



UNIVERSITI PUTRA MALAYSIA

***MOTORCYCLIST CRASH SURVIVORS: PSYCHOLOGICAL EFFECTS
AND THEIR ASSOCIATED FACTORS IN HOSPITAL SERDANG,
SELANGOR***

**BY
IRYANI BT MOHD RADZI**

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FPSK4 2012 7**

ACKNOWLEDGEMENT

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Keywords: Acute Stress Disorders, Depression, Anxiety, Stress and Motorcyclist Crash Survivors

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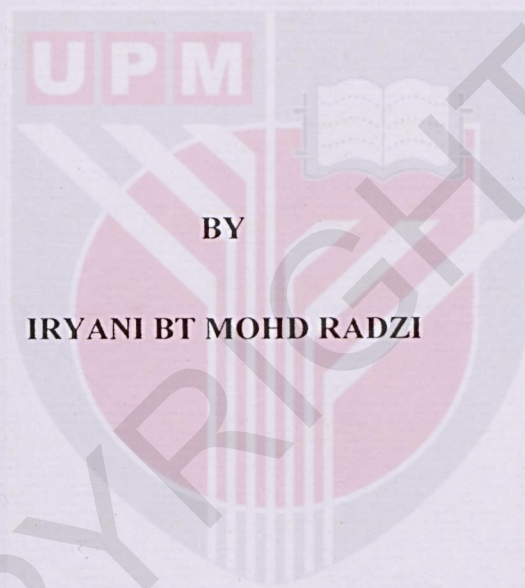
MANGSA KEMALANGAN MOTOSIKAL: KESAN PSIKOLOGI DAN FAKTOR-FAKTOR YANG BERKAITAN DI HOSPITAL SERDANG, SELANGOR

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Kata kunci: Akut Trauma, Depresi, Cemas, Tekanan dan Mangsa Kemalangan Motosikal

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**This submitted in fulfillment of the requirement for the degree Bachelor Science
(Environmental and Occupational Health) from Faculty of Medicine and Health
Sciences, Universiti Putra Malaysia**

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TABLE OF CONTENTS

	Pages
DECLARATION	ii
APPROVAL	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF APPENDICES	xiv

CHAPTER 1: INTRODUCTION

1.1	Background	1
1.2	Problem statement	3
1.3	Study justification	6
1.4	Conceptual framework	7
1.5	Definition	9
	1.5.1 Conceptual definition	9

1.5.1.1 Acute stress disorder	9
1.5.1.2 Depression	9
1.5.1.3 Anxiety	10
1.5.1.4 Stress	10
1.5.2 Operational definition	
1.5.2.1 Acute stress disorder	10
1.5.2.2 Depression, anxiety and stress	10
1.6 Objectives	11
1.6.1 General objective	11
1.6.2 Specific objectives	11
1.7 Hypothesis	12

CHAPTER 2: LITERATURE REVIEW

2.1 Motor vehicle crashes	13
2.2 Depression and anxiety	14
2.3 Acute stress disorder	16

CHAPTER 3: METHODOLOGY

3.1	Study design	18
3.2	Study location	18
3.3	Sampling unit	19
3.4	Sampling frame	19
3.5	Sample size	19
3.6	Sampling method	22
3.7	Data collection and measurement	26
	3.7.1 Questionnaire	26
	3.7.2 Assessment on acute stress disorder symptoms	26
	3.7.3 Assessment depression, anxiety and stress status	28
3.8	Data analysis	30
3.9	Ethical issues	31

CHAPTER 4: RESULTS

4.1	Background	32
4.2	Socio-demography factors	32
4.3	Acute stress disorder status	35
4.4	Depression status	35
4.5	Anxiety status	36
4.6	Stress status	37
4.7	Socio-demographic factors with acute stress disorder symptoms	38
4.8	Socio-demographic factors with depression status	40
4.9	Socio-demographic factors with anxiety status	42
4.10	Socio-demographic factors with stress status	44
4.11	Association between psychological effects status (depression, anxiety and stress) with acute stress disorder symptoms	46
4.11.1	Acute stress disorder symptoms with depression status	46
4.11.2	Acute stress disorder symptoms with anxiety status	47
4.11.3	Acute stress disorder symptoms with stress status	48

CHAPTER 5: DISCUSSION

5.0	Background	49
5.1	Socio-demography	50
5.2	Acute stress disorder symptoms	52
5.3	Level of psychological effects status (depression, anxiety and stress)	53
5.3.1	Depression status	53
5.3.2	Anxiety status	54
5.3.3	Stress status	55
5.4	The association between socio-demographic factors with acute stress disorder symptoms, depression, anxiety and stress status	56
5.5	The association between psychological effects status (depression, anxiety and stress) with acute stress disorder symptoms	60
5.5.1	The association between acute stress disorder symptoms with depression status	60
5.5.2	The association between acute stress disorder symptoms with anxiety status	61
5.5.3	The association between acute stress disorder symptoms with stress status	62
5.6	Study limitation	63
5.7	Conclusion	64

5.8	Recommendation	66
	REFERENCES	67
	APPENDICES	

LIST OF TABLES

Table 4.1:	Distribution of age among respondents	33
Table 4.2:	Distribution of socio-demographic background of respondents	34
Table 4.3:	Distribution of acute stress disorder among respondents	35
Table 4.4:	Distribution of depression among respondents	36
Table 4.5:	Distribution of anxiety among respondents	37
Table 4.6:	Distribution of stress among respondents	37
Table 4.7:	Socio-demographic factors with acute stress disorder symptoms	39
Table 4.8:	Socio-demographic factors with depression status	41
Table 4.9:	Socio-demographic factors with anxiety status	43
Table 4.10:	Socio-demographic factors with stress status	45
Table 4.11:	Acute stress disorder symptoms with depression status	46
Table 4.12:	Acute stress disorder symptoms with anxiety status	47
Table 4.13:	Acute stress disorder symptoms with stress status	48

LIST OF FIGURES

Figure 1 : Total road crashes by states, Malaysia 2010	5
Figure 2 : Conceptual framework	8
Figure 3.1: Orthopedic clinic, Hospital Serdang	24
Figure 3.2: Interview patient in ward 7E	24
Figure 3.3: Interview patient in orthopedic clinic	24
Figure 3.4: Interview patient in orthopedic clinic	24
Figure 4 : Data collection flow	25

LIST OF APPENDICES

Appendix 1: Respondent Information Sheet

Appendix 2: Consent Form

Appendix 3: Questionnaire

Appendix 4: UPM Ethics

Appendix 5: Hospital Serdang Ethics

Appendix 6: MOH Ethics



CHAPTER 1

INTRODUCTION

1.1 Background

Worldwide, traffic crashes killed 1.2 million people and injured 50 million people per year (WHO, 2004). Road traffic crashes increased year by year. Statistic from Malaysia Royal Police shows 414,421 road users were involved in road crash in year 2010. The statistic shows the increasing numbers as compared to year 2009 which were 397,330 cases. Road crash injuries were seventh in the top ten causes of death in Malaysia and fourth in the top five admitted in hospital in Malaysia in year 2010 (Ministry of Health, 2011). There were about 6,872 from the cases recorded to be death. From 6,872 deaths in road crashes 2010, 60% (4,036) was motorcyclist (Malaysia Royal Police, 2010). Therefore, motorcyclists were the biggest affected group in terms of death and a major trauma problem in the country.

Table 1: Yearly comparison of traffic crashes (2005 – 2010)

Accident	2005	2006	2007	2008	2009	2010
Fatal	5,623	5,719	5,672	5,974	6,218	6,260
Serious injury	7,600	7,373	7,384	7,019	6,978	6,002
Light injury	25,905	15,596	13,979	12,893	12,072	10,408
Damage only	298,136	312,564	336,284	347,185	372,062	391,751
Total	328,264	341,252	363,319	373,071	397,330	414,421

Source: Malaysia Royal Police (2010)

While traffic crashes were currently ranked at the ninth spot for global diseases of burden, it was projected they will move to the number three spot by 2020 (WHO, 2004). Crash injuries were fourth in the top five causes of death, with traffic crashes as the number one accidental cause of death in Taiwan. Traffic crashes in the prime years of people's lives obviously affect their everyday lives, and also their productivity.

These crashes not only cause direct physical injuries, but can also indirectly affect mental function, social function and work capabilities. Although physical injuries can be treated through medical care and rehabilitation, the psychosocial impact can last for several weeks, months, years, or even throughout the life.

The most common psychological traumas for motor vehicle crash survivors were depression and anxiety, which affect not only personal quality of life, but also families and society (Adshead, 2000). The symptoms found in the first month after crash have been termed as acute stress disorder (ASD) and those lasting longer than 1 month have been termed post traumatic stress disorder (PTSD) (American Psychiatric Association, 1994). Jaspers (1998) has shown that 25% of traffic crash victims experienced acute stress disorder (ASD) symptoms within several days of the crash.

Previous research has documented the psychological effects of various traumatic events. However, systematic or follow-up study of the psychological aftermath of crash has been limited (Tsay *et al.*, 2001).

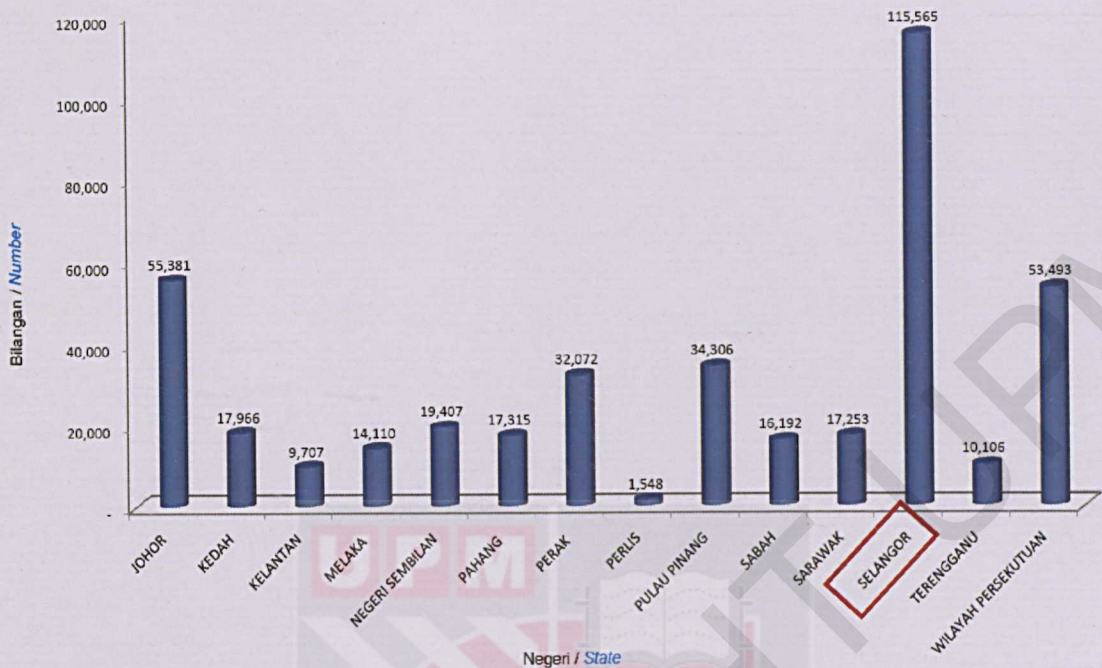
1.2 Problem statement

Yearly trend for the last two decades showed the number of motorcyclist fatalities has outnumbered other road users since early 90's, and the trend continues towards 2010 (MIROS, 2011). Among all types of road users, motorcycle riders had the highest risk of fatal and nonfatal injuries. Motorcycle riders were over 30 times more likely than car occupants to die in a traffic crash (Mau-Roung *et al.*, 2008). Motorcyclists face a number of risk factors that do not affect car drivers. The main risk factors were decreased stability and a much lower level of occupant protection than was provided by

a car. In addition, a motorcycle was less visible to other road users than a car or a truck. These factors together give motorcyclist a higher level of risk per kilometre travelled than other modes of transport. For more serious crashes, the motorcyclist was more likely to have the primary responsibility for the crash. The motorcycle rider had the primary responsibility for nearly 70 percent of fatal motorcycle crashes, but the comparable figure for minor injury crashes is 50 percent (Mau-Roung *et al.*, 2008)

Each year, the number of registered motorcycles continues to grow rapidly, and each year at least 1% of them get involved in road crash. The percentage was small, but the numbers were big enough to bring huge losses to the economic output of the country. Out of the 1% of motorcycle involved in road crashes, more than 10,000 riders and pillions were injured and killed every year. For many years, motorcycle has been the most preferable, convenient and affordable mode of transport in Malaysia. Based on 2010 data, total number motorcycles were 9,368,454 and 120,156 involved in crashes. About 4,036 deaths (include motorcyclist and pillion rider) recorded. Estimated motorcycle deaths per number of motorcycles involved was 0.0336 (Statistical Department; Transport Department, MOT & Royal Malaysian Police, 2010).

