**Short communication**

**Study of effect of posttraumatic stress disorder on the daily lives of schoolchildren in public schools in Morocco**

**ABSTRACT**

Posttraumatic stress disorder (PTSD) usually occur after traumatic occurrences that exceed the range of common human experience. The survey was conducted to assess the prevalence of PTSD among adolescents of public schools in the city of Sale in Morocco and to study the level of anxiety and depression (the most associated disorders of PTSD).

According to a cross-sectional survey, 900 schoolchildren were selected with an age between 11 and 16 years old. The percentage was 89% of participants who agreed to take part. The validated questionnaires (socio-demographic data, list of life events, CPTS-RI, CDI and STAIY) processed by the schoolchildren.

31.7% prevalence of PTSD was expressed; this percentage was due to the specificity of school children characterized by psychology of adolescence (adventure, independence from parents, etc.), poverty and low level of education of parents; a higher percentage of this disorder in girls with 60.7% than in boys with 39.3%. 77.2% and 51.3% of schoolchildren suffered from anxiety and depression respectively.

Unfortunately there are negative consequences of this disorder, especially with the significant prevalence of PTSD, on the well-being of these school-age adolescents. There are interventions to treat this disorder in affected adolescents.

**KEYWORDS:** prevalence; school-age; posttraumatic stress disorder; traumatic occurrences;

 associated disorders.

1. **INTRODUCTION**

Post-traumatic Stress Disorder (PTSD) is a psychopathological response to a traumatic experience and related to trauma and stress, such as sexual assault, death, serious disease and war. It can affect anyone after having experienced a stressful traumatic event. The main symptoms that characterize PTSD include re-experiencing the event, avoiding things reminiscent of the trauma, negative physical and emotional reactions, and neurovegetative hyper-activation (American Psychiatric Association, 2013).

The studies were a lot concerning the adults (Nixon et al., 2004; Pederson et al., 2004; Josse, 2011) in relation to adolescents. It is only recently, during the last few years, that these studies have been accentuated.

Schoolchildren are characterized by psychological and social specificities (adventure, the search for autonomy through contribution to their parents, etc.) and according to various studies this is why these adolescents may experience more traumatic occurrences than adults (Giaconia et al., 2004; Fortin, 2001). For a few studies in schoolchildren, the most observed traumatic occurrence concerns the abrupt and unexpected death of a loved one (Elklit & Petersen, 2008).

Schoolchildren with PTSD may experience flashbacks, nightmares, uncontrolled anxiety, and uncontrollable thoughts. Therefore, they are often avoiding any recall of the occurrence and generally, the different symptoms noticed in adolescents are almost identical to those of adults (Dyregrov &Yule, 2006).

The adolescents were more likely to develop PTSD for several possible causes such as belonging to developing countries with low income such as the country where our survey was conducted (Chossegros, 2010). Adolescents are at greater risk of developing PTSD, compared to adults, and the prevalence of this disease can vary from 5 to 90% (Attanayake et al., 2009; DeVries &Olff, 2009; Suliman et al., 2009). This difference in prevalence was due to certain factors such as the tools used to screening the PTSD, the nature of the trauma, the age of the patient, the nature and culture of the population of the country of investigation, etc. (Peirce et al., 2009; Hodges et al., 2013).

The objective of this investigation was to determine the prevalence of posttraumatic stress disorder for schoolchildren among public schools in the city of Salé in Morocco. Also study the effect of this disorder on their educational career and their social life. The co-morbidities of PTSD that we interested, in the investigation, was anxiety disorders and depressive disorders, and these disorders have a direct and negative effect on the school life of students.

1. **PARTICIPANTS AND PROCEDURE**
	1. **Population**

The place where the investigation carried out is the Salé city in Morocco, there are 51 public middle schools and the sampling was 18 middle schools selected randomly. We had taken 50 students as a sample for each school establishment, thus we had obtained 900 schoolchildren schooled.

The parents or guardians of 900 students had informed consents to be signed to agree to participate in the survey, but, upon return, 99 students did not give their signed informed consent. So the final number was 801 students who were obtained to carry out a cross-sectional investigation during the year 2020 from January to April. That is, the participation rate was 89%. The age of these adolescents varies between 11 years and 16 years (mean ± standard deviation = 13.64 ± 0.72).

During the survey, we had 94 schoolchildren who did not continue to full the questionnaires because they declared in the distributed questionnaire (CPTS-RI), that they did not experience any traumatic occurrence Thus, after having declared having been exposed to at least one traumatic occurrence during their life, 707 (88.3%) students completed the investigation. These schoolchildren of both sexes were divided into 335 males (47.4%) and 372 females (52.6%).

* 1. **Procedure and Materials**

In order to visualize the interest and explain all the steps to carry out this research at the school level, we individually met each school director, and to agree on the selection of classes and schoolchildren.

We had used five questionnaires that were used to collect the data and distributed successively as follows:

1. The sociodemographic data questionnaire.

2. The Life Events List, this list presents 17 questions of the most stressful events during an adolescent's life, according to the DSM 5 (Diagnostic and Statistical Manual of Mental

Disorders) (American Psychiatric Association, 2013).

3. The CPTS-RI questionnaire intended for children aged between 6 and 16 years. This questionnaire was carried out to define the symptoms of PTSD after exposure to a traumatic occurrence (Fernandez, 2005) and the administration time was 15 to 20 minutes. This questionnaire presented a scale of 20 items and each item of this scale is divided into 5 levels.

