PREVALENCE OF PTSD AND ITS ASSOCIATED RISK FACTORS AMONG TRAUMA PATIENTS ATTENDED ORTHOPAEDIC CLINICS AND WARDS IN HUSM AND HRPZII

BY:

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ABBREVIATIONS

AUC	: Area Under Curve
CAPS	: Clinician Administered PTSD Scale
CIES	: Children's Impact Even Scale
DSM-IV-TR	: Diagnostic and Statistical Manual
DTS	: Davidson Trauma Scale
CTSQ	: Children Trauma Screening Questionnaire
HUSM	: Hospital Universiti Sains Malaysia
HRPZII	: Hospital Raja Perempuan Zainab II
NPV	: Negative Predictive Value
PPV	: Positive Predictive Value
PDS	: Post Traumatic Stress Diagnostic Scale
ROC	: Receiver Operating Characteristic
SCID	: Structured Clinical Interview for DSM-IV
TSQ	: Trauma Screening Questionnaire

ABSTRACT

PREVALENCE OF PTSD AND ITS ASSOCIATED RISK FACTORS AMONG TRAUMA PATIENTS WHO ATTENDED ORTHOPAEDIC CLINICS AND WARDS IN HUSM AND HRPZII

Background: PTSD is prevalent among the trauma patients in Orthopaedic Wards and Clinic. An easy, cheap and reliable tool screening tool is needed to screen the possible PTSD symptoms in order to provide early intervention and to prevent further complication.

Objectives: This study was aimed to validate the Malay version of TSQ in order to determine the prevalence of PTSD and its associated risk factors among trauma patients who attended Orthopaedic Wards and Clinic in HUSM and HRPZII.

Methods: It was a cross sectional study and divided into two stages. The first stage was the validation of the Malay version TSQ and the second stage was a prevalence study. There were 201 participants in the study from Orthopaedic Wards and Clinic in HUSM and HRPZII. Data were collected by using the validated Malay version TSQ, sociodemographic data form and interviewed with CAPS. CAPS was used as a gold standard to diagnose PTSD as well as to compare with the Malay version of TSQ.

Results: Malay version of TSQ has good internal consistency ($\alpha = 0.733$) and good concurrent validity with CAPS. At cut-off score 5 or more, the sensitivity and specificity were 0.8 and 0.85 respectively. The negative predictive value was 0.96 but the positive predictive value was low (0.48). The prevalence of PTSD among trauma patients who attended Orthopaedic Wards and Clinic in HUSM and HRPZII was 24.9%. Fear during trauma had shown to be a significant risk factor of developing PTSD (OR=2.41, (95% CI 1.11, 5.20). Praying was a significantly common means used by respondents to cope with trauma. There was also significant association between support received from professionals and PTSD symptoms

Conclusion: Malay version of TSQ s a valid, cheap and reliable tool for screening PTSD. 24.9% of trauma patients in Orthopaedic Wards and Clinics in HUSM and HRPZII had PTSD.

Key Words: TSQ, PTSD, Orthopaedic, trauma

ABSTRAK

PREVALEN SERTA FAKTOR RISIKO YANG BERKAITAN PTSD DI KALANGAN PESAKIT YANG MENGALAMI TRAUMA DATANG KE WAD DAN KLINIK OTOPEDIK HUSM DAN HRPZII

Latarbelakang: : Kadar PTSD di kalangan pesakit yang mengalami trauma di wad dan klinik Oopedik adalah tinggi. Satu alat saringan yang mudah, murah dan boleh dipercayai diperlukan untuk menyaring kemungkinan tanda-tanda PTSD. Ini bagi membolehkan intervensi awal dapat diberi dan menghalang komplikasi yang teruk

Objektif:

Kajian ini bertujuan untuk mengesahkan kebolehpercayaan Trauma Screening Questionnaire versi Melayu dan menentukan prevalen serta faktor risiko yang berkaitan PTSD di kalangan pesakit yang mengalami trauma datang ke wad dan klinik Otopedik HUSM dan HRPZII.

Metodologi:

Kajian ini terbahagi kepada dua bahagian. Bahagian pertama ialah validasi TSQ versi Melayu dan bahagian kedua ialah kajian prevalen. Kajian ini disertai oleh 201 pesakit dari klinik dan wad Otopedik HUSM dan HRPZII. Data dikumpul melalu TSQ versi Melayu yang telah divalidasi, borang data demografi, dan temubual dengan meggunakan CAPS.