However, according to statistics released by the Royal Malaysian Police (2010) in figure 1, Selangor recorded to have the highest number of road crashes in Malaysia which is of 115.565.



Royal Malaysian Police (2010)

Figure 1: Total road crashes by states in Malaysia of year 2010

Recent statistics (2010) by Royal Malaysian Police indicate the number of casualties was 28,269 including fatal cases. Unfortunately, out of the total casualties, a bigger percentage of killed and seriously injured (KSI) pillions and riders have been observed for the same period. The proportion of fatalities and seriously injured gets bigger as the time approach 2010. In year 2006 to 2010, the proportion of KSI increases dramatically to more than 50% of total casualties in 2010 (MOT 2010). Acute stress disorder, depression and anxiety, the most common psychological problems after crashes, usually manifest within days after the crash (Frommberger *et al.*, 1998, Tsay *et al.*, 2001).

1.3 Justification of study

This study was conducted to determine the psychological effects (acute stress disorder, depression, anxiety and stress) and their associated factors among motorcyclist crash survivors in Selangor. As much as researcher was aware off, there has been no study conducted related to the depression, anxiety and acute stress disorder among motorcyclist crash survivors in Malaysia. In order to respond towards the issue, the study aims to gain a proper understanding of the association effects of motorcyclist involved with crash in their psychological effects (acute stress disorder, depression, anxiety and stress).

Depression and anxiety were selected due to its relations to acute stress disorder (ASD). People who were exposed to the trauma were likely to begin showing symptoms of depression or anxiety after the trauma. They most commonly appeared a few days or a few weeks after the traumatic event. People with traumatic events frequently developed depression and with time, the depression and anxiety starts to affect their relationships, work life or ability to perform everyday tasks. In a study involving 188 traffic crashes patients 10 days after the crash 41% of the patients showed severe anxiety, and at 3 months and 1 year later develop post traumatic stress disorder (PTSD). Bryant *et al.*, (1998) reported a prospective study of a sample of crash survivors who

were assessed one month after the crash. They reported that 13% of the sample met the criteria for diagnosis with acute stress disorder (ASD).

1.4 Conceptual framework

Figure 2 shows the conceptual framework for this study. Motor vehicle crashes was recognized to form of trauma and mental health difficulties may occur even in those who did not suffer from physical injuries (Blanchard *et.al.*, 1995). From motorcyclist crash survivors, they would be impact on physical health, psychosocial health and also social relationship. However, this study focused on the psychological effects health in terms of acute response, depression, anxiety and stress which were dependent variables in this study and the associated factors which socio-demographic factors as independents variables in this study.

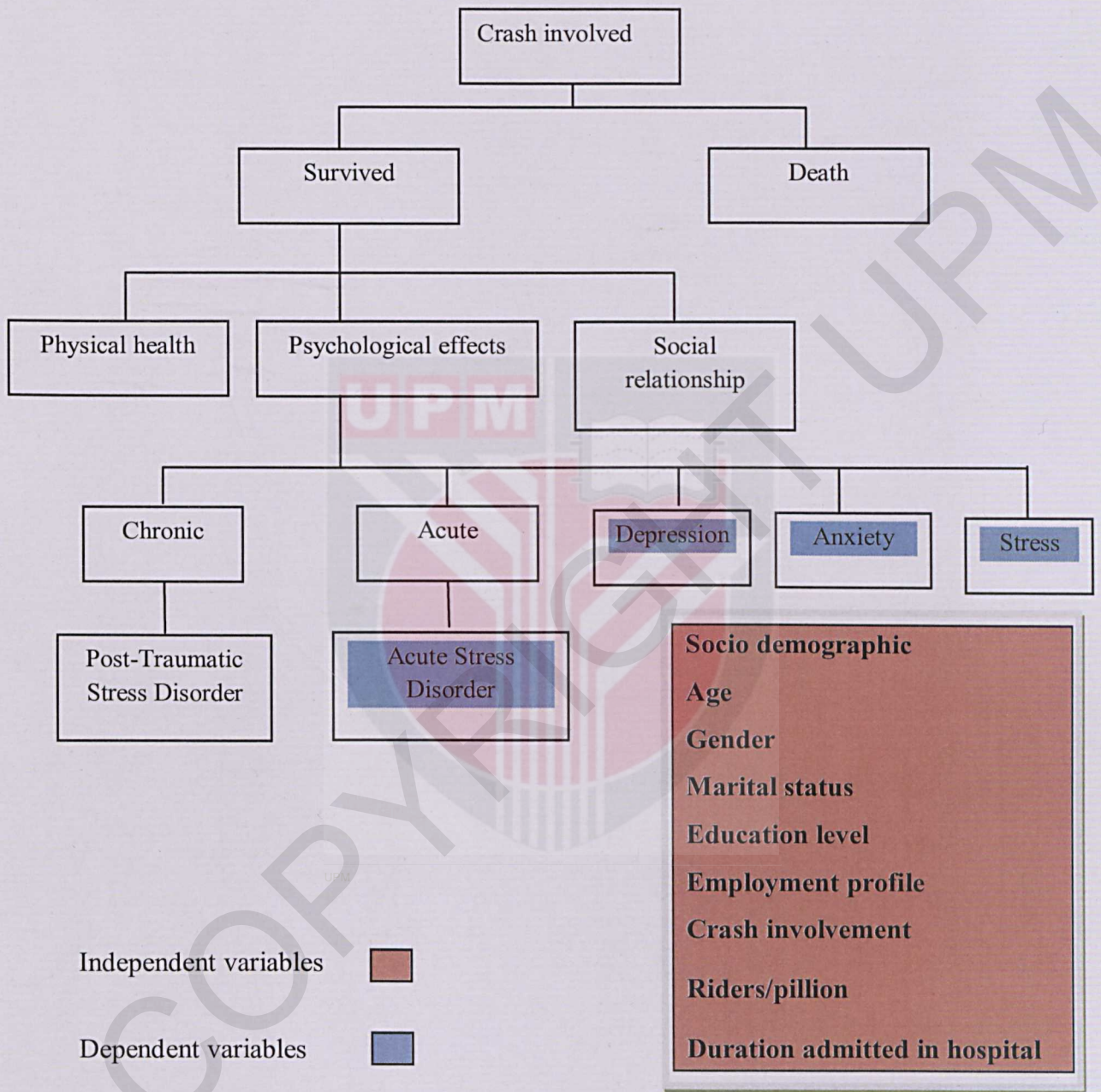


Figure 2: Conceptual framework

1.5 Definition

1.5.1 Conceptual definition

1.5.1.1 Acute stress disorder

Acute stress disorder (ASD) involved symptoms that occur within four weeks of exposure to trauma, and was only diagnosed if the disturbance lasts for less than four weeks (Harrison, 1999).

1.5.1.2 Depression

World Health Organization (WHO, 2004) defined depression as common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration

1.5.1.3 Anxiety

Anxiety was an emotional reaction with ambiguity, fear and worries and develops after an encounter with an internal or external threat (Spielberger *et al.*, 1983).

1.5.1.4 Stress

Stress was an individualized physical and or emotional response and may come from internal or external sources. (Ronald *et al.*, 1989)

1.5.2 Operational definition

1.5.2.1 Acute stress disorder symptoms

Acute stress disorder symptoms were measured using Acute Stress Disorder Scale (ASDS) (Bryant *et al.*, 2000). The ASDS was a self-report inventory that (a) indexes acute stress disorder (ASD) and (b) predicts posttraumatic stress disorder (PTSD). The ASDS was a 19-item inventory that was based on *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*, American Psychiatric Association, 1994) criteria. (Bryant *et al.*, 2000).

1.5.2.2 Depression, anxiety and stress

Depression, anxiety and stress status were measured using the Depression Anxiety and Stress Scales (DASS). The Depression Anxiety and Stress Scales (DASS)

was a 21-item self-report instrument designed to measure the three related negative emotional states of depression, anxiety and tension or stress.

1.6 OBJECTIVES

1.6.1 General objective

To study the psychological effect (acute stress disorder, depression, anxiety and stress) and their associated factors (age, marital status, educational background, types of motorcyclist, employment status, previous crashes and duration admitted in hospital) among motorcyclist survivors involved with crash in Hospital Serdang.

1.6.2 Specific objectives

- i. To determine the psychological effects status (acute stress disorder symptoms, depression, anxiety and stress) among respondents.
- ii. To determine the association between socio-demographic data with psychological effects status (acute stress disorder symptoms, depression, anxiety and stress) among respondents.

- iii. To determine the association between acute stress disorder symptoms with depression, anxiety and stress status among respondents.

1.7 HYPOTHESIS

- i. There was a significant association between socio-demographic data with psychological effect status (acute stress disorder symptoms, depression and anxiety) among respondents.
- ii. There was a significant association between acute stress disorder symptoms with psychological effects status (depression, anxiety and stress) among respondents.

CHAPTER 2

LITERATURE REVIEW

2.1 Motor vehicle crashes

Motor vehicle crashes were a leading source of morbidity and mortality among adults worldwide (Richter, 1981). For example, in the United States, over 3.5 million people are injured in road crashes every year (Butler *et al.*, 1999). Nowadays, there are more than 6000 fatal cases of road crashes in Malaysia. There are 9,368,454 of motorcycles involved in crashes and about 4,036 deaths (include rider and pillion) recorded (MIROS, 2010). In addition to the significant mortality and morbidity rates, motor vehicle crashes can also lead to a wide range of acute and chronic psychological consequences (Blaszczynski *et al.*, 1998). The importance of road crashes in this light is reinforced by the fact that the traumatic experienced during injury has found to be the leading cause of depression and anxiety.

2.2 Depression and anxiety

Previous research had documented the psychological effects of various traumatic events. However, systematic or follow-up study of the psychological aftermath of traffic crashes has been limited (Tsay *et al.*, 2001). The symptoms showed in the first month after a crash have been termed acute stress disorder and those lasting longer than 1 month have been termed post trauma symptomatology (American Psychiatric Association 1994). It is associated with depression and anxiety.

Depression was an emotional response that involves persistently low spirits, hopelessness, loss of interest, and can cause a combination of physical symptoms such as changes in appetite, sleep, body movement, thought and concentration. A person might have severe feelings of worthlessness, guilt or suicidal tendencies (Robertson and Katona, 1997). Mayou *et al.*, (2001) found 39% of patients still suffered from depression a year after injury. People with a physical illness, those who experience more stressful events may have even higher rates of depression following a traffic crash (Robertson and Katona, 1997).

Anxiety was an emotional reaction with ambiguity, fear and worry and develops after an encounter with an internal or external threat (Spielberger *et al.*, 1983). It results from a threat to the body, death of family members or friends, divorce, loss of job,

interpersonal difficulties, or a change of role function, which could be real or the result of the sufferer's imagination (Zatzick *et al.*, 1997, Michael, 2000). Similarly, Mayou *et al.*, (2001) found that a year after a crash 52% of patients was fearful of travel and 58% exhibited symptoms of general anxiety.

