Faculty of Medicine and Health Sciences

Posttraumatic Stress Disorder, Depressive Symptoms and Marital Conflicts in Relation to Trauma Exposure among Firefighters in Sarawak

Alia Fadaliana binti Majani

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Posttraumatic Stress Disorder, Depressive Symptoms and Marital Conflicts in Relation to Trauma Exposure among Firefighters in Sarawak

Alia Fadaliana binti Majani

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DECLARATION

This is to certify that the thesis work entitled "Posttraumatic Stress Disorders, Depression and Marital Conflict in Relation to Trauma Exposure among Firefighters in Sarawak" has been done by the candidate herself. This thesis does not contain any material extracted from elsewhere or from a work published by anybody else. Information derived from the published work of others has been acknowledged and a list of references is given. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Alia Fadaliana binti Majani

Matric Number: 15020297

Department of Psychological Medicine,

Faculty of Medicine and Health Sciences,

Universiti Malaysia Sarawak

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ABSTRACT

Multiple exposures to life threatening events may lead to the diagnosis for Posttraumatic Stress Disorder (PTSD) and depressive disorder especially among high-risk profession namely firefighters. Various consequences can be identified as a result of the exposure to traumatic events for instance marital conflicts among those who affected. Scant literatures have shown that there are very limited study investigating trauma exposure, PTSD, depressive symptoms, and marital conflicts among firefighters. Yet, there is no study conducted to investigate the psychological effect of trauma exposure on high-risk group especially in Malaysia. Thus, the present study explores the relationship between trauma exposure, PTSD and depression in relation to marital conflicts among firefighters in Sarawak. A cross-sectional research design was adopted to examine the relationship between trauma exposure, PTSD symptoms, depressive symptoms and marital conflicts. The variables were measured using Life Events Checklists (LEC-5) for exposure to trauma, The PTSD Checklist for DSM-5 (PCL-5) for PTSD symptoms, The Centre for Epidemiologic Studies Depression Scale (CESD) for depressive symptoms and Marital Satisfaction Inventory-Revised (MSI-R) to measure marital conflict. Types of data analysis used in present study were Independent sample t-test, One-way Analysis of variance (ANOVA), Pearson correlation analyses, Mann-Whitney U-test, Chi-Square analyses and Multi linear regression analyses. A total number of 258 firefighters from Fire and Service Department of Malaysia based in Sarawak participated in this study. Results revealed that 18.1% reported having PTSD symptoms based on the PCL-5 cut off-score of 33 and 18.5% reported having depressive symptoms. The result also indicates 10.8% respondent reported having both PTSD and depressive symptoms. The most prevalent trauma reported were fire and explosion, natural disaster, motor-vehicle accident and death of family members. Longer

years of services do not predict PTSD and depressive symptoms among firefighters. Problem solving and communication served as a significant predictor of marital conflicts domain for depressive symptoms. Present study suggests that proper plan for treatment and intervention is needed to increase the awareness on psychological well-being among high-risk profession namely firefighters prior to multiple exposures to traumatic events in carrying their job duty. Proper intervention programme also should be initiated for the spouse of the firefighters in dealing with traumatic partner.

Keywords: High-risk profession, firefighters, Fire and Service Department, PTSD, depression, trauma, marital conflicts

Gangguan Stres Pasca-Trauma (PTSD), Kemurungan, Konflik Perkahwinan dan Perkaitannya dengan Pendedahan Trauma dalam Kalangan Pegawai Bomba di Sarawak