CAPS digunakan sebagai alat piawai untuk mengenalpasti PTSD dan membandingkan dengan TSQ versi Melayu.

Keputusan:

TSQ versi Melayu mempunyai kebolehpercayaan konsistensi dalaman dan validasi yang bagus. Pada skor 5 dan ke atas, kepekaan dan kekhususan masing-masing ialah 0.8 dan 0.85. Nilai anggaran negatif ialah 0.96 dan nilai anggaran positif ialah rendah (0.48). Prevalen PTSD dalam pesakit trauma yang datang ke wad dan klinik Otopedik HUSM dan HRPZII ialah 24.9%. Ketakutan semasa mengalami trauma menunjukkan faktor risiko yang signifikan (OR=2.41, 95% CI 1.11, 5.20)). Sembahyang/berdoa merupakan cara yang signifikan bagi responden untuk menyesuaikan diri dengan trauma. Kajian juga menunjukkan hubungan yang signifikan antara sokongan yang diterima daripada profesional dan PTSD.

Kesimpulan:

TSQ versi Melayu merupakan alat saringan PTSD yang sah, murah dan boleh dipercayai. 24.9% di kalangan pesakit trauma di wad dan klinik Otopedik di HUSM dan HRPZII menghidapi PTSD

Kata kunci: TSQ, PTSD, Otopedik, trauma

CHAPTER 1

INTRODUCTION

1.1 Post Traumatic Stress Disorder (PTSD)

Post Traumatic Stress Disorder is an anxiety disorder that results from psychological sequelaes of traumatic events. A traumatic event is any event that poses a significant threat to life or stability. It falls outside of the normal range of events and is so overwhelming that typical coping mechanisms do not work. For examples; witnessing a homicide or another violent incident, a school shooting, sexual assault, a natural disaster, situations involving unexpected death. The American Psychiatric Association (APA) defined trauma as an event that is "outside the range of usual human experience" and likely to "evoke significant symptoms of distress in most people."

The traumatic experiences can lead to the development of several different disorders, including major depression, specific phobias, panic disorder and a range of physical symptoms, as well as PTSD.

In the National Comorbidity Study (Kessler et al., 1995), a survey interview of psychiatric disorder was administered to a probability sample of persons aged 15 to 54 years in the non-institutionalized civilian population living in the 48 contiguous United States. It is the first nationally representative general population survey to assess traumatic stressor exposure and PTSD, 60.7% of men and 51.2% of women reported exposure to a potentially traumatic event.

The lifetime incidence of PTSD is estimated to be, nine to fifteen percent (9-15%) with a lifetime prevalence of about 8 percent of the general population, although an additional 5 to 15 % may experience subclinical forms of the disorder (Kaplan & Saddocks 10^{th} edition). Some figures range from 47% in rape victims 12 weeks post assault, to 12% in road traffic accident victims, to between 5% and 8% among victim of natural disasters (Resick,2001).

Even though there has been development of a number of efficacious behavioral and pharmacological treatments, only a minority of patients with PTSD receive mental health services. PTSD is one of the most frequently under recognized and untreated anxiety disorder. Therefore, increasing the detection of patients with PTSD is a crucial step towards addressing the health and mental health burden experienced by these patients. Several approaches to screening have recently been suggested, ranging from the use of full-length psychometric self-report measures to the development of brief, stand-alone screening instruments.

1.2 Diagnosis of PTSD

According to DSM IV TR, to diagnose PTSD the person has to be exposed to traumatic events in which;

a) the person experienced, witnessed, or that as confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical of self or others.

b) the person's response involved intense fear, helplessness, or horror

The person has to experience the three clusters of PTSD symptoms include re-experiencing, avoidance and numbing, and hyper arousal. The symptoms have to be present for at least one month duration after the traumatic events and must significantly disrupt normal activities.

1.3 Scales for PTSD

The original PTSD module of the SCID was developed for use in the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1990). Considerable data have been collected regarding the reliability and the validity of the PTSD module in a veteran population. SCID assesses the full spectrum of Axis I and Axis II.

The Clinician Administered PTSD Scale (CAPS; Blake et al, 1995; Blake et al 1990) was designed later to address the shortcomings of previously developed structured interviews for diagnosing PTSD. The CAPS is a comprehensive interview that (1) uses behavioral referents for symptoms when feasible; (2) assesses all DSM-IV criteria, as well as a

selected sample of relevant associated features; (3) provides separate intensity and frequency ratings of symptoms; (4) specifically establishes that the time frame for symptom occurrence is consistent with diagnostic criteria; and (5) determines both current and lifetime symptoms.

