

## Post-Traumatic Stress Disorder among Mosul and Nineveh Medical Group Colleges students: A Survey study.

### Authors:

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### Background

Post-traumatic stress disorder is a serious, potentially debilitating condition that can occur in people who have experienced or witnessed a life-threatening event, such as a natural disaster, serious sudden death of a loved one, accident, terrorist incident, war, or other violent personal assault.

### Objectives

This study addresses the level of post-Traumatic Stress Disorder among sample of civilians in Mosul city (Medical groups Colleges Students) exposed to trauma aggravated by terrorism, war and displacement and to explore its relation with various socioeconomic variables.

### Methods

A cross-sectional study was conducted in Mosul City on Medical Colleges Students (Mosul Medical Groups Colleges, Mosul College of Medicine Nineveh Medical College, College of Pharmacy, College of Dentistry) as early as the first year of study began after liberation operations ended and education have been resumed to identify as early as possible the remnants effect of such operation on students. Questionnaire forms were distributed on a representative sample using post-traumatic stress disorder check list for posttraumatic stress disorder. Score >33 regarded as cut off point for differentiation between presence and absence posttraumatic stress disorder.

**Results:** Out of 4122 students, a representative sample of 351 students was chosen. All of them (100%) were experienced violence as they witnessed the military operations by themselves. The frequency of posttraumatic stress disorder among

the study group was 15.1 %. Logistic regression analysis revealed no significant effect regarding age, sex and residence on PTSD.

**Conclusions:** Post traumatic stress disorder was prevalent among Mosul city medical students more than other areas who used the same instrument for assessment, further evaluation and interventions is needed to help those who have suggestive symptoms of posttraumatic stress disorder.

Key words: posttraumatic stress disorder, and mental disorders, Mosul, Iraq.

## Introduction

Posttraumatic Stress Disorder (PTSD) has a major public health significance, it is an anxiety disorder that can occur following the experience or witnessing of a traumatic event <sup>(1)</sup>. Posttraumatic stress disorder symptoms usually appear within 3 months after a traumatic event but can emerge months or even years later. It is a disabling condition that can become chronic. The nature of this disorder and its co-occurrence among parents and children create challenges.

Evidence that it may be associated with premature senescence (early or accelerated aging) which will have major implications on the quality of life and healthcare policy. Therefore, there is a need to re-conceptualize PTSD beyond the boundaries of mental illness, and instead as a full systemic disorder <sup>(2)</sup>. This syndrome develops after exposure to an extreme stressful events which provokes fear, horror or helplessness and it is characterized by re-experiencing the trauma, avoiding reminders of the trauma and increase physiological arousal. <sup>(3)</sup>. Iraq civilians in general, <sup>(4)</sup> and Mosul people in particular have been exposed to wars, catastrophic events and widespread violence and terrorism during the last four decades and especially for the last four year. There are few resources available to help victims dealing with the resulting physical, psychological, and financial aftermath of those traumatic events. <sup>(5)</sup>

No reports were examining the effect of exposure to military operation in Mosul (2016-2017) and its exacerbating conflicts on the mental health of Mosul population.

Assessment and treatment call for a combined approach involving family and schools, as well as more specialized services

This study was carried out to examine the current prevalence of PTSD among a group of Iraqi population especially students who constitute a large sector from the community and they are considered the cornerstone for building the future of Iraq.

## **Methods**

### *Ethical agreement*

This study was approved by scientific committee of the Family and Community Medicine Department, Mosul Medical College, University of Mosul, Iraq. Prior data collection informed consent from all the participants orally obtained after an explanation of the aims and objectives of the work.

### *Study setting*

The study was conducted in Mosul city, the center of the Nineveh governorate in the north of Iraq. It involved the university of Mosul and Nineveh University as a sit for data collection. University of Mosul include a diversity of colleges of many branches and specialties of scientific medical, social, humanities, engineering, and a lot of other branches as its foundation exceed more than 60 years ago. Nineveh University is just a new forming university, it comprises just two colleges which are Nineveh Medical College and Electronic Engineering college. So that the study involved just medical colleges were present in both universities and their position are near to each other for purpose of data collection. In Iraq, the study years at the Medical colleges is six years, and it is five years for both dentistry and pharmacy colleges.

### *Study participants*

Out of (4122), total number of students of four colleges at the time of data collection, the sample size has been determined according to equation of sample size calculation for cross sectional studies of qualitative variables with known population and with 95% confidence interval with 5% margin of error <sup>(6)</sup>, which results in sample size (n = 351), who included in the study by systematic sampling randomization (where every third student in the class was selected).