ABSTRAK

Pendedahan berulang-kali terhadap peristiwa yang mengancam nyawa dalam kalangan pekerjaan yang berisiko tinggi khususnya pegawai bomba mendorong kepada pendedahan terhadap Gangguan Stress Pasca-Trauma serta kecelaruan kemurungan. Pelbagai kesan-kesan yang dikenalpasti disebabkan oleh pendedahan terhadap peristiwa-peristiwa trauma antaranya ialah kesulitan dan rasa tidak puas hati di dalam hubungan perkahwinan. Hasil tinjauan literatur mendapati hanya sebilangan kecil kajian-kajian lepas yang menunjukkan kesan-kesan pendedahan terhadap trauma, PTSD serta kemurungan dalam kalangan pegawai bomba. Walaubagaimanapun, tiada kajian lepas yang mengkaji tentang kesan-kesan psikologi disebabkan oleh pendedahan terhadap trauma dalam kalangan pekerjaan yang berisiko tinggi di Malaysia. Oleh itu, kajian ini dijalankan untuk mengkaji hubungkait di antara pendedahan terhadap trauma, PTSD dan kemurungan serta perkaitannya dengan hubungan perkahwinan dalam kalangan pegawai bomba di Sarawak. Kajian ini mengadaptasi kaedah kajian rentas bagi menentukan korelasi di antara pendedahan terhadap trauma, simtom PTSD, simtom kemurungan dan konflik rumah tangga. Kajian ini menggunakan instrumen Life Events Checklists (LEC-5) untuk mengukur pendedahan terhadap trauma, The PTSD Checklist for DSM-5 (PCL-5) untuk mengukur simtom PTSD, The Centre for Epidemiologic Studies Depression Scale (CESD) untuk mengukur simtom kemurungan dan Marital Satisfaction Inventory-Revised (MSI-R) untuk mengukur konflik rumah tangga. Kajian ini menggunakan Ujian T Independent, ANOVA, Analisis Korelasi Pearson, Ujian Mann-Whitney U dan Analisis Pelbagai Linear Regrasi dalam menganalisis

data kajian. Seramai 258 responden dari Jabatan Bomba dan Penyelamat di sekitar Sarawak telah menyertai kajian ini. Hasil kajian mendapati seramai 18.2% mempunyai simtom-simtom PTSD berdasarkan jumlah skor 33 dan ke atas, 20.1% memenuhi kriteria berdasarkan kluster PTSD dan 18.2% melaporkan mempunyai masalah kemurungan. Seramai 10.8% responden dilaporkan mempunyai kedua-dua simtom kecelaruan PTSD dan kemurungan. Trauma yang paling lazim dilaporkan adalah letupan dan kebakaran, bencana alam, kemalangan kenderaan dan kematian ahli keluarga terdekat, Tempoh sepanjang perkhidmatan tidak boleh digunakan untuk meramal simtom-simtom PTSD dan kemurungan dalam kalangan pegawai bomba bagi kajian ini. Komunikasi dalam penyelesaian masalah merupakan faktor peramal yang kuat bagi PTSD dan kemurungan. Kajian ini mencadangkan agar dilaksanakan beberapa pelan bagi rawatan serta intervensi yang mana amat diperlukan untuk meningkatkan kesedaran mengenai kesejahteraan psikologi dalam kalangan pekerjaan yang berisiko tinggi terutama sekali pegawai bomba yang terdedah dengan pelbagai pengalaman-pengalaman trauma. Program intervensi khas juga perlu dirangka bagi pasangan ahli bomba dalam menghadapi pasangan yang trauma.

Kata kunci: *Pekerjaan berisiko tinggi, pegawai bomba, Jabatan Bomba dan Penyelamat, PTSD, kemurungan, trauma, kesulitan perkahwinan*

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CHAPTER 1

INTRODUCTION

1.1 Trauma Exposure among Firefighters

In psychological literatures, the trauma among certain professions such as firefighters has been acknowledged for many years (Chen et al., 2007; Barnes, 2000). However, only recently the American Psychiatric Association (2013) has officially included high risk of trauma exposure among rescue professional workers should be considered for Posttraumatic Stress Disorder (PTSD) evaluation. There is numerous literature that support trauma experiences as necessary prerequisite for PTSD symptoms and diagnosis (Razik, Ehring & Emmelkamp, 2013; Berger et al., 2012). Job-related traumatic stress or high risks profession such as firefighters, military personnel, police and medical personnel with a multiple exposure to life threatening events that had increased chances for individuals in these professions to develop PTSD (Friedman, 2013; Skogstad et al., 2013) and depression (Alghamdi, Hunt & Shirley Thomas, 2016; Saijo, Ueno & Hashimoto, 2012).