CAPS also provides ratings of global functioning and as well as the impact of PTSD symptoms on relevant areas of life functioning. Evaluations of reliability and validity indicate strong psychometric performance. Initial examinations of interrater reliability were quite good (at the symptom level, *r* ranges from .92 to .99, and there is perfect agreement at the diagnostic level), and subsequent examinations of test–retest reliability for PTSD were .89 (Blake et al., 1997). Blake et al. (1997) found a coefficient alpha of .89, and when compared to a SCID PTSD diagnosis, they obtained a sensitivity of .91, a specificity of .86, and a kappa of .77. Additionally, the CAPS have shown strong correlation with other psychometric measures of PTSD, including the Mississippi Scale and the PK Scale of the MMPI (Weathers and Keane, 1999). Recent additions to the CAPS include changes to accommodate DSM-IV symptom revisions, as well as additional questions to assess trauma exposure in more detail.

Davidson Trauma Scale (DTS) is a well-recognized scale designed by J Davidson to measure the severity and frequency of PTSD symptoms. The DTS consists of 17 items corresponding to each of the DSM-IV symptoms. Both frequency and severity during the previous week must be rated for each item from 0-4 scales. The DTS demonstrated high specificity and positive predictive value, with lower sensitivity and negative predictive value. It can be used as a screening and also assessment tool for PTSD symptoms.

Foa and colleagues developed the Post-Traumatic Stress Diagnostic Scale (PDS) as an instrument to obtain a reliable diagnosis and to evaluate the symptoms of PTSD. It is a self-report scale with 49 items organized in 4 sections; list of different types of trauma, type of trauma suffered, symptoms according to the DSM-IV and symptoms related to function. The PDS provides a diagnosis, profile of symptoms, symptom of severity, and level of impairment associated with PTSD. The internal consistency of the 17 items is excellent with Cronbach's alpha was 0.92. Test-retest reliability is reported as satisfactory (Kappa 0.74). The validity is good and has a good relation with the SCID-I and other PTSD scales. However, the PDS also correlates well with anxiety and depression scales.

1.4 Screening tools for PTSD

Screening tools aid to identify individuals at high risk for developing a disorder and in need of further investigation. Screening for PTSD has an important advantage in that the existence of intrusion, hyperarousal and avoidance symptoms tied to the trauma makes a possibility to the disorder very high. A good test will have a reasonable balance of sensitivity and specificity. A test for PTSD can be made highly sensitive by setting a very low threshold. Screening tools may be self-rated or interviewer-rated. Self-rating tests are easy to use and appropriate for possible diagnosis, symptoms and function assessment, and treatment monitoring. It should be written in easily understood language and be acceptable to respondents.

Brewin 2005 did a systematic review of screening instruments for PTSD. Those included were IES (Impact of Event Scale), PCL-C (PTSD Checklist(Civilian Version)), PDS (Post

traumatic Stress Diagnostic) , PSS-SR (Post Traumatic Stress Symptom Scale (Self-Report version), DTS (Davidson Trauma Scale), SPAN (Startle, Physiological Arousal, Anger and Numbness items for DTS), SRS-PTSD (Self-rating Scale-PTSD), Penn Inventory , SPTSS (Screen for Post traumatic symptoms), PTSD-Q (PTSD-Questionnaire), Penn, TSQ, DRPST(Disaster-Related Psychologocal Screening Test) and SRIP(Self-Rating Inventory for PTSD. The mean diagnostic efficiency of the screening instruments was 86.5%. IES and TSQ consistently performed well. Both had been validated on independent samples and had been tested within 1 year of a traumatic event.

The overall efficiency of other instruments that based on 17 DSM-IV symptoms was around 85% on average. Most of them need longer time to rate the items.

1.5 Trauma Screening Questionnaire (TSQ)

The TSQ is a 10-item symptom screen that was designed for use with survivors of all types of traumatic stress. The TSQ is based on items from the PTSD Symptom Scale – Self Report (PSS-SR; Foa et al., 1993) and consists of five re-experiencing items and five hyper-arousal items. The avoidance and numbing criterion are not included in the questionnaire owing to the desire to have brief scale, as well as due to concerns that these items are not always well understood by respondents. Respondents are asked to answer those items that they have experienced at least twice in the past week. Brewin et al (2002) considered the screen "positive" when at least six items were endorsed. This study was done on a sample of rail crash survivors and crime victims. PTSD was present in 86% of individuals in rail crash survivors sample and 91% in the crime victim sample. The

sensitivity and specificity of using TSQ at cut off score 6 is 0.86 and 0.93 respectively (Brewin et al 2002) in the rail crash sample.