The students were informed about the study and its request. The number of the students included from each college represents the colleges' students' percentage from the overall students available at the time of data collection.

Student selection according to each college was demonstrated in figure (1). Larger sample was from Mosul Medical College which already have the highest number of students. Then, those calculated colleges' students were divided by the five in Mosul and Nineveh Medical college and divided by four in college of Dentistry and college of Pharmacy (number of grades in each college which included, escape the first grade because they didn't attend the class yet at time of data collection), in order to distribute the sample evenly between classes, as each class has approximately similar total students.

All included students were from Mosul and Nineveh Universities and their residence in Mosul and they have been stayed in Mosul during the Isis aggression and liberation operation. No participants' refusal was detected. All other students none eligible for study criteria were excluded.

### ***Data collection***

A questionnaire form was developed consisting of items related to demographic characteristics of respondents (age, sex and residence ), and existing health measurement Instrument to measure PTSD (the DMS 5 )<sup>(7) (8)</sup>. this form was distributed through visiting each college separately, convenient sample were obtained from 2<sup>nd</sup> grade till 6<sup>th</sup> grade of Colleges. The age range was between age range between 18-24 years. Data collection took place during the period from 1<sup>st</sup> November to 30<sup>th</sup> Dec. 2017; after military operation has been ended. The collected data was confidential and anonymous. The PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders (DSM-5) is a 20-item self-report measure that assesses the presence and severity of PTSD symptoms.<sup>(8)</sup>  
<sup>(9) (10) (11)</sup>

Respondents are asked to rate how bothered they have been by each of 20 items in the previous 12 months on exposure to traumatic event types on a 5- point Likert scale ranging from 0-4. Items are summed to provide a total severity score (range = 0-80). 0 = Not at all 1 = A little bit 2 = Moderately 3 = Quite a bit 4 = Extremely. Summing all 20 items (range 0-80) and using cut-point score of 33 appears to be a reasonable based upon current psychometric work. Test-retest reliability and concurrent validity have been done on 50 participants which were randomly chosen from same colleges, so to increase validity of the result which was 95 % matched.

The association of PTSD (dependent variable) with demographic and trauma exposure variable (independent variables) were tested by chi-square and Binary logistic regression. P value less than 0.05 was considered as significant.

**Results:** During the two-months period of data collection, 531 students were included in the study out of the total 4122 students of four colleges. Table 1 shows the socio-demographic characteristics of study population. Over a half (56.1%) of the students were 22-23 years old, a quarter were 24 years old or more and 18.2 % were 20-21 years old.

The male to female ratio was 1.18:1. Residence inside Mosul city formed 83.2% of the total sample. Urban residence of Mosul city (i.e. inside city center) was encountered among 292 of the participant where 16.8% were from outside Mosul city.

Table 2 depicts that (15.1%) of students reported score of 33 and more which indicative of presence of PTSD. From those 6% their score was more than 45.

Mean age of the participants who had suggestive score of PTSD was  $23 \pm 1.66$  years and who didn't have suggestive score was  $22.7 \pm 1.37$  years.

Table (3) shows that age has no significant statistical association with PTSD development where ( $p = 0.6$ ). Specific age group analysis illustrates a mild increase risk among age group (22-23) as odds estimates equals (1.6) while a protective effect found among 24 years and more age group (odds = 0.65), however, none of these relations were significant as p value (0.058, 0.05, respectively).

Thirty male students and 23 female students had PTSD. There was no significant difference in PTSD between males and females.

Place of residence exerts no effect on PTSD development, as odds estimates =0.84 and p value was not significant (0.66).

## Discussion

Reported lifetime prevalence of exposure to potentially traumatic experiences (PTEs) varies considerably between countries and, within countries, between

certain groups<sup>(12) (13) (14)</sup>. Higher frequency of exposure has been reported in inner cities and where natural disasters have occurred. (15)

All participants in the study population have been subjected to trauma and violence of the Isis aggression and liberation military operation in 100%, as they were selected to be included in the study if they didn't displace outside Mosul or migrated outside Iraq during the Isis aggression or during liberation operations. All of participants suffer from violence and fear which is extremely high among them as they witnessed the terrorism, destruction, violence, military operations, loss of close relatives or friends, or destruction of their home.