Fires and other emergencies such as road accident take huge numbers of life and destroyed properties in each year. Working as firefighters, they are expected to endure unbearable physical and psychological trauma as to protect the civilian against the abovementioned threats even though they were exposed to physical, chemical and biological hazards (Malek & Kamil, 2013; Shantz, 2002). As the firefighters exposed to repeated traumatic events due to their responsibilities, they are at high risk of suffering from PTSD,

depression or any other related mental disorders (Monteiro, Abs, Labres, Maus & Pioner, 2013).

1.2 PTSD

Unexpected extreme and sudden traumatic stressors such as abuse, war/combat, witnessing serious injuries, sudden death of loved one, great material destructions, natural disasters and some other stressors can be considered as the major contributor to the development of PTSD (Javidi & Yadollahie, 2012). The lifetime prevalence estimates of PTSD in selected general population across the world vary widely ranging from 7.1% among adolescents in Malaysia (Ghazali, Elklit, Balang, Sultan & Kana, 2014) to 37.4% among community population in Algeria (De Jong et al., 2001).

There are numerous studies explored on the lifetime prevalence for PTSD and trauma exposure among general population while little information is available among profession involved in rescue operations specifically among firefighters. Scant literatures have shown that most of empirical studies on PTSD across the globe focused on the victims-oriented, which might perceive as experiencing primary stress disorder (Garner, Baker & Hagelgans, 2016) instead of those who frequently involved directly in rescue operations.

1.3 Depression

Since the past few decades depression has become the prominent cause of mental illness worldwide especially in developed countries for over the past decade (World Health Organization, WHO, 2017; Guan, 2014). In fact, it is estimated that around 4.4% people around the globe which equivalent to over 300 million people suffer from depression with

nearly half of the people living in the area of South East Asia with 85.67 million (27%) and 66.21 million (21%) in Western Pacific region in the year 2015 (WHO, 2017). As the depressive disorders reported to have increase in number world widely (Lima, Assunção & Barreto, 2015; Schulz & Arora, 2015) and it can affect all ages. The causes of depression are varied and among them are low in socio-economic background, sudden death of beloved person, inability to functioning as well as normal person does due to terminal illness, victims of natural disasters (Alghamdi et al., 2016; Saijo et al., 2012) and other psychological factors (The National Institute of Mental Health, NIMH, 2017; WHO, 2017; Sakuma et al., 2015; Ghazali, Elklit, Balang, Sultan & Chen, 2014; Chung & Park, 2011).

There are abundant of previous literature in depression demonstrated that post-delivered women, elderly, trauma victims regardless of the types of trauma and among high risk professions suffer from depression (Alghamdi, Hunt & Thomas, 2017; Garner et al., 2016; Kukihara, Yamawaki, Uchiyama, Arai & Horikawa, 2014; Gerson & Rappaport, 2013). However, the target group for the present study is to explore the prevalence of depression among high risk professions group specifically among firefighters.

1.4 Marital Conflict

In the context of marital relationship, it is believed that PTSD and depression greatly affect individuals' marriage. Based on previous study, 25% to 39% of the partners of peacekeepers suffered from PTSD symptoms as they were also reported having relationship problems (Dirkzwager, Bramsen, Adèr & van der Ploeg, 2005). Meanwhile, based on the findings of meta-analysis study on PTSD and intimate relationship problems among civilian and military population, it was found that those who have PTSD, they also experienced

intimate relationship discord (Taft, Watkins, Stafford, Street & Monson, 2011). It is believed that it is hard to sustain the marriage among high risk group profession such as firefighters as they were exposed with various kind of traumatic events (Torres et al., 2016). From these findings, it can be denoted that individual who suffers PTSD and depression might have problem in intimate relationship and probability of experiencing marital conflict is high in high risk profession population.