In a study by Kenardy et al in 2006, the CTSQ (Children-TSQ) and CIES were used in children after accidental injury revealed that ROC curve analyses for both screens at 1 month was significantly better than chance (AUC = .80, P<.001 and .71, P<.05, respectively). At 6 months, CTSQ was significantly better than chance at predicting symptoms. CTSQ showed that at a score of ≥ 5 offered the optimum predictive cut-off point. The sensitivity and specificity were 0.85 and 0.75 at 1 month and 0.82 and 0.74 at 6 months respectively.

Walters et al in University Hospitals of Wales' Emergency Units used TSQ in 562 victims of assault. It showed that TSQ was an effective tool of predicting future PTSD, with a sensitivity=0.85, specificity = 0.89, negative predictive value (NPV) = 0.98 and efficiency=0.90. The optimum cut-off score was ≥6.

1.5 Validation Studies of TSQ

Reliability analysis for Child-TSQ revealed the item-total correlations for each of the items ranged from 0.14 to 0.50 and the internal consistency was acceptable (α= .69) (Kenardy et al 2006). Convergent validity was assessed by examining the relationship between the Child-TSQ and CIES. The Child-TSQ was significantly correlated with the CIES (*r* [163]=0.56; P<0.01)

Walters et al did a study in five hundred and sixty-two (562) individuals who presented to University Hospital of Wales' Emergency Unit following assault aimed to determine the validity of the Trauma Screening Questionnaire (TSQ) in predicting the development of PTSD following assault. The TSQ was completed between 1 and 3 weeks later. Davidson Trauma Scale (DTS) was used as a gold standard to diagnose PTSD (Davidson et al 1997). The efficacy of the TSQ in predicting a subsequent diagnosis of PTSD at 1 and 6 month was measured in terms of sensitivity and specificity. Positive (PPV) and negative predictive values (NPV) were also determined.

The study showed that the prevalence rates for PTSD were 11.0% at 1 month and 7.7% at 6 months. They performed similarly for the optimum TSQ cut-off score of 6 or over at 1 and 6 months post-injury. The study also compared those with possible brain injuries to those without by (i) grouping together those with facial or skull fractures compared to those without and (ii) comparing those with any head injury to those without. The TSQ performed comparatively on all measures in these injury groups. The results suggest that those at risk of developing PTSD can be identified before 3 weeks. The agreement between the prediction of PTSD by the TSQ and subsequent positive result on DTS indicates good concurrent and predictive validity.

In a study of victims of sexual violence in Brazzaville, Congo in order to evaluate the late-effect of post-rape psychological supported provided to them, TSQ was administered as a post-test questionnaire for long term evaluation. The questionnaires were translated and back-translated from French to Lingala and Lari. The questionnaires were field-tested and semantic mistakes were discussed and corrected to ensure acceptable cross-cultural

adaptation. The final version was validated by two senior psychiatrists. Internal consistency was measured by Cronbach's alpha (α= 0.68). The TSQ explores existence of PSTD: only two patients out of the 64 that could be evaluated (3.1%) met the needed criteria (score equal to or above 6) of PTSD.

The association of arousal symptoms was the most frequent with 15.6% of the woman combining at least four symptoms in this category.

In Netherlands, 100 Dutch victims of different civil trauma were given TSQ at first part of study and one month after that. The Dutch version of CAPS was used to make a diagnosis as a gold standard. The reliability was good (α = 0.85). At cut-off score of 7, the sensitivity and specificity were 0.87 and 0.69 respectively. The positive predictive value = 0.66, negative predictive value = 0.89 and the overall efficiency was 0.76 (Dekkers et al 2008). The study found a moderate positive correlation between PTSD and the severity of complaints (r = .59, P = .01). There was also a significant relationship between the TSQ and depression symptoms ((x^2 (10) = 19.42, P = .04). This study indicates that the Dutch version of the TSQ is a useful instrument for identifying future cases of PTSD.

1.7 Validity

The validity of a test describes the extent to which a test actually measures what it purports to measure

1.7.1 Face and content validity

The face validity refers to the subjective judgment as to whether the measurement in question appears on the surface to measure the feature in question.

The content validity refers to the same issue but is less superficial.