For the purpose of data collection, and because after liberation of the city from Isis, almost all infrastructure were destructed and there were no any primary health center, or hospital working in the city, scattered minimal schools were still sanding, meaning it was impossible to carry out a survey which depends on primary health care centers, hospital or schools, so the students of the college and especially medical students were just returned back to study as early as possible after the military operations has finished, make them suitable participants for the study. The chosen colleges have the students with minimal differences in socioeconomic status with approximate location inside University of Mosul and Nineveh University which are merged together temporally in places because of destructions of infrastructures which belong to these colleges.

Most survivors of trauma return to normal given a little time. However, some people will have stress reactions that do not go away on their own, or may even get worse over time. These individuals may develop PTSD<sup>(1). (16)</sup>.

Although the reported high rate of trauma among study sample, however the prevalence of PTSD among them was (15.1%). It is very important to remember that recovery from any trauma is possible and that can lead to normal, happy life again. A such powerful experiences may change people in many ways, not all of them negative. As people recover from trauma, they may render themselves stronger than before, perhaps more caring and with a more balanced and sensible and view about what is important in their lives.

Several studies have examined the prevalence of PTSD among population all over the world where ever there is degree of violence, however there are no valid and

reliable cross-cultural instruments capable of measuring torture, trauma, and trauma-related symptoms associated with diagnosis of posttraumatic stress disorder (PTSD). In the Middle East, Lebanon, a study found a 3.4% lifetime prevalence rate of PTSD in a nationally representative sample (n = 2,857) of adult Lebanese civilians, while in the Gaza Strip, researchers reported that the lifetime prevalence of PTSD among adults was 17.8%, both were depending on WHO Composite International Diagnostic Interview <sup>(17) (18)</sup>. In Israel, 9.4% of the adult sample (n= 512) were determined to have PTSD assessed by the Stanford Acute Stress Reaction Questionnaire <sup>(19)</sup>. A Community surveys among children and adolescents aged 1 to 15 years old (n= 3,079) attending primary health care centers in Mosul, Iraq during 2007 depending on evaluating mental disorder reported 10.5% prevalence rate of PTSD <sup>(20)</sup>. In other country region reports lower PTSD prevalence as in US 6.8% <sup>(21)</sup>, 1.3% in Germany, <sup>(13)</sup> and 1.3% in Australia <sup>(22)</sup>, as those where depending on DSM-IV disorders in the National Comorbidity Survey. This observed a wide range of PTSD rates may be correlated with the degree of violence each population subjected to it, and also the instrument used in collecting data.

The present study shows high figure of PTSD where it's used the most recent method for assessing PTSD (The PTSD Checklist for DSM-5, 2013) <sup>(23)</sup>.

Previously, researcher have documented the exposure of Iraqis to violence <sup>(24), (25)</sup> added to that witnessing military operations and loss of close relatives and their friends exert more stress. It is well established that exposure to violence is a risk factor for PTSD <sup>(26), (27)</sup>.

Moreover, other studies who depend on Harvard trauma questionnaire reflect much higher figure of PTSD as in southern Sudan (36.23%) <sup>(28)</sup>, Sir Lanka (30.4%) <sup>(29)</sup>, Afghanistan (39.87) <sup>(30)</sup> and Uganda (55.9%) <sup>(31)</sup>.

Recently, if a patient meets a provisional diagnosis using above methods, he or she needs further assessment (e.g., Clinician-Administered PTSD Scale for DSM-5 CAPS-5) to confirm a diagnosis of PTSD, which was inapplicable in the present study as with other researches, so it's one of limitation of the present study.

Current study displays a mild increasing risk of PTSD among age group 22-23 years, while it depicts a protective effect against PTSD among age group 24 and

more years old, but this relation is of no statistically significant. It is consistent with the findings encountered by other studies<sup>(30), (32), (29), (33)</sup>. This effect might be due to difference in samples selection. No significant difference in the rate of PTSD between males and females is found in the present study, which is in similar to that in other literatures<sup>(34) (35), (33)</sup>. The sex differences related to PTSD seems to be a cross- culturally consistent.

Further research may clarify the epidemiology of PTSD in Iraq in general which can specify future interventions needed.

**Conclusions and Recommendation** Evaluating the mental health will help professionals and sponsored for health to stand up on the future program that can be used to help people be better members of the society. Although that most agencies and organizations concentrate on providing necessities such as food, clothing, and shelter for people after or during the war; however, mental health should not be forgotten among other important needs of the people with a focus on posttraumatic stress disorder (PTSD).

### **Conflict of interest**

None.

### **Financial Funding**

Self-supported.

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