Traffic crash victims' physical function declines immediately after their crashes because of their injuries, but at 6 months their ability to perform activities of daily living improves. However, many patients have moderate to severe psychological problems, self-abasement, guilt, depression, a distorted self-image and anxiety (Holbrook *et al.*, 1998).

Depression and anxiety, the most common psychological problems after crashes, influence each of the other disorders, and usually manifest within days after the crash (Frommberger *et al.*, 1998). These psychological concerns and consequent social re-adaptation are obstacles that affect crash victims' ability to return to normal life (Todd *et al.*, 1996, Holbrook *et al.*, 1998). As discussed above, a person with acute stress disorder (ASD) is frequently also diagnosed with other psychiatric disorders, such as depression and anxiety (Frommberger *et al.*, 1998, Tsay *et al.*, 2001).

2.3 Acute stress disorder

Acute stress disorder (ASD) was a relatively diagnostic category and was included in DSM-IV. It involves symptoms that occur within four weeks of exposure to trauma, and is only diagnosed if the disturbance lasts for less than four weeks. In a sense, then, ASD is similar to PTSD but represents an acute reaction to traumatic events. ASD requires exposure to a traumatic event in which “the person experienced, witnessed, or was confronted with events that involved actual or threatened death or serious injury, or a threat to the physical integrity” (American Psychiatric Association, 1994) of either the victim or others in the situation. It also requires that the victim’s response involve “intense fear, helplessness, or horror.” (American Psychiatric Association, 1994). Involvement in a motor vehicle crash, even a relatively minor one, could conceivably meet this requirement. Apart from diagnostic criteria relating to the duration of the disturbance (2 days to 4 weeks) and ruling out a range of other diagnostic categories, the remaining diagnostic criteria describe the symptoms required for diagnosis and therefore provide a broad description of the disorder. Diagnosis of the disorder also requires that there be significant distress or impairment in social, occupational or other important areas of personal functioning (Harrison, 1999).

The relative recency of inclusion of this disorder in the DSM-IV (American Psychiatric Association, 1994) means that there is little evidence bearing on its prevalence following crash involvement. Taylor *et al.*, (1995) review of anxiety disorders following crash involvement, for example, does not include ASD as a possible problem for this reason. Harvey *et al.*, (1998) reported a prospective study of a sample of crash survivors who were assessed one month after the crash. They reported that 13% of the sample met the criteria for diagnosis with ASD. Harvey and Bryant's estimate for clinical ASD is taken as a reasonable estimate of the incidence of ASD amongst injured drivers (13%). Only those injured suffer from ASD as a consequence of crash involvement and may, therefore, be conservative (Bryant *et al.*, 1998).

CHAPTER 3

METHODOLOGY

3.1 Study design

The study was a cross sectional study design where exposure and outcome were determined simultaneously. The cross sectional study design was used to determine the associated factors with acute stress disorder of motorcyclist survivors involved in road crash with the mediating effects on depression and anxiety status.

3.2 Study location

This study was carried out at the orthopedic clinics and orthopedic ward at Hospital Serdang in Selangor. This location was chosen because Selangor has been reported as state that had highest incidence of motor vehicle crash and Hospital Serdang is one of the major hospitals in Selangor.

3.3 Sampling unit

Study participants were selected in orthopedic clinic and orthopedic ward at Hospital Serdang.

3.4 Sampling frame

Patients who had follow ups with the orthopedic clinics and orthopedic wards obtained from the Hospital Serdang.

3.5 Sample size

The study sample were chosen using purposive sampling to selects motorcyclist crash survivors who had follow up with the orthopedic clinics and orthopedic warded in Hospital Serdang, Selangor. Sample size for the study is calculated using Kirkwood (1988).

$$N = \frac{P(1-P)}{e^2}$$

Where,

N = Sample size

P = Prevalence

e = Probability error

Therefore, according to the equation, N was equal to sample size and p was the prevalence of vehicle injury.

- 1) Prevalence of **acute stress disorder is 25%**. (Jaspers *et al.*, 1998: *Whiplash and post-traumatic stress disorder*).

Standard error, $e = p \leq 0.05$.

$$\begin{aligned} \text{Sample size, } N &= p(1-p) / e^2 \\ &= 0.25(1-0.25) / (0.05)^2 \\ &= 75 \text{ respondents} \end{aligned}$$

About **20% respondent will be added**

$$\begin{aligned} N &= 75 \times 20\% \\ &= 15 \text{ respondents} \end{aligned}$$

Addition of 20% to overcome the problem of non-responses

The total respondent for the study was $75 + 15 = 90$ respondents

- 2) Prevalence of **depression was 39%** (Mayou *et al.*, 2001: *Prediction of psychological outcomes one year after a motor vehicle accident*).

Standard error, $e = p \leq 0.05$.

$$\begin{aligned}\text{Sample size, } N &= p(1-p)/e^2 \\ &= 0.39(1-0.39)/(0.05)^2 \\ &= 95 \text{ respondents}\end{aligned}$$

About **20% respondent will be added.**

$$\begin{aligned}N &= 95 \times 20\% \\ &= 19 \text{ respondents}\end{aligned}$$

Addition of 20% to overcome the problem of non-responses

The total respondent for the study was $95 + 19 = 114$ respondents

- 3) Prevalence of **anxiety was 41%** (Mayou *et al.*, 1993: *Psychiatric consequences of road traffic accidents*)

Standard error, $e = p \leq 0.05$.

$$\begin{aligned}\text{Sample size, } N &= p(1-p)/e^2 \\ &= 0.41(1-0.41)/(0.05)^2 \\ &= 97 \text{ respondents}\end{aligned}$$

About **20% respondent will be added.**

$$N = 97 \times 20\% \\ = 19 \text{ respondents}$$

Addition of 20% to overcome the problem of non-responses

The total respondent for the study was $97 + 19 = 116$ respondents.

So, based on the calculation that has been done, the sample size was chosen based on the highest sample needed from the three different outcomes. This total respondent needed in this study is 116 respondents.

3.6 Sampling methods

The samples were chosen using purposive sampling. The motorcyclist crash survivors are riders or pillioners involved in road crash within a month (Satoko *et al.*, 2006). A face-to-face interview was carried out with each person selected, using a structured questionnaire to collect information regarding the acute stress disorder among motorcyclist crash survivors.

Participants were included if they were patients with traffic-related injuries, aged between 18 to 65 years old (Koren *et al.*, 1999), psychologically unimpaired and willing to participate. They were excluded if they have traumatic brain injury, previous severe medical illness or a history of psychiatric disorders (Wang *et al.*, 2005).

Patients were requested to fill their age and from the data, it will be categorized in two categories (18-38, 39-59) by using SPSS range. This categories needed to differentiate between young and old group.

The participants were asked to sign a consent form in order to participate in this study (Appendix 2). After consent form was signed, the participant filled up the questionnaire given. Each participant took about 20 to 30 minutes to complete the questionnaire. There were five scales provided (normal, mild, moderate, severe and extremely severe) in Depression, Anxiety and Stress Scale (DASS21) questionnaire. In this study, the DASS21 questionnaire will be categorized into two categories. Normal level will consider as not having depression, anxiety and stress. Mild to extremely severe will consider as having depression, anxiety and stress (Sahoo, 2010).



Figure 3.1: Orthopedic clinic, Hospital Serdang



Figure 3.2: Interview Patient in ward 7E



Figure 3.3: Interview Patient in Orthopedic clinic

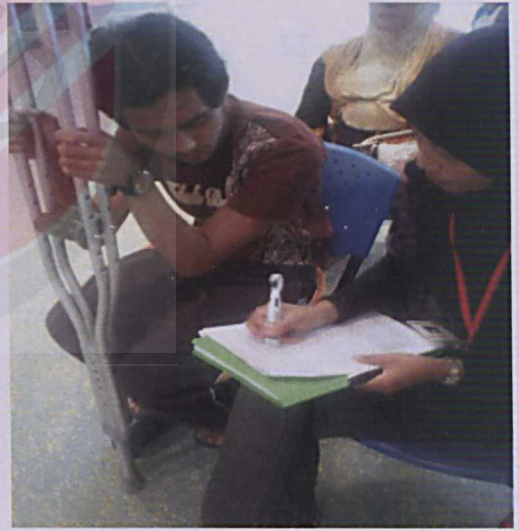


Figure 3.4: Interview Patient in Orthopedic clinic

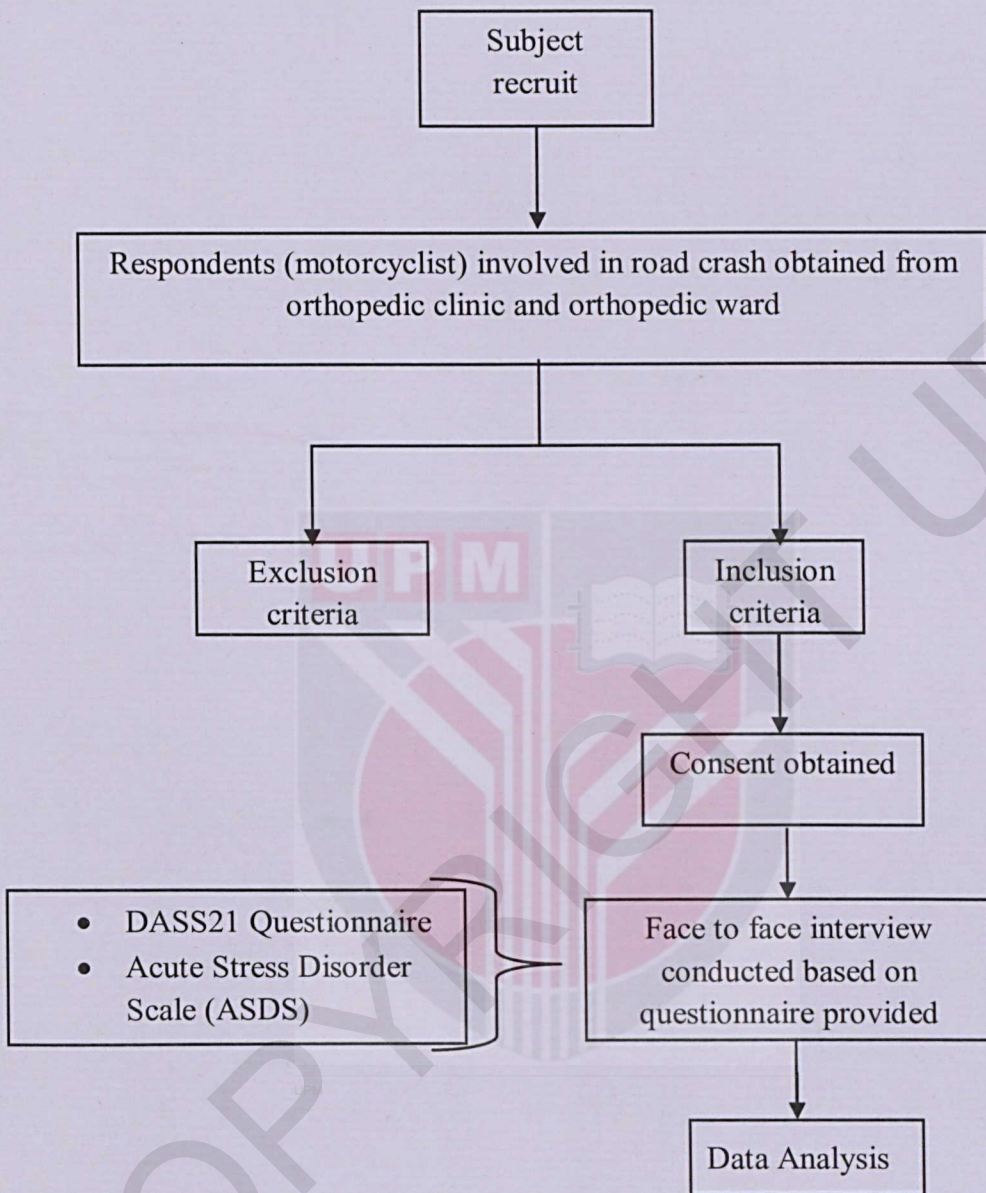


Figure 4: Data collection flow

3.7 Data collection and measurement

3.7.1 Questionnaire

Questionnaire forms used in this study consist of three parts. Part 1: Socio-demographic information; Part 2: Acute Stress Disorder Scale (ASDS); Part 3: Depression, Anxiety and Stress Scale (DASS 21).