1.5 Problem Statement

Literature reviews have strongly indicated that firefighters are exposed to repeated trauma exposure in their professions. Many of them are exposed with various traumatic experiences throughout their career life as firefighters. However, in spite of many researches explore on the prevalence of PTSD and depression, there is still a dearth of study which could help in identifying and acknowledging the aftermath of every traumatic experiences faced among the firefighters and how it will disrupt the relationships in marriage in Malaysian population. Scant literatures have also indicated that there is no study conducted on repeated trauma exposure, PTSD and depression among our first responder in Malaysia specifically among firefighters in Sarawak. Most studies in trauma exposure, PTSD and depression including Malaysia focused on the victims-oriented of natural disasters such as tsunami, flood areas, abused and trauma patients who had experience at least one traumatic event in their life (Syed Jaapar, Abidin & Othman, 2014; Ghazali et al., 2013; Ghazali et al., 2012) without acknowledging the long-term effect of trauma among first responder.

Thus, the present study attempts to identify the prevalence of trauma exposure, PTSD and depressive symptoms among firefighters in relation to marital conflict. As firefighters

served emergency lifesaving services during the time of disasters, it is important to keep them healthy (Tak et al., 2007) and ensure that they received better psychological assistance for them to function as good as others in their daily life routine especially their relationship with spouse. The rationale of conducting this study is to establish a systematic data on trauma exposure, prevalence of PTSD and depressive symptoms and how these mental conditions can affect firefighters' marriage. The results of this study would provide an insight to the profession of firefighters as they also in need of psychological assistance and social support from public as well as government as their profession required them to be exposed to high risks of life-threatening events. This might facilitate our future directions for clinical application and research on PTSD among trauma-related profession in Malaysia.

1.6 Conceptual and Operational Definition of Variables

1.6.1 Trauma Exposure

Conceptually, trauma exposure is defined using Diagnostic and Statistical Manual of Mental Disorder Edition 5 (DSM-5; APA, 2013) guideline. According to the DSM-5, trauma exposure is when "The person was exposed to: death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence, in the following way(s): Direct exposure (witnessing the trauma and learning that a relative or close friend was exposed to a trauma) or indirect exposure to aversive details of the trauma, usually in the course of professional duties (e.g., first responders, medics)" (APA, 2013). Operationally, trauma exposure is measured by using Life Events Checklist 5 (LEC-5; Weathers et al., 2013) which consists of 22 items. Each item coded as 0 for no and 1 for yes. The LEC-5

showed sufficient in temporal stability, good convergence and was strongly associated with PTSD symptoms (Gray, Litz, Hsu & Lombardo, 2004).

1.6.2 PTSD Symptoms

Conceptually, PTSD is also defined based on DSM-5 criteria. The following description is fully quoted from DSM-5 to describe a complete diagnostic criterion of PTSD:

Criterion A: Traumatic event. Trauma survivors must have been exposed to actual or threatened: for example, death, serious injury, sexual violence. The exposure can be direct witnessed OR indirect, by hearing of a relative or close friend who has experienced the event indirectly experienced death must be accidental or violent. Repeated or extreme indirect exposure to qualifying events, usually by professionals and non-professional exposure by media does not count.

Criterion B: Intrusion or Re-experiencing. These symptoms envelope ways that someone re-experiences the event. This could look like: Intrusive thoughts or memories, nightmares related to the traumatic event, flashbacks, feeling like the event is happening again, and psychological and physical reactivity to reminders of the traumatic event, such as an anniversary.

Criterion C: Avoidant symptoms. Avoidant symptoms describe ways that someone may try to avoid any memory of the event, and must include one of the following: avoiding thoughts or feelings connected to the traumatic event, avoiding people or situations connected to the traumatic event.

Criterion D: Negative alterations in mood or cognitions. This criterion is new, but captures many symptoms that have long been observed by PTSD sufferers and clinicians. Basically, there is a decline in someone's mood or though patterns, which can include: memory problems that are exclusive to the event, negative thoughts or beliefs about one's self or the world, distorted sense of blame for one's self or others, related to the event, being stuck in severe emotions related to the trauma (e.g. horror, shame, sadness), severely reduced interest in pre-trauma activities, feeling detached, isolated or disconnected from other people.