4. The STAIY was a self-assessment questionnaire (Spielberger et al., 1983), it is a scale which presents 20 items and which aims to measure the intensity of anxiety in schoolchildren. The duration was 10 to 15 minutes, each answer to a questionnaire item corresponds to a score from 1 to 4 (1 indicating the lowest degree of anxiety, 4 the upmost degree).

5. The last self-assessment questionnaire for assess the level of depression was the CDI (Fernandez, 2005), included 27 items and which aims to measure the intensity of depressive symptoms in adolescents. The CDI targets children and adolescents aged 7 to 17 years. The duration of handover is 15 to 20 minutes.

All questionnaires were completed anonymously and by the schoolchildren themselves.

1. **RESULTS AND DISCUSSION**
	1. **Sociodemographic Data and Lived Traumatic Events**

All participating adolescents were aged 11 to 16 years. Schoolchildren who had married parents presented 84.7% and schoolchildren who lived with their parents in slums were 1.7%. Students who had unemployed fathers presents only 3.6% and mothers who did not working 71.7%. The father's salary with the mother's salary presented an average salary of 3.27 ± 1.61 dh (Moroccan dirham; 1 dh is equivalent to about 0.10 USD and 1 dh is equivalent to about 0.09 euro), which means that parents would earn 4000 dh to 6000 dh per month as monthly income. Students who consumed tobacco presented 20.1% and 10.2% drugs consumption. The schoolchildren who had repeated their classes presented 27.3% (N=193) of students.

According to the Life Events List completed by the schoolchildren, among 17 traumatic occurrences, 16 were experienced; while participation in war was the only event that was not experienced. 20.1% presented the percentage of the most experienced event and which was the abrupt and unexpected death of a loved one; followed by 11.2% for the event intense human suffering, as shown in Table 1.

**Table 1.** **The variables expressed in number and percentage of students**

|  |  |  |
| --- | --- | --- |
| **The variable** | **Number** | **Percentage (%)** |
| **Gender**  Male Female | 335372 | 47.452.6 |
| **Married parents** | 599 | 84.7 |
| **Father works** | 682 | 96.4 |
| **Mother works** | 200 | 28.3 |
| **Salary** Under 4000dh Between 4000dh and 8000dh More than 8000dh | 288257162 | 40.736.422.9 |
| **Tobacco use** | 142 | 20.1 |
| **Drug consumption** | 72 | 10.2 |
| **Traumatic events** The abrupt and unexpected  death of a loved one | 142 | 20.1 |
| **The severity level of PTSD** Without PTSD With PTSD | 483224 | 68.331.7 |

Note. Dh - Moroccan dirham.

* 1. **Prevalence of Posttraumatic Stress Disorder and Associated Disorders of PTSD**

For our sample of 707 students, we found 31.7% of schoolchildren (N = 224) who had PTSD which presents severe and very severe and moderate severity level and the schoolchildren who did not had PTSD presented 68.3% (N = 483), as shown in Table 1.

At the level of gender difference among students who had PTSD, we found 88 boys (39.3%) and 136 girls (60.7%).

While for the group with disorders associated with PTSD, we found 77.2% anxiety (N = 173) and 51.3% with depression (N= 115), as shown in Figure 1.

**Figure 1**. **The disorders associated with PTSD (anxiety and depression) among**

 **schoolchildren in percentage**

In addition, for girls suffering from anxiety we found 49.1% (N = 110). While for boys suffering from anxiety we found 28.1% (N = 63).

For girls suffering from depression we found 37.5% (N = 84). While for boys suffering from depression we found 13.8% (N = 31).

The main consequences of post-traumatic stress disorder and depression: We found 49.8% who did not do the homework requested by their teachers and 52.6% of students who had poor academic performance.

We found 50.1% had difficult to concentrate and 10.2% had memory disruptions of things learned. We found that 29.7% with suicidal thoughts and 29.3% disinterest in activities.

* 1. **Recommendations for PTSD interventions**

To reduce the negative psychosocial, economic, and health problems, the results of our study must be taken into consideration by local Moroccan authorities to improve the quality of life of these schoolchildren.

The findings of the current study highlight the need for urgent public interventions (Government and nongovernmental organizations) directed to manage PTSD.

1. **CONCLUSIONS**

Posttraumatic stress disorder (PTSD) is reaction to traumatic events that had experienced during the life and that can have significant physical, functional, and psychological effects on the daily life of adolescents. Our investigation elucidates a complex interplay of factors contributing to the emergence of PTSD following trauma.

Gender, residential environment (poverty, a problem of precariousness social, important unemployment rate and a blurred vision of the future), geographical location (Morocco is a low and middle income countries), educational attainment (an important rate of parental illiteracy), familial support (a lack of social support), and the nature and locus of the trauma surfaced as integral elements in this disorder.

Treatment strategy encompassing psychological assessment and support; treatment is with behavioral therapy and sometimes with selective serotonin reuptake inhibitors or antiadrenergic medications to hope for partial or complete remission of PTSD.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author hereby declare that NO generative AI technologies such as Large Language Models(ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

**CONSENT**

It is not applicable.

**ETHICAL APPROVAL**

It is not applicable.

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