3.7.2 Assessment on acute stress disorder symptoms

Assessment on ASD was measured using the Acute Stress Disorder Scale (ASDS). The ASDS was a 19-item inventory that is based on Diagnostic and Statistical Manual of Mental Disorders (4th ed.; *DSM-IV*, American Psychiatric Association, 1994) criteria. The ASDS possessed good sensitivity (95%) and specificity (83%) for identifying ASD against the ASD Interview on 99 civilian trauma survivors. Test-retest reliability of the ASDS scores between 2 and 7 days was strong ($r = .94$). For a diagnosis of PTSD score 1 or more is needed: for one of re-experiencing questions (questions 1-5), 3 of avoidance questions (6-12), and for 2 arousal questions (13-17).

The ASDS items were generated by (a) basing the item content on *DSM-IV* criteria and (b) canvassing six experienced clinical psychologists to provide items that diagnose ASD. These clinicians each had at least 5 years experience in assessing acutely traumatized populations in specialist trauma clinics. Specifically, each clinician was provided with the *DSM-IV* criteria for ASD and requested to generate the minimum number of items required to comprehensively address each of the criteria. On the basis of the generated items, the authors identified 19 items that encompassed the symptoms nominated by the clinicians. The 19 items that comprise the ASDS included 5 dissociative, 4 reexperiencing, 4 avoidance, and 6 arousal symptoms. Items on the ASDS were phrased in order to facilitate self-report responses. The ASDS requires respondents to rate the extent to which each symptom is present on a 5-point scale (1 = *not at all*, 5 = *very much*). The ASDS was scored by summing the scores for all items (Bryant *et al.*, 2000). This questionnaire was translated using back-translation procedure. An analyzed of reliability indicate that this trial was reliable to be used in this population, $\alpha = 0.863$.

3.7.3 Assessment for depression, anxiety and stress status

Assessment for measuring the anxiety and depression was measured by using Depression and Anxiety Stress Scale (DASS). The DASS-21 was a measure that assesses three negative emotional states: depression, anxiety and stress (Lovibond *et al.*, 1995). It contained 21 items (7 items for each emotional state). It was a Self-report format consisting of statements referring to the past week. Each item was scored on a 4-point scale (0 = did not apply to me at all, to 3 = applied to me very much or most of the time). Comparison of the DASS-21 to clinical judgment showed that the measure has clinical utility (Mitchell *et al.*, 2007). The scale appeared understandable and easy to complete. Excludes many somatic items that may not be relevant to those with SCI and the instrument has greater sensitivity for identifying SCI patients with possible anxiety disorders (Mitchell *et al.*, 2007). The ability to separately measure the three emotional states may be of considerable use for researchers and clinicians. This was an advantage given that measures of anxiety and depression often do not distinguish between these conditions and anxiety was likely more prevalent than depression.

The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, and lacks of interest/involvement, anhedonia, and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale was sensitive to levels of chronic non-

specific arousal. It assessed difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Subjects were asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. As the scales of the DASS have been shown to have a high internal consistency and to yield meaningful discriminations in a variety of settings, the scales should meet the needs of both researchers and clinicians who wish to measure current state or change in state over time (e.g., in the course of treatment) on the three dimensions of depression, anxiety and stress. The DASS was suitable for screening adolescents and adults.

DASS 21 translated in Bahasa Melayu Version was used in this study. The original version of DASS was 42-item. DASS 21-item was a modified and shorter version (Lovibond *et al.*, 1995). In this study, the author focused on the effort of translating the DASS-21 into Bahasa Malaysia (BM) and eventually validated this version (Ramli, 2007). The scoring of 21-item requires the users to time 2 of total score 21-item to suit the original 42-item. It was not a diagnostic questionnaire but rather as a severity measurement (dimensional rather than a categorical) (Lovibond, 1998). DASS is suitable to be used in any clinical or non-clinical settings (Crawford *et al.*, 2003). The questionnaire was easy and simple to administer to general population without any special training was needed. Unlike certain psychometric tests, by only using this questionnaire, researcher would be able to gauge levels of depression, anxiety and stress

at the same time. Almost all 21 items in this questionnaire were relatively cultural free as none of its item mentioned any aspects on certain culture or religion. The effort of translation and validation of Bahasa Malaysia version were focused on DASS-21 before further development of BM DASS-42. Furthermore, DASS-21 was less been studied across the globe (Ramli, 2007). The BM DASS 21 had very good Cronbach's alpha values of 0.75, 0.74 and 0.79, respectively for depression, anxiety and stress subscale.

3.8 Data analysis

Statistical analysis was performed by statistical package for social (SPSS) version 19.0. All data were expressed as mean \pm SD unless otherwise specified. The data was screened for missing data and data error. Then, the continuous data was tested for normality. The p value ($p < 0.05$) was considered to be statistically significant. Chi-square test was used to determine the association between socio-demographic with the psychological effects status (acute stress disorder, depression, anxiety and stress) and to determine the association between acute stress disorder with depression, anxiety and stress.

3.9 Ethical issues

Ethical approval for the study was obtained from Ethical committee at Faculty of Medicine and Health Sciences, University Putra Malaysia. Then, consent from respondents was needed. Respondents volunteered to join the study and sign the consent form. The respondents were notified that this study was confidential and all information provided with regards to their identity will remain private and confidential. Besides that, approval from Ministry of Health to conduct research at Orthopedic Clinics and Orthopedic ward at Hospital Serdang that and approval from Hospital Serdang were also obtained.

CHAPTER 4

RESULTS

4.1 Background

This chapter presents the statistical analysis of psychological effects and their associated factors among motorcyclist crash survivors. Data were collected from February to April 2012 in orthopedic clinics and also orthopedic ward at Hospital Serdang, Selangor. In this study, 116 had met the inclusive criteria and participated in this study. A total of 116 respondents were approached to enroll in this study. The response rate obtained was 100%.

4.2 Socio-demography factors

The respondents participated in this study were in the age range from 18-59 years old. The mean and standard deviation of the age of the respondents was about

1.82 and 1.083 years old respectively. Table 4.1 summarized the distribution of age of the respondents.

Table 4.1: Distribution of age among respondents (N=116)

Socio-Demographic Characteristics	Mean \pm SD	N(%)
Age	1.82 \pm 1.083	
18-38		68 (58.6)
40-59		37 (31.9)

Majority (87.1%) of the respondents involved in this study consists of male and followed by females (12.9%) (Table 4.2). Same goes to data of the respondents that have license (87.1%) while the other did not have any license on the road (12.9%). Meanwhile, majority (59.5%) of the respondents has experienced crash before this and the other 40.5% did not experience any crashes before. The respondents were asked about their marital status, educational background, employment status and also the duration of admittance in the hospital. Majority (67.2%) of them was single and 32.8% were married. For educational background, majority (44.8%) from tertiary education, followed by secondary education (36.2%) and primary education (19%).

For the employment status, 71.6% from the respondents were working, while the other 19% still studying and only 9.5% of the respondents were unemployed. Most

(38.8%) of the respondents admitted to hospital less than 1 week, followed by 1-2 weeks (34.5%) and 3 weeks above (26.7%). Table 4.2 summarized the socio-demographic background of the respondents.

Table 4.2: Distribution of socio-demographic background of respondents

Socio-Demographic Characteristics	n (%)
Gender	
Male	101 (87.1)
Female	15 (12.9)
Marital Status	
Single	78 (67.2)
Married	38 (32.8)
Educational background	
Primary	22 (19)
Secondary	42 (36.2)
Tertiary	52 (44.8)
Types of Motorcyclist	
Rider	85 (73.3)
Pillion	31 (26.7)
Employment Status	
Working	83 (71.6)
None	11 (9.5)
Student	22 (19.0)
Previous Crashes	
Yes	69 (59.5)
No	47 (40.5)
Motorcyclist Legal License	
Yes	101 (87.1)
No	15 (12.9)
Duration in hospital	
1 week and below	45 (38.8)
1 -2 weeks	40 (34.5)
3 weeks above	31 (26.7)

N=116

4.3 Acute stress disorder status

Table 4.3 shows the status of acute stress disorder symptoms by using Acute Stress Disorder Scale. 11.2% from the respondents were found to have acute stress disorder symptoms, while the other 88.8% were found to have low symptoms of acute stress disorder (ASD).

Table 4.3: Distribution of acute stress disorder symptoms among respondents

Acute Stress Disorder Scale	Mean \pm SD	N (%)
Acute stress disorder symptoms	37.61 \pm 8.908	
Low (50 and below)		103 (88.8)
High (above 50)		13 (11.2)

N=116

4.4 Depression status

In term of depression status among respondents, there were about 67.2% of the respondents did not experience any depressive symptoms. About 16.4% of the respondents categorized under moderate level, followed by 15.5% of the respondents categorized under mild and only 0.9% of the respondents were extremely severe. However, there were no respondents were categorized under severe level of depression. In this study, normal level of depression was considered for those who did not have depression, while mild to extremely severe level of depression was considered as

having depression. So, total number of respondents to have depressive symptoms was 32.8%. Table 4.4 summarized the distribution state of depression among respondents.

Table 4.4: Distribution of depression among respondents (N=116)

DASS Subscale	Mean	SD	Normal (0-9)	Mild (10-13)	Moderate (14-20)	Severe (21-27)	Extremely Severe (28+)
Depression	7.33	5.844	78	18	18	0	1
Percentage (%)			(67.2)	(15.5)	(16.4)	0	(0.9)

4.5 Anxiety status

For the anxiety symptoms among respondents, there were about 37.1% respondents categorized under moderate level of anxiety. 18.1% of the respondents categorized as extremely severe, while 15.5% of respondents categorized under severe level of anxiety and also 15.5% have no anxiety level. However, only 13.8% of respondents were categorized as mild anxiety. In this study, normal level of anxiety was considered for those who did not have anxiety, while mild to extremely severe level of anxiety was considered as having anxiety. So, total number of anxiety level among respondents was 84.5%. Table 4.5 summarizes the distribution state of anxiety among respondents.

Table 4.5: Distribution of anxiety among respondents (N=116)

DASS Subscale	Mean	SD	Normal (0-7)	Mild (8-9)	Moderate (10-14)	Severe (15-19)	Extremely Severe (20+)
Anxiety	13.28	6.430	18	16	43	18	21
Percentage			(15.5)	(13.8)	(37.1)	(15.5)	(18.1)

4.6 Stress status

There were about 65.5% of respondents have normal level of stress. About 16.4% of respondents were categorized as mild stress followed by 8.6% were categorized as moderate and severe and only 0.9% have extremely severe of stress level. In this study, normal level of stress was considered for those who did not have stress, while mild to extremely severe level of stress was considered as having stress. So, total number of respondents to have stress was 34.5%. Table 4.6 showed the summary of distribution state of stress among respondents.

Table 4.6: Distribution of stress among respondents (N=116)

DASS Subscale	Mean	SD	Normal (0-14)	Mild (15-18)	Moderate (19-25)	Severe (26-33)	Extremely Severe (34+)
Stress	12.88	7.424	76	19	10	10	1
Percentage			(65.5)	(16.4)	(8.6)	(8.6)	(0.9)

4.7 Socio-Demographic factors with acute stress disorder symptoms

The association between socio-demographic factors and status of acute stress disorder symptoms was determined in this study. The results showed that there was no significant association between socio-demographic factors with the status of acute stress disorder symptoms among respondents. However, from all of the socio-demographic factors that have been analyzed, only factors regarding the “duration admitted to hospital” has been found to have a significant association with acute stress disorder symptoms. Table 4.7 shows the result.