Criterion E: Increased arousal symptoms. Increased arousal symptoms are used to describe the ways that the brain remains "on edge," wary and watchful of further threats. Symptoms include the following: difficulty concentrating, irritability, increased temper or anger, difficulty falling or staying asleep, hyper vigilance, being easily startled.

Operationally, PTSD is measured by the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). It consists of a 20 self-report items that measures the symptoms of PTSD in individuals. The PCL-5 is corresponds to the DSM-5 symptoms criteria for PTSD. The rating scale for each symptom ranged between 0 to 4. Each scale is labelled with 0 denotes "not at all", 1 denotes "a little bit", 2 denotes "moderately", 3 denotes "quite a bit" and 4 denotes "extremely".

1.6.3 Depressive Symptoms

Conceptually, depression is a type of mental disorders that characterized by persistent feeling of sadness. In this study, the conceptual definition is adopted from DSM-5. The following sentences outline DSM-5 criteria of depression. The individual must be

experiencing five or more symptoms during the same 2-week period and at least one of the symptoms should be either (1) depressed mood or (2) loss of interest or pleasure.

1. Depressed mood most of the day, nearly every day.
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.
3. Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day.
4. A slowing down of thought and a reduction of physical movement (observable by others, not merely subjective feelings of restlessness or being slowed down).
5. Fatigue or loss of energy nearly every day.
6. Feelings of worthlessness or excessive or inappropriate guilt nearly every day.
7. Diminished ability to think or concentrate, or indecisiveness, nearly every day.
8. Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempts or a specific plan for committing suicide.

Operationally, depressive symptoms are measured by The Centre for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). CESD consists of 20 items that measure the symptoms of depression that might disturb individual's everyday functioning includes feelings of guilt, worthlessness, helplessness, sleep disturbance and depressed in moods and feelings (Ghazali et al., 2014). It has been widely used as a good tool to measure depressive symptomatology in general population (Radloff, 1977). The CESD was scored using 4 likert-scale; 0 - denotes absent, 1- denotes rarely, 2 - denotes sometimes and 3 - denotes always.

1.6.4 Marital Conflicts

Conceptually marital conflict can be defined in many ways. Marital conflict is "the process of conflict arising between the two parties in a marriage, which can indicate sexual disagreement, child minding differences, temperamental differences and even religious conflict of interests" (Pam, 2013).

Operationally marital conflict is measured by Marital Satisfaction Inventory-Revised (MSI-R; Snyder, 1997). The MSI-R was established to measure the nature and extent of relationship distress. The present study used 8 subscales in MSI-R comprises; (i) Global distress – measures the overall dissatisfaction towards the relationship with their partner, (ii) Affective communication – evaluates merely over affective and understanding aspects in the relationship between the partner, (iii) Problem solving communication – measures the inability to resolve differences in the relationship , (iv) Aggression – evaluates the physical aggression experienced by the respondent's from their partner, (v) Time together – measures couple companionship and time spent together, (vi) Disagreement about finance – evaluates relationship distress in finance managements, (vii) Sexual dissatisfaction – assesses the sexual displeasure in respondents towards their partner and (viii) Family history of distress.

1.7 Research Aim and Objective

The aim of the study is to investigate trauma exposure, PTSD, depression and marital conflicts among firefighters in Sarawak.

Research Objectives

1. To determine the prevalence of trauma exposure, PTSD and depressive symptoms among firefighters in Sarawak.

2. To establish relationships between trauma exposures with PTSD and depressive symptoms among firefighters.

3. To determine the associations between years of services, PTSD symptoms and depressive symptoms among junior and senior firefighters.

4. To determine the relationship between marital status and marital conflict with trauma exposure, PTSD symptoms and depressive symptoms among firefighters in Sarawak.

5. To establish relationship between trauma exposure, PTSD, depressive symptoms with marital conflicts among the firefighters.

6. To examine the predictive factors for marital conflict and depressive symptoms among married and widowed firefighters.

