



## Research report

## Prevalence of post-traumatic stress disorder and depression in two groups of children one year after the January 2010 earthquake in Haiti

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## ABSTRACT

**Background:** More than 500 studies were conducted in Haiti following the January 12 of 2010 earthquake, yet few of them assessed mental health of the population. To our knowledge, none targeted the effectiveness of various methods used to treat survivors, whether adults or children

**Method:** Our study aimed to assess one year after the disaster, the effect of a specific psycho-social support offered to relocated children in Port-au-Prince compared with a control group.

**Results:** The two groups were homogeneous in the intensity of the peritraumatic distress they experienced. We were unable to show a significant difference between both in the average scores for PTSD, nor for depression, nor in three out of the four sub-scales of the Child Behavior Check-List. In case children, 68% and 40.9%, respectively, and 50% and 20.5% of the control group, reported severe levels of the symptoms of PTSD and depression. These surprising results can be explained by the absence of equivalence in the two groups from a socio-demographic point of view and because subjects were not randomly selected in the recruitment process.

**Conclusion:** This study has not made it possible to indicate the effectiveness of a specific psycho-social support offered to children in the aftermath of the disaster. On the other hand, the sample illustrates the high prevalence (more than 50% for PTSD) of severe post-traumatic stress in this group of school-age children, one year after the earthquake.

These results indicate that serious attention should be paid to the mental health aspects in reconstruction program for the country.

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## 1. Introduction

## 1.1. Natural disasters: PTSD and comorbidity in children in a developmental context

It has been proven through research stretching over several decades that children and adolescents can suffer from Post-traumatic stress disorder (American Psychiatric Association, 2013; Bremner and Vermetten, 2001; Giannopoulou et al., 2006). Traumatic exposure in children has become a major public health problem throughout the world, when the disastrous consequences

are taken into account with respect to the subject studied, their family and their community (See, Fairbank et al., 2007 for review). Disparities emerge from epidemiological research into the prevalence of the condition in this age group. On the one hand, certain studies indicate a higher level of symptoms in girls; on the other hand, a second group claims the opposite result; a third series suggests that both genders react equally with respect to the symptoms they report. According to the review produced by Berriault et al. (2007) the seriousness of the effect on the lives of children exposed to trauma varies between 18% and 84%. Furthermore, the development of PTSD in lifetime is estimated at 1.3%. The literature tends to show that the disorder is more prevalent in children and adolescents who have been exposed to specific events affecting the whole community. These include terrorist attacks, hurricanes, earthquakes, fires, industrial disasters and armed conflicts. In a study performed on 80 boys and 79 girls assessed after

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a serial killing, 60% of them met the criteria for PTSD (Fairbank et al., 2007).

Children's dependence on others makes them more vulnerable in disaster situations (Lubit and Eth, 2003), affecting them in numerous ways. This results in post-traumatic psychiatric disturbances and neuro-physiological changes, which have repercussions on emotional development (Bremner and Vermetten, 2001). According to Anderson (2005), post-traumatic reactions can vary enormously, depending on age, stage of development and the variables inherent in the event (its origin, severity and duration). There is a marked difference between the symptomatology of PTSD, as defined in the DSM, and between the way it presents in children and in adults.

Studies identified by Lubit and Eth (2003) demonstrate that the scale of the damage caused by exposure to trauma in a child's life is governed by several parameters. These include the individual's temperament; in other words, the threshold of reactivity and the force of reaction contribute to his/her vulnerability to trauma. A child with a personal history of over-exposure to trauma is at greater risk when faced with new traumatic experiences (Macdonald et al., 2010). After a disaster, the majority of subjects directly exposed may present with significant psychiatric symptoms, sometimes corresponding to specific clinical entities. In similar cases, the most common post-traumatic symptoms will consist of reactions of fear, anhedonia, attention and learning deficits, the intensification of specific fears, excessive dependency and subsequent regressive behavior. Exposure to trauma may also produce several forms of anxiety, symptoms of depression and dissociation, as well as behavioral disorders. Other authors identify sleep disruption, nightmares, fears linked to the traumatic event and repetitive post-traumatic game-playing (Romano et al., 2008); and regression, especially excessively clinging to caregivers, separation anxiety and the loss of skills previously acquired. Other symptoms have frequently been reported such as disturbing thoughts, blunting of reactions and isolation, hyperactivity, depression, generalized anxiety (Giannopoulou, et al., 2006), panic attacks, difficulty in concentration, irritability, dysphoria, somatic complaints and substance abuse. Anxiety, depression and behavioral disorders may increase in the months following the incident. The manifestation of PTSD is often delayed, however (Goenjian, et al., 2005).