Table 4.7: Socio-Demographic factors with acute stress disorder symptoms (N=116)

Socio-Demographic Factors	Acute Stress Disorder Scale (ASDS)			χ^2 value	p-value
	Low (%)	High (%)	Total (%)		
Marital Status					# 0.755
Single	70 (68)	8 (61.5)	78 (67.2)		
Married	33 (32)	5 (38.5)	38 (32.8)		
Age					# 0.356
18-38	94 (91.3)	11 (84.6)	105 (90.5)		
39-59	9 (8.7)	2 (15.4)	11 (9.5)		
Education background				4.500	0.105
Primary	17 (16.5)	5 (38.5)	22 (19.0)		
Secondary	37 (35.9)	5 (38.5)	42 (36.2)		
Tertiary	49 (47.6)	3 (23.0)	52 (44.8)		
Types of motorcyclist					# 1.000
Rider	75 (72.8)	10 (76.9)	85 (73.3)		
Pillion	28 (27.2)	3 (23.1)	31 (26.7)		
Employment status				3.157	0.206
Working	75 (72.8)	8 (61.5)	83 (71.6)		
None	8 (7.8)	3 (23.1)	11 (9.5)		
Student	20 (19.4)	2 (15.4)	22 (19)		
Previous Crashes				0.026	0.873
Yes	61 (59.2)	8 (61.5)	69 (59.5)		
No	42 (40.8)	5 (38.5)	47 (40.5)		
Duration in hospital				18.921	*<0.001
1 week and below	43 (41.7)	2 (15.4)	45 (38.8)		
1 -2 weeks	39 (37.9)	1 (7.7)	40 (34.5)		
3 weeks above	21 (20.4)	10 (76.9)	31 (26.7)		
Total	103	13	116		

#Fisher's Exact Test

*Significant at $p < 0.05$

4.8 Socio-Demographic factors with depression status

The association between socio-demographic factors with depression status was also been determined in this study. The results showed that marital status, age, educational background, types of motorcyclist, employment status and previous crashes has no significant association with the depression status. However, from all of these seven factors presented in socio-demographic factors only factor of duration admitted in hospital have significant association with depression status among respondents. The summary of association of all this six factors from socio-demographic factors with depression status was presented in Table 4.8.

Table 4.8: Socio-Demographic factors with depression status (N=116)

Socio-demographic factors	Depression			χ^2 value	p-value
	No (%)	Yes (%)	Total (%)		
Marital status				0.373	0.542
Single	51 (65.4)	27 (71.1)	78 (67.2)		
Married	27 (34.6)	11 (28.9)	38 (32.8)		
Age					# 0.099
18-38	68 (87.2)	37 (97.3)	105 (90.5)		
39-59	10 (12.8)	1 (2.6)	11 (9.5)		
Educational background				4.778	0.092
Primary	17 (21.8)	5 (13.2)	22 (19)		
Secondary	23 (29.5)	19 (50)	42 (36.2)		
Tertiary	38 (48.7)	14 (36.8)	52 (44.8)		
Types of motorcyclist				0.267	0.606
Rider	56 (71.8)	29 (76.3)	85 (73.3)		
Pillion	22 (28.2)	9 (23.7)	31 (26.7)		
Employment status				0.195	0.907
Working	55 (70.5)	28 (73.7)	83 (71.5)		
None	8 (10.3)	3 (7.9)	11 (9.5)		
Student	15 (19.2)	7 (18.4)	22 (19)		
Previous Crashes				1.101	0.294
Yes	49 (62.8)	20 (52.6)	69 (59.5)		
No	29 (37.2)	18 (47.4)	47 (40.5)		
Duration in hospital				7.275	*0.026
1 week and below	36 (46.2)	9 (23.7)	45 (38.8)		
1 -2 weeks	21 (26.9)	19 (50)	40 (34.5)		
3 weeks above	21 (26.9)	10 (26.3)	31 (26.7)		
Total	78	38	116		

Fisher's Exact Test

*Significant at $p < 0.05$

4.9 Socio-Demographic factors with anxiety status

Socio-demographic factors with anxiety status were also been determined in this study. From the results, it showed that marital status, educational background, types of motorcyclist, employment status and previous crashes has no association with anxiety status among respondents. However, only age factor and duration in hospital have shown a significant association with anxiety status. Table 4.9 showed the result of socio-demographic factors with anxiety status.

Table 4.9: Socio-Demographic factors with anxiety status (N=116)

Socio-Demographic Factors	Anxiety			χ^2 value	p-value
	No (%)	Yes (%)	Total (%)		
Marital status				0.240	0.624
Single	13 (72.2)	65 (66.3)	78 (67.2)		
Married	5 (27.8)	33 (33.7)	38 (32.8)		
Age				4.028	*0.045
18-38	14 (77.8)	91 (93)	105 (90.5)		
39-59	4 (22.2)	7 (7)	11 (9.5)		
Educational background				0.863	0.650
Primary	2 (11.1)	20 (20.4)	22 (19)		
Secondary	7 (38.9)	35 (35.7)	42 (36.2)		
Tertiary	9 (50)	43 (43.9)	52 (44.8)		
Types of motorcyclist					# 0.392
Rider	15 (83.3)	70 (71.4)	85 (73.3)		
Pillion	3(16.7)	28 (28.6)	31 (26.7)		
Employment status				0.250	0.883
Working	12 (66.7)	71 (72.4)	83 (71.5)		
None	2 (11.1)	9 (9.2)	11 (9.5)		
Student	4 (22.2)	18 (18.4)	22 (19)		
Previous Crashes				0.023	0.878
Yes	11 (61.1)	58 (59.2)	69 (59.5)		
No	7 (38.9)	40 (40.8)	47 (40.5)		
Duration in hospital				9.446	*0.009
1 week and below	12 (66.7)	33 (33.7)	45 (38.8)		
1 -2 weeks	1 (5.5)	39 (38.9)	40 (34.5)		
3 weeks above	5 (27.8)	26 (26.5)	31 (26.7)		

#Fisher's Exact Test

*Significant at $p < 0.05$

4.10 Socio-Demographic factors with stress status

Socio-demographic factors with stress status were also been determined in this study. From the seven items in the socio-demographic factors that have been studied, six from them showed no association with stress status. However, from the seven items that has been studied, only factor duration in hospital has significant association with stress status among respondents. For more detail, Table 4.10 showed the results.



Table 4.10: Socio-demographic factors with stress status

Socio-Demographic Factors	Stress			χ^2 value	p-value
	No (%)	Yes (%)	Total (%)		
Marital status				0.766	0.381
Single	49 (64.5)	29 (72.5)	78 (67.2)		
Married	27 (35.5)	11 (27.5)	38 (32.8)		
Age					# 0.326
18-38	67 (88.2)	38 (95)	105 (90.5)		
39-59	9 (11.8)	2 (5)	11 (9.5)		
Educational background				3.195	0.202
Primary	18 (23.7)	4 (10)	22 (19)		
Secondary	26 (34.2)	16 (40)	42 (36.2)		
Tertiary	32 (42.1)	20 (50)	52 (44.8)		
Types of motorcyclist				0.093	0.761
Rider	55 (72.4)	30 (75)	85 (73.3)		
Pillion	21 (27.6)	10 (25)	31 (26.7)		
Employment status				2.964	0.227
Working	57 (75)	26 (65)	83 (71.5)		
None	8 (10.5)	3 (7.5)	11 (9.5)		
Student	11 (14.5)	11 (27.5)	22 (19)		
Previous Crashes				0.771	0.380
Yes	43 (56.6)	26 (65)	69 (59.5)		
No	33 (43.4)	14 (35)	47 (40.5)		
Duration in hospital				13.079	*<0.001
1 week and below	37 (48.7)	8 (20)	45 (38.8)		
1 -2 weeks	18 (23.7)	22 (55)	40 (34.5)		
3 weeks above	21 (27.6)	10 (25)	31 (26.7)		

#Fisher's Exact Test

*Significant at $p < 0.05$

4.11 Association between psychological effects status (depression, anxiety and stress) with acute stress disorder symptoms

The association between psychological effects status (depression, anxiety and stress) with acute stress disorder symptoms also been determined. The table below showed the association between these three (depression, anxiety and stress) psychological factors status with acute stress disorder symptoms among respondents. Only depression and stress status have significant association with acute stress disorder symptoms ($p < 0.05$) as shown in Table 4.11 and able 4.13.

4.11.1 Acute stress disorder symptoms with depression status

Numbers of respondents who have depression and have high acute stress disorder symptoms were higher compared to respondents who did not have depression. This association was found to be significant as shown in Table 4.11.

Table 4.11: Acute stress disorder symptoms with depression status

Depression	Acute Stress Disorder Scale (ASDS)			χ^2 value	p-value
	Low (%)	High (%)	Total (%)		
No	73 (70.9)	5 (38.5)	78 (67.2)		#*0.028
Yes	30 (29.1)	8 (61.5)	38 (32.8)		
Total	103	13	116		

#Fisher's Exact Test

*Significant at $p < 0.05$

4.11.2 Acute stress disorder symptoms with anxiety status

Numbers of respondents who have anxiety with high acute stress disorder symptoms were higher compared to who did not have anxiety. The result showed that there is no association between acute stress disorders with anxiety status.

Table 4.12: Acute stress disorder symptoms with anxiety status

Anxiety	Acute Stress Disorder Scale (ASDS)			χ^2 value	P-value
	Low (%)	High (%)	Total (%)		
No	18 (17.48)	0 (0)	18 (15.52)		# 0.215
Yes	85 (82.52)	13 (100)	98 (84.48)		
Total	103	13	116		

#Fisher's Exact Test

*Significant at $p < 0.05$

4.11.3 Acute stress disorder symptoms with stress status

The number of respondents who were found to have stress and high acute stress disorder symptoms was higher than respondents who did not have stress. The association between acute stress disorders with stress was found not to be significant.

Table 4.13: Acute stress disorder symptoms with stress status

Stress	Acute Stress Disorder Scale (ASDS)			χ^2 value	P-value
	Low (%)	High (%)	Total (%)		
No	71 (68.9)	5 (38.5)	76 (65.5)		#*0.050
Yes	32 (31.1)	8 (61.5)	40 (34.5)		
Total	103	13	116		

#Fisher's Exact Test

*Significant at $p < 0.05$

CHAPTER 5

DISCUSSION

5.0 Background

This chapter reviews and discusses the findings of this study to assess the status of overall psychological effects (acute stress disorder, depression, anxiety and stress) among 116 motorcyclist crash survivors. The first part of this chapter discusses on the results of hypothesis that have been made. While the second part of this chapter will be addresses the conclusions and recommendations on this study. In this chapter, the findings will be compared with previous literature reviews and explanations on the findings will be further discussed.

5.1 Socio-demography

One hundred and sixteen respondents (116) were enrolled in this study after sample size has been calculated. The inclusive criteria for age range in this study were from 18-65 years old. However, in this study the age range among respondents obtained was 18-59. However, about 90.5% from respondents were age range of 18-38. According to the Malaysia Statistical Report Road Crash 2010, showed the high cases of road crashes in Malaysia involved the drivers or riders between 16 to 30 years old with more than 20,000 out of cases for year 2010.

Majority (67.2%) of them were single and 32.8% were married. Usually, patients who are single prefer to ride a motorcycle than the other vehicles because it saves the cost and ease of travel to work. Patients who had family usually use car because they need to send their kids to school when compared to single person who do not have any responsibility to do so. This is matched with the high age range involved in this study which is 18-38 which with this age range most of them still not married yet. The motorcyclists were, however, less likely to be married than the car drivers (Reeder *et al.*, 1992). This finding could be attributed, at least in part, to the fact that a car provides a more convenient form of family transport (Reeder *et al.*, 1992).

In this study, the gender of the respondents was predominantly male (87.1%) and followed by female (12.9%) respectively. This is may be because usually the male riders are more than female riders on the road and also the male riders more prefer to ride the motorcycle compare to woman who prefer car as a vehicle for transportation. This corresponds to the statistics issued by the Malaysian Royal Police (2010) that recorded more males motorcyclist are injured than females. Statistics by Malaysian Royal Police (2010) showed that majority (85.4%) were male drivers involved in road crash as compared to female (14.6%). Study done by Langley *et al.* (1994) state that motorcycle riding is a significant cause of serious injuries to young male cause of death and serious injury.