1.8 Research Questions

1. What is the prevalence of trauma exposure, PTSD and depressive symptoms among firefighters in Sarawak?

2. Are there any relationships between trauma exposure with PTSD and depressive symptoms among firefighters in Sarawak?

3. Does length of services associate with more PTSD and depressive symptoms among firefighters?

4. Are there any relationship between marital status with PTSD and depressive symptoms?

5. Are there any relationship between trauma exposure, PTSD and depressive symptoms with marital conflict among married and widowed firefighters?

6. What are the predictive factors for marital conflict and depressive symptoms among married and widowed firefighters?

Research Hypotheses

1. Firefighters who had repeated trauma exposure will exhibit higher PTSD and depressive symptoms.
2. The longer the years of services for firefighters, the more likely they would report on symptoms of PTSD and depression.
3. Firefighters with PTSD and depressive symptoms will score higher in marital conflicts than those without PTSD and depressive symptoms.

1.9 Summary

The aimed of the study has been clarified in this section. The needs of conducting in the study is to give insight for firefighters and the higher authority about the prevalence and risks that faced by the firefighters in suffering from PTSD and depressive symptoms aftermath the exposure from various traumatic experiences while on duty and off duty. Thus, the following chapter will discuss more on the theoretical framework, literature review and prevalence trauma exposure, posttraumatic stress disorder, depression and marital conflicts

that happened among the general population and high-risk profession specifically among firefighters.

CHAPTER 2

LITERATURE REVIEW

The following chapter discusses details definition of repeated trauma exposure, PTSD and depression based on DSM-5 criteria as proposed by the American Psychiatry Association (APA, 2013). A psychological trauma theory that is relevant to the current study is also presented and discussed. Several previous studies and findings on the marital conflict in relation to trauma exposure, PTSD and depression especially among general population and firefighters across the globe are discussed in the following sections. Based on literature reviews, some knowledge gaps are identified and justification of study together with research aim, objectives and research questions are also presented.

2.1 Psychological Trauma Theory

Historically, shell shock theory started during the World War 1 as most of the soldier returned back home suffering from "shell shock" syndrome. According to Myers (as cited in Crocq & Crocq, 2000), the shell shock term was used to describe soldiers suffering from losses of senses such as memory, vision, smell and taste. Myers further explained that those soldiers were shocked by "shell exploding in their immediate vicinity and presented with remarkably similar symptoms" (as cited in Crocq & Crocq, 2000). Based on the study conducted by Crocq and Crocq (2000, p. 50), the shell shock term were first used on 6th of February 1915 in the times as referring to the "soldiers suffering from shock were given a treatment in the special wards at the National Hospital for the Paralyzed and Epileptic in Queen Square". Crocq and Crocq (2000) mentioned that the aftermath effect from World

War 1 (WW1) causes soldiers to suffer various mental disorders after witnessing horrible death of their comrades during the war happened. The death of their comrades and witnessing mutilating comrade did bring emotional shock among the soldiers other than suffering from physical wounds (Crocq & Crocq, 2000). The physiological and psychological of the soldier while exposing to countless amount of trauma during the WW1 did affect their psychological state. The symptoms of shell shock barely seen among the soldiers during that time were fatigue, tremble, confusion, nightmares and impaired in visual and hearing (Jones, 2010; Crocq & Crocq, 2000).

In the modern years, shell shock theory is considered as the core foundation of PTSD. Both conditions occurred after an individuals' suffer from trauma which lead to everlasting impact of the victims (Roberts, n.d.). The symptoms of shell shock victims were almost similar with the symptoms of PTSD which started to be acknowledged after the returning of veteran from combat (Friedman, 2013). Multiples exposure to traumatic events in human's life triggered various studies to be conducted related to PTSD. Although the shell shock theory focused aftermath effect of trauma among soldier after returning from the combat and it differs with PTSD, the theory provides a significant foundation for researchers and clinicians to study further on PTSD. PTSD covers a wide range of traumatic experiences exposed by individual not only among the soldier but also among general population specifically among high risk profession such as firefighters.