Both assess the degree to which the test's content is related to what the test is supposed to measure.

1.7.2 Criterion validity

Criterion validity is the extension to which score correlate with other measurement of what the test is supposed to measure.

1.7.3 Concurrent validity

The concurrent validity is assessed by comparing the new tools with the gold standard that already exist and are known to be valid. The sensitivity, specificity, positive predictive value and negative predictive values are calculated.

1.7.4 Reliability

Reliability describes the consistency of a test results on repeat measurements. The reliability values are expressed by correlation coefficients which range from 0.0 (no agreement) to 1.0 (complete agreement)

1.7.5 Test-retest reliability

Test-retest reliability describes the level of agreement of observers assessing the same material under similar conditions but at different times.

1.7.6 Internal consistency

Internal consistency is the extent to which tests or procedures assess the same characteristic, skill or quality. It is a measure of the precision between the observers or of the measuring instruments used in a study. Cronbach's alpha.is used as a measurement for the internal consistency.

1.7.7 Sensitivity, specificity, positive predictive value and negative predictive value

- The sensitivity of a test is the chance of a positive test result given a disease
- The specificity of a test is the chance of a negative test result given no disease
- The positive predictive value is the probability that someone with a positive test will have a disease
- The negative predictive value is the probability that someone with a negative test will not have a disease

1.8 Purpose of TSQ translated and validate in Malay language

The purpose of TSQ is to screen symptoms of PTSD among patients who were involved in trauma and attending Orthopaedic Wards and Clinics of HUSM and HRPZII for treatment. At this moment there are no local standard Malay language TSQ that have been validated for local use. Victims of traumatic events usually do not know how to express their feelings. A brief and easily understood screening tool is important to aid in the detection of PTSD symptoms. It would have been better if a validated TSQ in Malay language for local use had been available. Before conducting a study it is important and necessary to have a reliable and valid study instrument.

1.9 PTSD in Malaysia

Lim (Lim, 1994) conducted a study on psychological distress, anxiety, depression and PTSD among 71 fire-fighters involved in the rescue operation following the collapse of Highland Towers in 1993 compared with a matched control group of 30 persons from non-firemen population. 70% of the subjects had at least one symptom of PTSD as compared to the control group.

Subramaniam et al 2009 examined the symptoms of PTSD among survivors of December 2004 Malaysian Tsunami. 19% of respondents fulfilled the criteria for PTSD. The study showed there was no significant difference between men and women in terms of post traumatic stress and the quantity and quality of social support. However, there is a significant difference in adaptive and maladaptive coping styles among victims who fulfill

the PTSD diagnosis and those who did not. It was also found that there is no relationship between PTSD symptoms and emotional support, whereas there is a significant relationship between PTSD symptoms and practical support.

Normah C.D. et al (2010) did a study among forty help-seeking women experiencing domestic violence in two shelters in Malaysia from 2007 to 2008. 60% of them had symptoms consistent with the diagnosis of PTSD. Correlation between negative appraisals with PTSD showed significant positive correlation with negative cognitions about the self, self-blame and negative appraisals, whereas the optimism coping style and social support have significant negative correlation with PTSD. The greater use of optimism coping style and the higher quality social support appeared to lead to a significantly reduced tendency of developing PTSD.

1.10 PTSD in injured patients.

Although exposure to a stressful event is an indispensable condition, exposure alone is insufficient for determining whether the experience is traumatic. In DSM-IV, the critical determinant is the person's cognitive and affective reactivity to an event. Therefore, if an event, such as a motor vehicle accident, involves "actual or threatened death or serious injury ... to self or others" (APA, 1994, p. 427) and also elicits severe and incapacitating psychological distress such as "intense fear, helplessness, or horror" (APA, 1994, p. 428).

According to the largest-ever U.S. study evaluating the impact of traumatic injury, suffering a traumatic injury can have serious and long-lasting implications for a patient's mental health. Researchers from the Harborview Injury Prevention and Research Center,

the University of Washington, and the John Hopkins Bloomberg School of Public Health found that PTSD and depression were very common among patients assessed one year after suffering a serious injury. They also found that injured patients diagnosed with PTSD were six times more likely to not have returned to work, in the year following the injury. The study followed 2707 injured patients from 69 hospitals across the country, and found 20.7% had PTSD and 6.6% had depression one year after the injury. Both disorders were independently associated with significant impairments across all functional outcomes: activities of daily living, health status, and the return to usual activities, including work. Patients who had one disorder were three times less likely to be working one year after injury, and patients with both disorders were five to six times less likely to have returned to work.