In this study, housewives, retired patients and unemployed patients were categorized as unemployed. About 71.6% of the respondents were employed, 19% were student and 9.5% were found to be unemployed. Usually, patients who were employed were road user and exposed to involve with crashes all their way going to work. Study done by the Adam *et al.* (2003) there were 81.6% who were employed before the crashes and 25% stopped working since the crash.

In this study, majority (87.1%) of the respondents have their valid license compare to without one (12.9%). This shows that most of the respondents comply with law. The others who did not have any license maybe pillions who were involved with

crashes. This is consistent with the pillion data in this study which is 26.7% compared to respondents who did not have license. However, majority (73.3%) of respondents in this study were riders compared to pillion.

5.2 Acute stress disorder symptoms

The first objective in this study is to determine the psychological status (acute stress disorder symptoms, depression, anxiety and stress) among respondents. For acute stress disorder symptoms, acute stress disorder symptoms among respondents was only 11.2% while another 88.8% was reported to have low acute stress disorder symptoms.

This result is consistent with the study done previously, done by Bryant *et al.* (1998). The authors carried out a prospective study of a sample of crash survivors who were assessed one month after the crash. They reported that 13% of the sample met the criteria for diagnosis with acute stress disorder (ASD) and Hamanaka *et al.* (2006) showed the prevalence rates of acute stress disorder (ASD) were 9.0%. In the month following a traumatic event individuals most severely affected by trauma often meet the diagnostic criteria for acute stress disorder (ASD) (DSM-IV, APA, 1994). After that initial month, of course, many individuals with severe and enduring acute stress disorder are diagnosed with posttraumatic stress disorder (PTSD).

5.3 Psychological effects status (depression, anxiety and stress)

5.3.1 Depression status

This study also aims to determine depression status among respondents. Generally, most of the respondents indicated as normal level of depression. However, 32.8% of respondents were found to be depressed. Depression was common among motor vehicle crash survivors (Berglind *et al.*, 2004). Mayou *et al.* (2001) found 39% of patients still suffered from depression a year after injury. This is due to deterioration of physical and social functioning among patients.

Other studies also found that rates of depression or in adults range from 4% to 53% in hospital (Fauerbach *et al.*, 1997) and from 4% to 35% in the first twelve months after discharge (Madions *et al.*, 2001). Therefore, the orthopedic trauma population in particular appears to have high prevalence of depression and other traumatic events (Maslina, 2011).

5.3.2 Anxiety status

There were about 84.5% of the respondents categorized under anxiety. It is common for motor vehicle crash survivors to feel anxiety. Anxiety is an emotional reaction with ambiguity, fear and worry and develops after an encounter with an internal or external threat (Spielberger *et al.*, 1983). In this study, the respondents were threatened from the body, death of family members or friends, loss of job, interpersonal difficulties, or change of role function which could be real or the result of the sufferer's imagination (Michael, 2000).

In a study of 188 traffic crash patients 10 days after the crash, 41% anxiety was the most common psychiatric symptom (Mayou *et al.*, 1993). Similarly, Mayou *et al.* (2001) found that a year after a crash 52% of patients was fearful to travel and 58% exhibited symptoms of general anxiety. Besides, the crash can cause phobic travel anxiety (Maslina, 2011). The related phobic travel anxiety can be both distressing and markedly disabling for survivors, leading to their avoidance of travel or of situations or circumstances that remind them of their crashes. Satako *et al.* (2006) proved that 13.4% subjects were detected with phobic travel anxiety after the crashes.

5.3.3 Stress status

There were about 34.5% of respondents detected to have stress by using DASS 21 questionnaire. Most people experience some form of stress reaction after having been exposed to severe threat, or experiencing or witnessing horror or severe destruction. These normal stress reactions stem from the lingering effects of the chemical mobilization of the body to deal with imminent threat or existing danger, as well as the challenges to beliefs and meaning that such experiences often pose. In most cases stress reactions subside during the weeks following the incident. In a minority of cases, however, stress reactions following a highly traumatic event are particularly severe or enduring. Stress is the reaction to any real or perceived challenge, demand, threat or change to which you must adapt. Any negative or positive event that causes a stress response is a “stressor” and is said to be “stressful.” The potentially high level of distress may occur during the acute trauma phase and formally recognize with the inclusion of acute stress disorder (DSM-IV; American Psychiatric Association, 1994).

5.4 The association between socio-demographic factors with acute stress disorder symptoms, depression, anxiety and stress status

The second objective in this study is to determine the association between socio-demographic data with psychological effects (acute stress disorder symptoms, depression, anxiety and stress). The results showed that there was no significant association between six items (marital status, age, education background, types of motorcyclist, employment status, and experienced previous crashes) in socio-demographic factors with acute stress disorder symptoms, depression, anxiety and also stress. However, from all of the socio-demographic factors that have been studied, only factors of duration admitted in hospital have a significant association with psychological effects (acute stress disorder symptoms, depression, anxiety and stress). It was hypothesized that there will be a significant association between socio-demographic data with psychological effects (acute stress disorder symptoms, depression, anxiety and stress). Thus, the hypothesis of this study was accepted. Staying in ward longer indicates that they have serious injury. It is because they have to follow further procedure regarding their injury. Furthermore, they were still adapting to the unfamiliar surroundings in the ward and they have to experience other patients getting in and out.

Patients been hospitalized also tend to avoid from any conversations related to their trauma because they did not want to remember it again. Usually patient will be asked about their traumatic event either by the doctors, nurses or visitors. Based from the interview session with them, majority of them agreed that they feel disturbed when they were asked to recall about the crash and they try to avoid this. Diagnostic criteria for ASD stipulate that the individual must display "marked avoidance of stimuli that arouse recollections of the trauma." Such avoidance includes avoidance of thoughts, feelings, activities, conversations, and people that may remind the individual of their traumatic experience (American Psychiatric Association, 1994). Active avoidance in the acute phase has been reported by 50% of motor-vehicle crash survivors (Bryant *et al.*, 1996).

These showed, the longer they spent time in hospital, the more they get depression. There are many causes of increase depression with duration been hospitalized, such as socioeconomic status, social support network and work status. For the socioeconomic status, based on the interview sessions, majority of patient worried about the bills they have to pay during hospitalization. They also worried about their work status either they still can work normally or they will be effects the performance related to their injury. Depression is a common disorder among hospitalized older adults, and it has been associated with adverse outcomes during hospital stays,

including increased risk of morbidity and mortality and reduced recovery rates from illness and disability (Onder *et al.*, 2003).

From all of seven items in socio-demographic factors only two of them have significant associations with anxiety status among respondents. These factors are “duration in hospital” and age level. This findings is similar to a study conducted by Smith (1989) indicating significant between socio-demographic factors with anxiety. Early psychological trauma occurs close in time to the road crashes, typically within a day or two, but not more than a week. However, the duration and severity was not predictable (Smith, 1989).

Anxiety is an emotional reaction with ambiguity, fear and worry and develops after an encounter with an internal or external threat (Spielberger *et al.*, 1983). It results from a threat to the body, death of family members or friends, divorce, loss of job, interpersonal difficulties, or a change of role function, which could be real or the result of the sufferer’s imagination (Zatzick *et al.*, 1997, Michael, 2000). Anxiety was the most common psychiatric symptom (Mayou *et al.*, 1993). Similarly, Mayou *et al.* (2001) found that years after an crash 52% of patients were fearful of travel and 58% exhibited symptoms of general anxiety. In the other hand, Mayou (2001) reported that even when a motor vehicle crash was not serious, there have been large psychological

consequences for the person involved including anxiety, depression and driving phobias.

Factor of “duration admitted to hospital” also has a significant association with stress among respondents. There is growing evidence that those whose persisting pain had a traumatic onset (e.g involved in crashes) tend to report greater distress and disability than those who do not experience a similar onset for their pain (Turk *et al.*, 2002). While it might be expected that in the few weeks after their crash, people with pain might be expected to be at their most distressed and struggling to come to terms with their situation and pain. This clearly shows that those with persisting pain from crashes and who are continuing to seek treatment almost 6-years later are significantly more disabled and distressed by their pain than those with similar pain complaints seen in the weeks following their crashes. In other words, those who continue to seek treatment for these conditions clearly have not adjusted to their pain despite the passage of time (Michael, 2005).

5.5 Association between psychological effects status (depression, anxiety, stress) with acute stress disorder symptoms

5.5.1 The association between acute stress disorders symptoms with depression status

The third objective in this study is to determine the association between acute stress disorder symptoms with psychological effects status (depression, anxiety and stress). Based on the result, numbers of respondents who have depression and have higher acute stress disorders symptoms were higher compared to respondents who did not have depression. The hypothesis stated that there is a significant association between acute stress disorder symptoms and the other psychological effects status (depression, anxiety and stress). This association was found to be significant. Thus, it shows that the hypothesis was not rejected.

Several scholars indicate that depression is a common mental illness that occurs after accidental injuries and is highly correlated to PTSD (Michaels *et al.*, 1999, Tsay *et al.*, 2001). Depression is an emotional response that involves persistently low spirits, hopelessness, loss of interest, and can cause a combination of physical symptoms such as changes in appetite, sleep, body movement, thought and concentration. A person might have severe feelings of worthlessness, guilt or suicidal tendencies (Robertson and

Katona, 1997). Mayou *et al.* (2001) found 39% of patients still suffered from depression a year after injury. People with a physical illness, those who experience more stressful events, and those who have history of depression may have even higher rates of depression following a traffic crashes (Robertson and Katona, 1997).

This is in line with Mayou *et al.* (1993) study that reported many patients had acute stress disorder characterized by anxiety or depression and horrific, intrusive memories of the crashes. Immediately after the crash, 18% of subjects suffered acute stress disorder. Nine (9) developed full PTSD, and 13 had symptoms of anxiety or depression. Given the chronicity of symptoms, the term acute stress disorder is a misnomer; the syndrome appears to be partial PTSD, as described by Blanchard *et al.* (1994, 1995).

5.5.2 The association between acute stress disorders symptoms with anxiety status

In this study, the findings showed that there is no association between acute stress disorders with anxiety status in this study. Hypothesis in this study states that there is a significant association between acute stress disorder symptoms and the other psychological effects status (depression, anxiety and stress). Thus, the hypothesis was rejected.

Taylor *et al.*, (1995) review of anxiety disorders following crash involvement, for example, does not include ASD as a possible problem for this reason. Barton *et al.*, (1996) reported data from a sample of crash victims who had reported for medical treatment following the crash and focused specifically on the factors involved in the development of ASD.

5.5.3 The association between acute stress disorders symptoms with stress status

The number of respondents who were found to have stress and acute stress disorder symptoms were higher than respondents who did not have stress. Hypothesis in this study states that there is a significant association between acute stress disorder symptoms and the other psychological effects status (depression, anxiety and stress). The association between acute stress disorders symptoms with anxiety status was found to be significant. Thus the hypothesis was not rejected.

Diagnosis of the disorder also requires that there be significant distress or impairment in social, occupational or other important areas of personal functioning. The relative recency of inclusion of this disorder in the DSM-IV (American Psychiatric Association, 1994) means that there is little evidence bearing on its prevalence following crash involvement. The observed clustering of reexperiencing and

arousal symptoms in the acute stress disorders is consistent with the proposal that acute arousal is strongly related to distress associated with intrusive and distressing memories (Bryant *et al.*, 2000).

5.6 Study Limitation

Firstly, this is a cross-sectional study and so inferences about causality cannot be made. Besides, cross sectional study is only a snapshot where the situation may provide differing results if another time-frame had been chosen. Additionally, this study relied on self-report data and thus may be subject to over or underreporting of events and symptoms, in part owing to factors such as embarrassment, shame, and social desirability

Secondly, the time constrain was definitely one of the limitation. The study required a lot of time to know the total scenario of the problems regarding the motorcyclist crash survivors. Besides, survey was conducted in Serdang Hospital only, so, our findings may not be representative to populations in Selangor.

