excessive for the child, causing anxiety, irritation and aggressiveness. Malfunctions of the activating function of the reticular formation determine secondary disorders of the neurotransmission metabolism of the brain. More often than in the general pediatric population, speech disorders are observed in truly hyperactive children (Jacobson et al., 2018). In our research, traumatic behavior refers to behavior of any participants in a situation that increases the risk of a child to be injured. Participants in a traumatic situation are not only the children themselves but their parents or other people involved in contact with children in different social institutions (kindergarten, school etc.) (Draper et al., 2007; Bonander et al., 2016). A child tries to cope with both biological (less often) and social (mainly) factors by means of his activity. The more problems the child faces, the more "hyper" is manifested in its activity. Parents do not realize, that the traumatic behavior of their children is mainly caused by intra-family

factors (micro-social circumstance) such as daily routine, parent's relationship style with family members, individual characteristics of children etc. Parents think the reasons for the high level of injuries by the children [are found] in their high motor activity, anxiety and curiosity, imperfect motor skills and coordination of movements, as well as in reduced sense of danger (Dehon, 2006). Doctors encounter unconscious resistance from family members who avoid to recognize the problem as systemic, and to accept responsibility for the difficulties in the family, and for the child injury as well. Our psychological research reveals that relationships between family members may be causes for re-injuries in children.

CONCLUSIONS

1. Parental disorganization of the living space of their children and irresponsible attitude to the injuries of their children: there is disorganized daily routine, uncertainty of the rules and daily requirements, connivance in behavior and unexpectedly undue punishments. The vagueness of requirements and inconsistency of parents encourage the child to strengthen his/her daily activities, trying to find the missing supports. The increased activity of the child is interpreted by mistake as attention deficit hyperactivity disorder (ADHD).

2. The effect on a child of secondary benefits from a primary unintentional injury: as a result, a stable semantic pattern is formed, which finds its behavioral expression in the high activity and risk of the child. That creates the prerequisites or implicit readiness for re-traumatizing of the child and an unconscious perception that any injury or illness is good. Thanks to a re-injury, the child achieves some secondary benefits: structured daily life (the daily routine is organized by parents, taking into account the implementation of all necessary medical procedures); parents take into account the needs of the ill child, partly reducing requirements for him/her; parents and child get closer to each other emotionally and physically (parents take care of him/her during the difficult period of life). As a result, every injury allows the child to compensate the absence of attention of parents, at least partly.

3. When working with patients and families with a history of re-injures in children, the assessment of family functioning, the identification

of families at risk and the development of programs to promote healthy family functioning to achieve positive results should be integrated into clinical practice. This information can also be useful before a traumatic event, and thus can be used in a preventative format. It is important for adults to know that children understand and respond to traumatic events based on their developmental level. Parental expectations need to be consistent with what is typical for their child's age. If the individuals in a child's support system understand his or her behavior and distress as normal reactions to abnormal events, they can better support the child during the recovery period.

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VAIKŲ IKI 10 M. TRAUMATINIO ELGESIO NEUROPSICHOLOGINIAI IR PSICHOLOGINIAI YPATUMAI

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Santrauka. Yra daug vaikų, kurie gyvenime tampa neįgalūs (Alisic et al., 2014; Cohen, 2009; Draper, 2007). Istorinėje Vaikų teisių apsaugos konvencijoje, kurią ratifikavo beveik visos pasaulio vyriausybės, teigiama, jog kiekvienas vaikas turi teisę į saugią aplinką ir apsaugą nuo traumų. Trauminė situacija ir jos pasekmės susijusios su įvairiais psichologiniais faktoriais (Shi, 2015), kurie siejami su vaiko aplinka ir socialine situacija, kurioje vaikas dalyvauja (Bonander, 2017; Gregorovski, 2013; Loeb et al., 2011). Tyrimo tikslas – atskleisti mikrosocialinius faktorius, kurie susiję su pakartotina 5–10 metų vaikų trauma: (pseudo) hiperaktyvumo susirgimų ypatumus, sąveiką tarp suaugusiųjų, besirūpinančių vaikais, traumuotų vaikų šeimos kasdienius įpročius. Tyrimo metodai ir dalyviai – tiriamieji (n=350; 74,2 proc. berniukų ir 25,8 proc. mergaičių) buvo atrinkti iš bendro Rusijos gyventojų skaičiaus. Jauniausias tyrimo dalyvis buvo 5 metų, vyriausias – 10 metų. Tyrimas atliktas Tiumenės (Rusija) regioninėse klinikinėse ligoninėse, mokyklose, vaikų darželiuose 2016–2019 metais. **Išvados:** tikro hiperaktyvumo sutrikimai buvo nustatyti daugiau negu 5 proc. vaikų. Be to, pastebėta ir pseudohiperaktyvumo atvejų. Kad būtų galima sumažinti vaikų traumų atvejų, būtina išskirti du patogeninius veiksnius, susijusius su traumomis: minimalią vaikų smegenų disfunkciją (biologinis) ir tėvų elgesį (socialinis).

Reikšminiai žodžiai: retraumatizacija, vaikų sužalojimai, tarpdisciplininė sąveika, psichologiniai veiksniai, šeimos aplinkybės.

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