Norris (1992) has explored the psychological sequelae of motor vehicle accidents (MVAs) by examining the frequency and impact of potentially traumatic events in a large, multi-site epidemiological study. Among traumatized individuals in this study, MVAs were found to be a leading cause of PTSD preceded only by sexual and physical assaults. Moreover, Norrris state that "when both the frequency and severity data were considered together, MVAs emerged as perhaps the single most significant among those studied. Norris estimates that MVAs alone could account for 28 cases of PTSD for every 1000 adults in the United States.

Among consecutive admissions of MVA survivors at an emergency department, Mayou and colleagues found that 11% met criteria for PTSD in the following year (Mayou, Bryant & Duthie, 1993)

In a cross sectional study in Orthopaedic and Trauma Clinic at Kenyatta National Hospital, Nairobi by Ongecha – Owour et al in 2004, the prevalence rate of PTSD among motor vehicle accident (MVA) survivors was 13.3%. Females had a higher rate compared to male subjects (17.9% vs 11.7%). Majority of those with PTSD (42.9%) were young, 20-29 year. Marriage was identified as a possible risk factors especially for the males (81.85% of those having diagnoses of PTSD were married). For the females, 21.4% of those affected had been previously married (divorced, separated or widowed). Other risk factors that were identified in the study were; post-primary education (62.9%), experiencing the first motor vehicle accident (14.1%), previous psychiatric illness and other medical illness. The type of accident, role/status and immediate reactions to the accident were not significant (Ongecha – Owour et al, 2004).

PTSD occurred in one tenth of road accident victims (Mayou et al 1993). Emotional disorder was associated with having pre-accident psychological or social problems and, in patients with multiple injuries and continuing medical complications

PTSD after major trauma was not related to measures of injury severity, but was related to other factors, such as blaming others for the accident and the processes involved in claiming compensation. (Harris et al 2008)

51% from 580 patients who had sustained orthopaedic trauma in a study by Starr et al 2004 met the criteria for PTSD. Those patients had significantly higher Injury Severity Scores

($p = 0.04$), a higher sum of Extremity Abbreviated Injury Scores ($p = 0.05$), and a longer duration since the injury than those without PTSD ($p < 0.01$). Causes of patient injuries included in the study were motor vehicle collision, motor-pedestrian collision, motorcycle collision, crush injuries, horseback riding injuries, and gunshot wounds; with falls and motor vehicle collision were responsible for most injuries.

39% of 158 MVA survivors who sought medical treatment for injuries sustained in a MVA met criteria for PTSD (Blanchard Hickling, Taylor & Loos, 1995). The MVA victims who met the criteria for PTSD were more subjectively distressed and had more impairment in role function than the MVA victims who did not meet the PTSD criteria. A high percentage (53%) of the MVA-PTSD group also met the criteria for current major depression, with most of that developing after the MVA. A prior history of major depression appears to be a risk factor for developing PTSD after an MVA ($p = .0004$): 50% of MVA victims who developed PTSD had a history of previous major depression, as compared with 23% of those with a less severe reaction to the MVA. A prior history of PTSD from earlier trauma also is associated with developing PTSD or a subsyndromal form of it (25.2%) ($p = .0012$). Due to the number of MVAs that occur in any given year and the rate of PTSD within MVA populations, MVA-related PTSD is a serious public health concern that warrants greater attention.

1.11 Risk Factors associated with PTSD

1.11.1 Pre-traumatic risk factors

Kessler and colleagues found in a community sample that 60.7% of men and 51.2% of women had been exposed to a traumatic event in the past. The rate of PTSD in women, however, was more than twice that occurring in men (Kessler at al, Breslau et al 1995, Brewin et al 1999). The lifetime prevalence ranges from about 10 to 12 percent among women and 5 to 6 percent among men. Victims among young age group was also found to be at more risk of developing PTSD (Resnick et al 1999, Brewin et al 2000).

Low education (Breslau et al 1995, Resnick et al 1999), low IQ (Stein et al 2002, Brewin et al 2000), low socioeconomic status (Brewin et al 2000) and ethnoracial minority status (Resnick et al 1999, Santos et al 2008, Stephens et al 2010) victims of traumatic events had more susceptibility to develop PTSD. Personality such as neuroticism and extroversion also plays a role in predicting the symptoms of (PTSD Breslau et al 1995, Smith et al). Person with substance abuse is at higher risk to have PTSD compared to non-abusers (Resnick et al 1999).