Thirdly, psychological effects among motorcyclist crash survivors were measured through retrospective ratings, which could be distorted by recall biases. The patients may miss the important information regarding their injuries or traumatic events.

Last but not least, the association with physical injury was not measure in this study. It is only predicted based on duration they have admitted to hospital.

5.7 Conclusions

In conclusion, this study has shown that in motorcyclist crash survivors, a large proportion of psychological effects experienced were anxiety (84.5%) followed by stress (34.5%), depression (32.8%) and acute stress disorders symptoms (11.2%).

From the result that had been obtained, the overall anxiety score was 13.28 ± 6.430 . The overall stress score was 12.8 ± 7.424 , depression score was 7.33 ± 5.844 and acute stress disorders symptoms score was 37.61 ± 8.908 . There is no association between anxiety status with acute stress disorders symptoms. However, there is a significant association between depression status and acute stress disorders symptoms as well as the association between stress status with acute stress disorders symptoms.

The factor 'duration of admitted to hospital' has a significant associated with depression status, anxiety status, stress status and also acute stress disorders symptoms. In addition, in this study, the age factor also has a significant association with anxiety status.

It is not easy to identify those at risk though some of parameters documented in this study may help. A multidisciplinary approach is therefore essential in the management of the road crash survivors at the orthopedic and clinics if their physical and physiological needs are to be adequately addressed.

Although physical injuries following trauma can be treated through medical care and rehabilitation, the psychosocial impact of person can last for several weeks, months, years or even throughout the life. The most common psychosocial traumas after involved with crash are acute stress disorder (within a month) and post traumatic stress disorder (after a month). Traumatic events, such as motorcycle crashes, can have a long-lasting negative impact on both the victim and the victim's family. Therefore, it may be necessary for future management teams to look into the possibility of compensating these patients.

5.8 Recommendations

In the future, studies regarding the psychological effects among the motor vehicle crash survivors especially among motorcyclist should be conducted because they are the most expose group among the road user getting in crash.

Periodically check the psychological status and observe the symptoms for early identification and it can be done while doing the patients assessment. It is important to identify the symptoms early on and seek appropriate psychological treatment. So that the probability of this condition might affecting the patients can be reduce. Relaxation training and cognitive restructuring for example can be effective treatment for motor-vehicle crash victims with depression or chronic pain (Muse, 1986). Cognitive restructuring appears useful in reducing depression and driving-related fears (Muse, 1986). Besides, it can be helpful to use stress management techniques to help the patient cope with stressful legal proceedings (Meichenbaum, 1977). Appropriate management of stress in one's life is also necessary to avoid anxieties (Ronald *et al.*, 1989)

Social support from family members, friends and also society is important in increase the confident level of the survivors. The psychological effects increase among patients whom had less social support from families and friends. Families and friends should give morale support and motivation to help them to increase the confident level.

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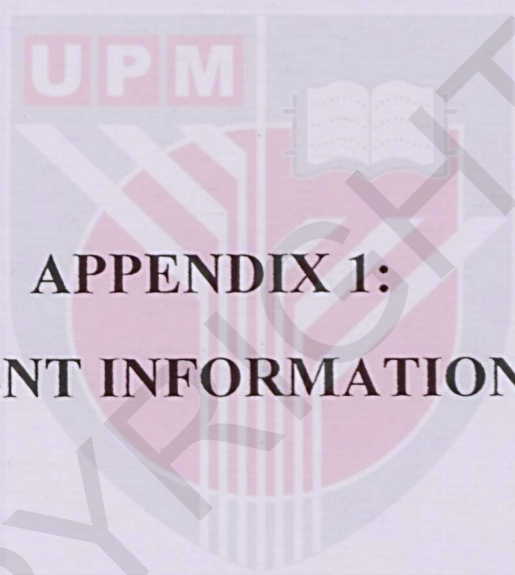
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APPENDIX 1:
RESPONDENT INFORMATION SHEET

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UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

PENERANGAN KEPADA PESERTA

Sila baca maklumat berikut dengan teliti. Sekiranya mempunyai sebarang pertanyaan, sila kemukakan kepada penyelidik. Terima kasih kerana membantu kami di dalam kajian ini.

TAJUK KAJIAN: MANGSA KEMALANGAN MOTORSIKAL: KESAN PSIKOLOGI DAN FAKTOR MEMPENGARUHI DI HOSPITAL SERDANG, SELANGOR

PENGENALAN

Kemalangan di Malaysia semakin meningkat dari tahun ke setahun. Menurut statistik yang dikeluarkan oleh Ibu Pejabat Polis, Malaysia pada tahun 2010 dilaporkan 414,421 kes kemalangan dilaporkan di negara kita. Selangor merupakan antara negeri di Malaysia yang mencatat kes tertinggi iaitu 115,565 kes dan motosikal mencatat jumlah yang kedua tertinggi iaitu sebanyak 120,156 kes mengikut statistik yang dikeluarkan oleh Polis Di-Raja Malaysia. Oleh yang demikian, kajian ini adalah berkaitan dengan kualiti hidup di kalangan mangsa kemalangan motosikal jalan raya di negeri Selangor. Mangsa kemalangan motosikal jalan raya kebiasaannya mengalami trauma yang boleh menyebabkan kebimbangan dan kesedihan. Diharap dengan maklumat yang diperolehi daripada kajian ini beberapa cadangan berkenaan mengatasi masalah ini dapat diatasi dan membantu komuniti yang terlibat..

APAKAH YANG PERLU ANDA LAKUKAN?

Anda perlu membaca dan memahami isi kandungan penerangan ini. Setelah itu, anda dikehendaki menandatangani borang "**BORANG PERSETUJUAN PESERTA**" untuk menyatakan minat anda menyertai kajian ini. Borang penyertaan responden harus dikembalikan kepada penyelidik sebelum mengisi borang soal selidik. Sekiranya anda mempunyai sebarang kemusykilan, pengkaji akan membantu untuk memberi maklumat selanjutnya.

SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Responden yang tidak boleh menyertai kajian ini termasuk individu yang mengalami masalah neurological, masalah mental, perempuan mengandung dan tidak mengalami sebarang kemalangan jalan raya.

APAKAH FAEDAH MENYERTAI KAJIAN INI?

KEPADA ANDA SEBAGAI PENYERTA

Anda dapat menyumbang kepada kefahaman kualiti hidup mangsa kemalangan jalan raya dan dapat membantu di dalam cadangan penaik tarafan kualiti hidup pesakit.

KEPADA PENYELIDIK

Semua maklumat yang diperolehi dari kajian ini akan membantu penyelidik mendapatkan maklumat berkenaan signifikansi hubungan kualiti hidup, kebimbangan dan kesedihan terhadap mangsa kemalangan jalan raya. Oleh yang demikian, langkah-langkah pembaik pulihan boleh dicadangkan kepada komuniti terlibat.

ADAKAH IA BERISIKO?

Kajian ini tiada risiko daripada segi kesihatan dan keselamatan.

APAKAH PILIHAN UNTUK MENARIK DIRI DARIPADA PENYELIDIKAN INI?

Penyertaan responden di dalam kajian ini adalah secara sukarela. Responden berhak menarik diri daripada kajian pada bila-bila sekiranya responden berasa kurang selesa untuk memberi maklumat kepada penyelidik.

ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?

Identiti anda akan dirahsiakan dan semua maklumat yang diberikan adalah untuk tujuan kajian sahaja. Keputusan kajian ini mungkin akan diutarakan dalam bentuk penerbitan.

SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEMASA MENGIKUTI PENYELIDIKAN INI?

Sekiranya anda mempunyai sebarang kemusykilan, anda boleh menghubungi nama yang tertera di bawah ini.

IRYANI BT MOHD RADZI

Penyelidik

Unit Kesihatan Persekitaran dan Pekerjaan,

Jabatan Kesihatan Komuniti

Fakulti Perubatan dan Sains Kesihatan, UPM

No.Tel : 013-4604342

Email: iryanimohdradzi@gmail.com



RESPONDENT'S INFORMATION SHEET

Please read the following information carefully, do not hesitate to discuss any questions you may have with your researcher.

STUDY TITLE:

MOTORCYCLIST CRASH SURVIVORS: PSYCHOLOGICAL EFFECTS AND THEIR ASSOCIATED FACTORS IN HOSPITAL SERDANG, SELANGOR

INTRODUCTION

Accident in Malaysia is increasing from year to year. According to statistics released by the Police Headquarters, Malaysia in 2010 reported 414,421 cases reported accidents in our country. Selangor is one of the states in Malaysia, which recorded the highest cases of 115,565 cases and motorcycles registered the second highest total of 120,156 cases according to statistics released by the Royal Malaysian Police. Therefore, this study is related to the quality of life among road motorcycle accident victims in the state. Road motorcycle accident victims usually experience trauma that can cause anxiety and depression. Hopefully, the information obtained from this study several proposals to overcome this problem can be overcome and help the community involved.



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SELANGOR, MALAYSIA

WHAT WILL YOU HAVE TO DO?

You should read and understand the contents of this description. After that, you are required to sign a form "RESPONDENT CONSENT FORM" to express your interest in this study. Entry forms must be returned to the researcher respondents before completing this questionnaire form. If you have any questions, researchers will help to provide further information.

WHO SHOULD NOT ENTER THE STUDY?

Respondent cannot participate in this study included people with neurological problems, mental problems, pregnant women and not having any accidents.

WHAT WILL BE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

You can contribute to understanding quality of life for victims of road traffic crashes and can assist in the proposed patient's quality of life upgrades

b) TO THE INVESTIGATOR?

All information obtained from this study will help researchers obtain information on the significance of the relationship quality of life, anxiety and depression and grief of victims of road accidents. Therefore, restoring repairers measures can be proposed to the communities involved.



ARE THERE ANY RISKS?

This study is no risk in terms of health and safety.

WHAT ARE THE POSSIBLE DRAWBACKS?

Participation of respondents in this study is voluntary. Respondent is entitled to withdraw from the study at any time if the respondents are uncomfortable to provide information to researchers.

WILL THE INFORMATION AND MY IDENTITY REMAIN CONFIDENTIAL?

Your identity will be kept confidential and all information given is for research purposes only. The results of this study may be expressed in the form of publications.

WHO SHOULD I CONTACT IF I HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

If you have any questions, you can contact names listed below

IRYANI BT MOHD RADZI

Researcher

Environmental and Occupational Health Unit,

Department of Community Health

Faculty of Medicine and Health Sciences, UPM

No.Tel : 013-4604342

Email: iryanimohdradzi@gmail.com

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**APPENDIX 2:
CONSENT FORM**



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BERSAMA BERTAMBAH

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UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

BORANG PERSETUJUAN RESPONDEN

**TAJUK PENYELIDIKAN: TAJUK KAJIAN: MANGSA KEMALANGAN
MOTORSIKAL: KESAN PSIKOLOGI DAN FAKTOR MEMPENGARUHI DI
HOSPITAL SERDANG, SELANGOR**

PENYELIDIK: IRYANI BT MOHD RADZI

Saya..... No Kad Pengenalan.....
beralamat.....
..... dengan ini bersetuju untuk mengambil bahagian secara
sukarela dalam menyertai penyelidikan klinikal *(pengajian klinikal/ pengajian soal selidik/
percubaan ubat-ubatan) seperti yang disebut di atas.

Saya telah diberi penjelasan secara menyeluruh mengenai dasar penyelidikan klinikal dari segi metodologi, risiko dan komplikasi (dirujuk pada Helaian Kepada Responden). Saya memahami bahawa saya berhak menarik diri dari penyelidikan ini pada bila-bila masa tanpa memberi sebarang alasan. Saya juga memahami bahawa sebarang maklumat yang berkaitan identiti saya akan dirahsiakan.