With respect to the psychological consequences of childhood exposure to an earthquake, studies have focused on the development of PTSD in subjects exposed to this type of event. Giannopoulou et al. (2006) report on epidemiological data collected from young survivors of earthquakes in Taiwan and Armenia and note a prevalence rate of post-traumatic symptoms between 21% and 70%. These authors recorded similar results with respect to the predictive value of variables such as the distance from the epicenter and the magnitude of the earthquake in the internal development of PTSD in the child. Hizli et al. (2009) obtained results that were rather more divergent, however. They proceeded to perform an epidemiological study that included children and adolescents aged 8 to 18 years who had survived the 1999 earthquake in Turkey and who had subsequently moved to the capital, Ankara. Contrary to previous research, the subjective perception of the earthquake proved to be the predictor of a high score on instruments measuring post-traumatic stress and depression. The quake's impact did not represent a predictive factor in the development of post-traumatic reactions.

At this stage, we shall also mention other relevant studies with focus on adolescent. Six and a half years after the earthquake that occurred at Spatak in Greece, in a sample of orphaned adolescents or who had not been orphaned, the prevalence of post-traumatic symptoms of depression and stress was considerable. While a significant difference was observed between the two groups with respect to depression, none was observed regarding the prevalence of the symptoms of PTSD. The authors concluded that this absence of difference could be explained by the similarity in terms of severity of

the trauma, rather than by the loss of a parent during the earthquake (Goenjian et al., 2009).

Various data on the effect of exposure to earthquake of great magnitude on suicidal ideation in adolescent have been reported in the literature ultimately. For example, one month after the powerful earthquake that struck Sichuan, China in May 2008, in a population of 3324 students from secondary school, 623 revealed experiences of suicidal ideation before the quake. In this group, 57.4% had reported a decrease in their suicidal ideation in the aftermath of the event (Yu et al., 2010). Nevertheless, the prevalence of depression and suicidal ideation was in the range of 20% and 10% in the global population of 3324 adolescents recruited from a town close to the epicenter, Chengdu (Lau et al., 2010). In the sample, the interruption of schooling and exposure to horrifying bulletin in the press related to the event represented risk factors for symptoms of PTSD and depression, while a good level of perceived social support and the sense of security fed by the educator or friends were protective factors. With regard to suicidal ideation, in addition to the interruption of schooling, being female, presence of PTSD, a superior academic performance were included among risk factors; however, perceived social support, exposure to pathetic news from the media, not to mention the sense of security generates by teachers following the event represented protective factors. Furthermore, concerning the effects of the same earthquake occurred in China in 2008 in a group of secondary school students in the range of 15 and 18 years old exposed in the area of Wenchuan, the results from a longitudinal study have demonstrated that depression was a major risk factor for suicidal ideation whose prevalence at 6–12–18 months after the disaster was 35.6% 35.6% - 30.7% (Ran et al., 2014), respectively.

Despite researchers have started to pay more attention to the effects of exposure to earthquake and other natural disaster on suicidal behaviors in adults and adolescents, studies on subjects including younger children are very rare (Kolves et al., 2013).

Ultimately, what emerges from numerous observations based in the previous studies is the importance of introducing structured and effective mental health programs that will benefit the victims, especially those groups at greatest risk in disaster situations.

Schnyder (2005) produced an inventory of various therapeutic approaches for dealing with PTSD. He divided them into three major categories depending on the aim of the treatment and the amount of time spent on it. 1) Early intervention, also known as 'psychosocial, psychological, psychiatric or psychotherapeutic intervention' is designed to prevent the development of post-traumatic stress in the individual exposed to the trauma, taking his/her needs into special consideration (Vermeiren, 2006). 2) Short-term psychotherapy in States of Acute Stress (SAS). 3) Long-term psychotherapy is indicated in cases of chronic PTSD.

Consequently, our study falls within the context of the previous discussion. Jean-Jacques (2011) reviewed over 500 studies performed in Haiti after the earthquake that struck on January 12 of 2010 which resulted in a death toll of more than 222,000. Very few of these studies paid lot attention to mental health of the population who had been exposed to the event. To our knowledge, none dealt with the effectiveness of the various ways in which the victims, adults or children, were treated. We therefore wonder about the repercussions one year thereafter of a specific psycho-social support for post-traumatic reactions in children exposed to the disaster. We hypothesized that children who attended a leisure centre where they benefitted from psycho-social support would have reported fewer post-traumatic stress symptoms than their peers who never received any psychological support. Clearly, the pathological scores ought to be lower on CPTS-RI, CDI and CBCL scales than among the control group. Furthermore, we assumed interaction between peritraumatic distress and the severity of post-traumatic stress, symptoms of depression and the global index of psycho-pathology on CBCL. Finally, correlation could be expected between the amount of

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