Previous history of trauma (Resnick et al 1999, Brewin et al 2000, Ozer et al 2003, Breslau et al 1999) and family history of psychiatric disorder (Breslau et al 1995, Ozer et al 2003) have been found to predispose these victims to symptoms of PTSD.

Breslau et al.'s (1991) did a study on sample of urban young adults, the probability of developing PTSD among individuals following exposure, to a potential trauma was more than twofold, for those with a preexisting anxiety disorder or preexisting major depression. With respect to family history, Breslau et al. found that the risk of developing PTSD from exposure to a potential trauma was significantly higher among individuals who reported a family history of anxiety, depression, psychosis, or antisocial behavior.

1.11.2 Peri-traumatic risk factor

Different types of traumatic events have different impact to the survivors. The rate of PTSD was significantly higher among crime versus non crime victims (25.8% vs 9.4%). Motor vehicle accident is the leading cause of PTSD in the general population in United States of America (Norris 1992), preceded only by sexual and physical assault victims that were seriously injured (Resnick et al 1993) compared to victims that did not get injured.

In the NCS, which used DSM-III-R criteria for trauma exposure and PTSD, the most frequently identified types of trauma were witnessing someone being badly injured or killed (35.6% of men and 14.5% of women); involvement in a fire, flood, or natural disaster (18.9% of men and 15.2% of women); and involvement in a life-threatening accident (25% of men and 13.8% of women). Using a DSM-IV definition of traumatic events, a recent survey found that the unexpected death of a loved one was the most frequently reported trauma in a random sample of 18- to 45-year-old Detroit residents (Breslau et al., 1998).

In the NCS (Kessler et al., 1995), men were more likely than women to report witnessing injury or death, involvement in a natural disaster or life-threatening accident, involvement in a physical attack, and combat exposure. Women were more likely to report having experienced rape, sexual molestation, and childhood physical abuse. Consistent with these results, findings from a national survey of adult women in the United States, the National Women's Study (NWS; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993), indicated that 12.7% of participants had experienced a completed rape, 14.3% had experienced molestation or attempted sexual assault, and 10.3% had been physically assaulted. Nearly 30% of rapes reported in the NWS occurred before age 11, and approximately two-thirds occurred before age 18.

The more severe the trauma, more risk to develop PTSD among the victims (Brewin et al 2000). The immediate reactions during the trauma especially perceived life threat (Ozer et al 2003, Resnick et al 1993) or fear may predict the development of PTSD symptoms in the survivors. Death of someone during the events especially someone close or family members may also increased the risk of developing PTSD

1.11.3 Post-traumatic risk factors

Some studies also reported that lack of social support and subsequent life stress after traumatic event increased risk of developing PTSD (Brewin et al 2000, Ozer et al 2003).

1.11.4 Protective factors

Resilience (King et al 1999) and good social support (Brewin et al 2000, Ozer et al 2003) can protect victims of traumatic event from developing PTSD. Beliefs and the ramification of these beliefs can buffer psychological distress (McFarlane et al 1992). Firm religious belief or perhaps some unknown genetic factor influencing coping ability and resiliency .Clarification of these issues in the future will assist our understanding of human adaptation under stress and adversity.

1.12 Comorbidity

From NCS; lifetime comorbidity between PTSD and the other DSM-IIIR disorders was 88% for men and 79% for women (Kessler et al., 1995). In contrast, 46% of women and 55% of men with disorders other than PTSD had lifetime histories of another psychiatric disorder. The disorders most prevalent among men with lifetime histories of PTSD were alcohol abuse or dependence (51.9%), major depression (47.9%), conduct disorder (43.3%), and drug abuse or dependence (34.5%). The disorders most prevalent among women with lifetime PTSD were major depression (48.5%), simple phobia (29.0%), social phobia (28.4%), and alcohol abuse/dependence (27.9%). In Breslau et al.'s (1991) young adult sample, the two most prevalent disorders among individuals with lifetime PTSD were major depression (36.6%) and alcohol abuse or dependence (31.2%).

However, the comorbidity rates in both of these studies refer to lifetime disorder rather than current disorder and therefore do not necessarily imply the simultaneous occurrence of

PTSD with other psychiatric disorders. A study of criminal victimization among women community residents (Boudreaux et al 1998) also found that women with current PTSD were more likely than women without PTSD to meet criteria for the following disorders: major depression (32% vs. 4%), obsessive-compulsive disorder (27% vs. 3%), agoraphobia (18% vs. 1%), and social phobia (18% vs. 4%).