Saya berminat / tidak berminat* untuk mengetahui keputusan kajian yang dijalankan ke atas sampel saya.

*potong yang tidak berkenaan

Tandatangan Tandatangan
(Responden) (Saksi)

Tarikh : Nama :
No. K/P:

Saya mengesahkan bahawa saya telah menerangkan kepada responden sifat dan tujuan penyelidikan klinikal tersebut di atas.

Tarikh Tandatangan
(Penyelidik)



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BERSAMA BERSAMA

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CONSENT FORM (RESPONDENT)

RESEARCH TITLE: MOTORCYCLIST CRASH SURVIVORS: PSYCHOLOGICAL EFFECTS AND THEIR ASSOCIATED FACTORS IN HOSPITAL SERDANG, SELANGOR

RESEARCHER: IRYANI BT MOHD RADZI

I Identity Card No. address

.....hereby voluntarily agree to take part in the clinical research *(clinical study, questionnaire study/ drug trial) specified above.

I have been informed about the nature of the clinical research in terms of methodology, possible adverse effects and complications (refer to Information Sheet). I understand that I have the right to withdraw from this clinical research at any time without assigning any reason whatsoever. I

also understand that this study is confidential and all information provided with regards to my identity will remain private and confidential.

I wish to *know/don't wish to know the results of the tests performed on my sample.

* delete where necessary

Signature Signature

(Respondent)

(Witness)

Date: Name:

I/C No.:

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned clinical research.

Date Signature

(Researcher)



The logo of Universiti Pendidikan Malaysia (UPM) is a shield-shaped emblem. It features a red and white color scheme. At the top left, the letters 'UPM' are written in white on a red rectangular background. Below this, there are stylized white geometric shapes resembling a book or a set of scales. In the center, there is a red circular element with white vertical lines. At the top right, there is a white icon of an open book. The entire logo is set against a light grey background.

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**APPENDIX 3:
QUESTIONNAIRE**

Bahagian A: Data sosio demografi responden

Arahan: Sila tandakan (/) pada jawapan yang bersesuaian atau isikan jawapan pada ruang kosong yang disediakan.

Kegunaan Penyelidik

Kod

A1

1. Jantina Lelaki Perempuan

A2

2. Umur : _____ tahun

A3

3. Status perkahwinan : Bujang Janda/Duda
 Berkahwin Bercerai/Tinggal Berasingan

A4

4. Tahap Pendidikan : Tidak bersekolah Diploma/STPM
 PMR Ijazah
 SPM Lain-lain

A5

5. Jenis pengguna motosikal (semasa kemalangan berlaku) Penunggang Pembonceng

A6

6. Status pekerjaan : Bekerja Pelajar
 Tidak bekerja

A7

7. Pernahkah anda terlibat dalam kemalangan sebelum ini? Ya Tidak

A8

8. Adakah anda mempunyai lesen memandu? Ya Tidak

A10

10. Berapa lamakah anda telah berada di hospital? 1minggu (dan kurang) 2 minggu (dan kurang) 3 minggu (dan kurang)

Acute Stress Disorder Scale (ASDS)

Secara ringkas terangkan pengalaman traumatik anda

Adakah pengalaman itu menakutkan anda? Yes No

Sila jawab setiap soalan berkisar tentang apa yang anda rasa setelah berlakunya kejadian tersebut? (kemalangan). Bulatkan satu (1) jawapan di setiap soalan untuk menunjukkan perasaan anda

- 1 = *tiada langsung*
- 2 = *sedikit*
- 3 = *kerap*
- 4 = *banyak*
- 5 = *sangat banyak*

1. Semasa atau selepas trauma, adakah anda pernah tidak berasa apa-apa/ tiada perasaan?	1	2	3	4	5
2. Semasa atau selepas trauma, adakah anda pernah berasa kebingungan?	1	2	3	4	5
3. Semasa atau selepas trauma, adakah anda pernah berasa perkara yang berlaku di sekeliling anda sebagai khayalan atau mimpi?	1	2	3	4	5
4. Semasa atau selepas trauma, adakah anda pernah berasa bukan seperti diri sendiri seperti melihat sesuatu keadaan dari perspektif orang lain?	1	2	3	4	5
5. Adakah anda tidak dapat mengingat kembali aspek-aspek penting trauma tersebut?	1	2	3	4	5
6. Adakah kenangan trauma terus bermain di fikiran anda?	1	2	3	4	5
7. Adakah anda pernah mempunyai mimpi buruk atau mimpi ngeri tentang trauma?	1	2	3	4	5
8. Adakah anda pernah berasa seolah-olah trauma tersebut akan berlaku lagi/berulang?	1	2	3	4	5
9. Adakah anda berasa sedih apabila teringatkan trauma tersebut?	1	2	3	4	5
10. Adakah anda pernah mencuba untuk tidak memikirkan tentang trauma tersebut?	1	2	3	4	5
11. Adakah anda pernah mencuba untuk tidak bercakap tentang trauma tersebut?	1	2	3	4	5
12. Adakah anda pernah mencuba untuk mengelak daripada situasi atau orang yang dapat mengingatkan anda kembali kepada trauma tersebut?	1	2	3	4	5
13. Adakah anda pernah mencuba untuk tidak berasa sedih atau kecewa tentang trauma tersebut?	1	2	3	4	5
14. Adakah anda pernah menghadapi masalah/kesukaran untuk tidur semenjak menghadapi trauma tersebut?	1	2	3	4	5
15. Adakah anda pernah berasa lebih mudah tersinggung selepas trauma tersebut?	1	2	3	4	5
16. Adakah anda menghadapi masalah menumpukan perhatian semenjak trauma tersebut?	1	2	3	4	5
17. Adakah anda menjadi lebih peka terhadap bahaya semenjak trauma tersebut?	1	2	3	4	5
18. Adakah anda menjadi gelisah semenjak trauma tersebut?	1	2	3	4	5
19. Apabila anda diingatkan tentang trauma tersebut, adakah anda berpeluh atau gementar atau degupan jantung menjadi semakin kencang?	1	2	3	4	5

Dass, Anxiety, Stress Scale (DASS 21-ITEMS)

Sila baca setiap kenyataan di bawah dan bulatkan pada nombor 0,1,2 atau 3 bagi menggambarkan keadaan anda sepanjang minggu yang lalu. Tiada jawapan yang betul atau salah. Jangan mengambil masa yang terlalu lama untuk menjawab mana-mana kenyataan.

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

DASS mengandungi 21 soalan

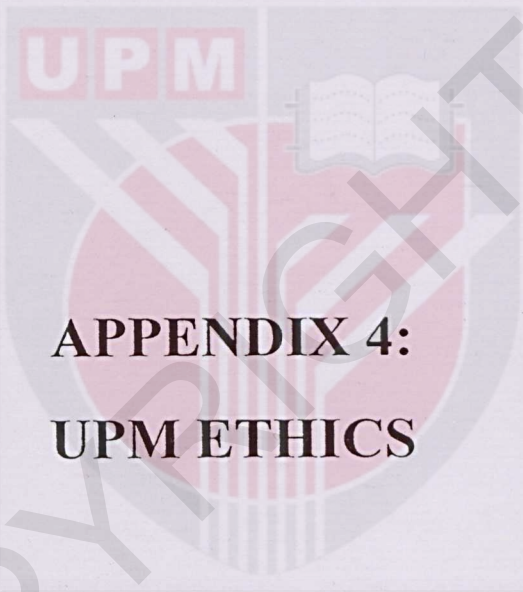
Skala pemarkahan adalah seperti berikut:

The rating scale is as follows:

- 0 **Tidak langsung** menggambarkan keadaan saya
Did not apply to me at all
- 1 **Sedikit atau jarang-jarang** menggambarkan keadaan saya.
Applied to me to some degree, or some of the time
- 2 **Banyak atau kerap kali** menggambarkan keadaan saya.
Applied to me to a considerable degree, or a good part of time
- 3 **Sangat banyak atau sangat kerap** menggambarkan keadaan saya
Applied to me very much, or most of the time

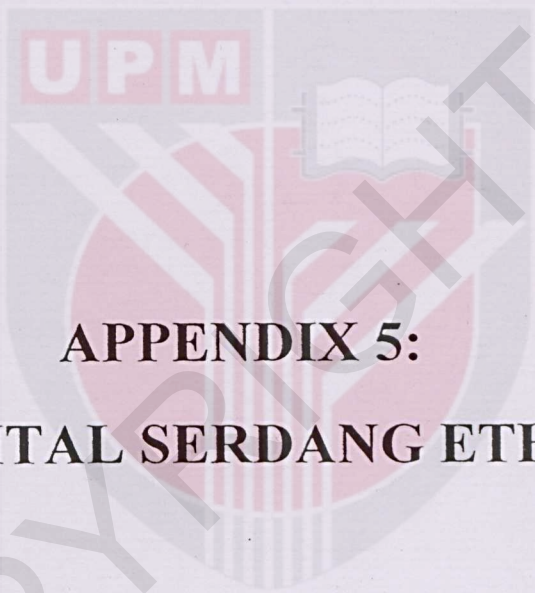
	SOALAN	SKOR			
1	Saya dapati diri saya sukar ditenteramkan <i>I found it hard to wind down</i>	0	1	2	3
2	Saya sedar mulut saya terasa kering <i>I was aware of dryness of my mouth</i>	0	1	2	3
3	Saya tidak dapat mengalami perasaan positif sama sekali <i>I couldn't seem to experience any positive feeling at all</i>	0	1	2	3
4	Saya mengalami kesukaran bernafas (contohnya pernafasan yang laju, tercungap-cungap walaupun tidak melakukan senaman fizikal) <i>I experienced breathing difficulty (eg, excessively rapidbreathing, breathlessness in the absence of physical exertion)</i>	0	1	2	3
5	Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara <i>I found it difficult to work up the initiative to do things</i>	0	1	2	3
6	Saya cenderung untuk bertindak keterlaluan dalam sesuatu keadaan <i>I tended to over-react to situations</i>	0	1	2	3

7	Saya rasa menggeletar (contohnya pada tangan) <i>I experienced trembling (eg, in the hands)</i>	0	1	2	3
8	Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas <i>I felt that I was using a lot of nervous energy</i>	0	1	2	3
9	Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri <i>I was worried about situations in which I might panic and make a fool of myself</i>	0	1	2	3
10	Saya rasa saya tidak mempunyai apa-apa untuk diharapkan <i>I felt that I had nothing to look forward to</i>	0	1	2	3
11	Saya dapati diri saya semakin gelisah <i>I found myself getting agitated</i>	0	1	2	3
12	Saya rasa sukar untuk relaks <i>I found it difficult to relax</i>	0	1	2	3
13	Saya rasa sedih dan murung <i>I felt down-hearted and blue</i>	0	1	2	3
14	Saya tidak dapat menahan sabar dengan perkara yang menghalang saya meneruskan apa yang saya lakukan <i>I was intolerant of anything that kept me from getting on with what I was doing</i>	0	1	2	3
15	Saya rasa hampir-hampir menjadi panik/cemas <i>I felt I was close to panic</i>	0	1	2	3
16	Saya tidak bersemangat dengan apa jua yang saya lakukan. <i>I was unable to become enthusiastic about anything</i>	0	1	2	3
17	Saya tidak begitu berharga sebagai seorang individu <i>I felt I wasn't worth much as a person</i>	0	1	2	3
18	Saya rasa yang saya mudah tersentuh <i>I felt that I was rather touchy</i>	0	1	2	3
19	Saya sedar tindakbalas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan jantung bertambah, atau denyutan jantung berkurangan) <i>I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)</i>	0	1	2	3
20	Saya berasa takut tanpa sebab yang munasabah <i>I felt scared without any good reason</i>	0	1	2	3
21	Saya rasa hidup ini tidak bermakna <i>I felt that life was meaningless I felt that life was meaningless</i>	0	1	2	3



**APPENDIX 4:
UPM ETHICS**

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APPENDIX 5:
HOSPITAL SERDANG ETHICS

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**APPENDIX 6:
MOH ETHICS**