In a community sample of 801 women (Breslau et al1997), PTSD was associated with an increased risk for first-episode onset of major depression and alcohol abuse or dependence. Exposure to a potentially traumatic event also was associated with an increased risk of alcohol abuse or dependence in this sample.

Physical health comorbidities and life adjustment problems associated with PTSD in the empirical literature include more somatic complaints, poorer health status, increased use of health services, and higher rates of cardiovascular symptoms, neurological symptoms, gastrointestinal symptoms, and other physical symptoms of known and unknown etiology (Beckham et al., 1998; Boscarino & Chang, 1999; Holen, 1991; Kulka et al., 1990)

Few studies found evidence of impaired functioning such as more physical limitations and greater likelihood of not being employed among individuals with PTSD (Fairbank et al, 1999; Zatzick et al., 1997). Hence affecting their ability to function well in the social and occupational aspects of their lives.

This shows the important of screening for early signs of PTSD and should become routine during the acute hospitalization of all trauma patients, regardless of injury severity. This

would enable early intervention thereby helping these patients to return to their premorbid level of functioning in a shorter period of time. Apart from this, such early intervention will prevent further complication.

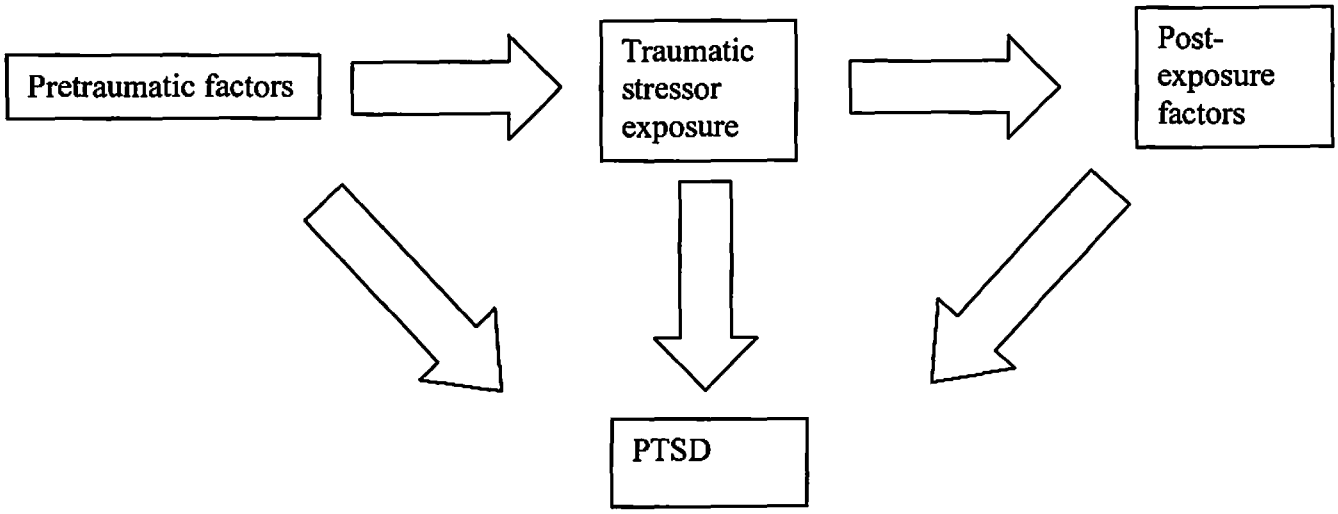

Figure 1: Schematic representation of factors postulated to affect the development of PTSD

CHAPTER 2

OBJECTIVE

2.1 General objective

To validate Malay version of TSQ, in order to assess the prevalence of post-traumatic stress disorder and risk factors among patients that were involved in trauma, and sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII

2.2 Specific objective

1. To validate Malay version of Trauma Screening Questionnaire (TSQ).
2. To determine the prevalence of post-traumatic stress disorder (PTSD) among patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII
3. To determine the risk factors for PTSD, among patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII

2.3 Research questions

1. Was Malay version of Trauma Screening Questionnaire (TSQ) valid?
2. What was the prevalence of post-traumatic stress disorder (PTSD) among patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII?
3. What were the risk factors associated with development of PTSD among patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII?
4. What were the ways of coping employed, by patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII
5. What were the types of support received by patients that were involved in trauma, sought treatment in Orthopaedic Wards and Clinics of HUSM and HRPZII