The rapid growing of the number of PTSD and depressive symptoms signifies the importance to study further among high risk profession specifically among firefighters (Alghamdi, Hunt & Shirley Thomas, 2016; Friedman, 2013; Skogstad et al., 2013; Saijo, Ueno & Hashimoto, 2012). There is no study conducted in relation to firefighters in Malaysia even though they have been constantly exposed to various types of traumatic events. No

further action been taken seriously in order to help traumatized and depressed firefighters to deal with their trauma experiences. Previous findings have shown that, the devastating consequences of constant exposure to traumatic events relatively in job setting might bring various effect towards individual self and might lead to disharmonious in family institution (Torres et al., 2016; Taft, Watkins, Stafford, Street & Monson, 2011; Dirkzwager, Bramsen, Adèr & van der Ploeg, 2005) specifically among partners of the firefighters.

2.2 Trauma Exposure among Firefighters

Trauma exposure and traumatic event can be devastating for individuals who experienced it. The United States National Institute of Mental Health (NIMH, 2017) defines traumatic event as, "a shocking, scary, or dangerous experience that affects someone emotionally. These situations may be natural, like a tornado or earthquake. They can also be caused by other people, like a car accident, crime, or terror attack" (NIMH, 2017). DSM-5 (APA, 2013) requires a Criterion A which is exposure to traumatic event as one of diagnosis criteria for PTSD. Previous study reported that firefighters are among professions that are exposed with wide range of traumatic event exposure (Meyer, Zimering, Daly, Knight, Kamholz & Gulliver, 2012).

Traumatic even has also been defined as "Traumatic events are extraordinary, not because they occur rarely, but rather because they overwhelm the ordinary human adaptation to life, which involve threats to life or body integrity, or a close personal encounter with violence and death" (Herman, 1992, p.33). Traumatic events were defined by the presence of stressors that have various effects on human functioning (Lukaschek et al., 2005). Every individual perceived traumatic stressor differently, despite of the nature of the traumatic

events they were experienced which might lead to significant changes in individual's lives and everyday functioning which cause by the presence of the unbearable stressors (Greenberg et al., 2015; Lukaschek, et al., 2005).

Traumatic events might challenge individual's resiliency in handling various risk exposures, and it is believed that these events significantly affected individuals' self throughout their entire life. It will be hazardous if the individuals are not able to cope well with traumatic experience especially for those who frequently exposed to the traumatic events. The consequences of traumatic events on individuals depend on their vulnerability to perceive the events happened on them (Greenberg et al., 2015; Angleman, 2010). Greenberg and colleagues (2015) further explained that some individuals are able to cope with stressors and only show several symptoms of distress for a short period of time and for some would suffer from more serious symptoms.

Firefighting has been one of the most honored yet hazardous careers which mainly aimed to save lives, minimizing the risks of injuries and reducing property and loss of lives (Brennan, 2002). Many firefighters are exposed to crime victim incidents that involved death and severe injuries which was not triggered by natural causes (Hoffman, 2012). Firefighters are the *unsung* heroes who save lives and properties by risking their own safety for the sake of saving other precious soul and properties.

Based on the report on Firefighter Fatalities in the United States in 2013, there were 106 deaths involving professional firefighters, volunteer firefighters and part-time members of contract fire (Fahy, LeBlanc & Molis, 2010). Six of them died as a result of traumatic injuries received during rescue operations while others died because of heart attack and car crashed while returning from rescue operation. Fahy and colleagues (2010) also reported that

most of the on-duty firefighters in United States were killed while quench the flames. Sometimes, working as firefighters which might risk their own life and direct contact with danger is being unapprised in the past literature (Barnes, 2000). Unfortunately, their heroic deeds and responsibilities received little recognition from the public. Yet, public perceived every firefighter obliged to be tough, courageous and self-sacrificing (Angelman, 2010).

As firefighters provide essential life-saving services (Osman, Yei, Bahari, Arifin & Fong, 2012), they were expected to be prepared mentally and physically from any circumstances that might happen prior to any emergency duties. They were also presumed to be resilience despite of witnessing various injuries and death and able to control their emotions in which this might cause them to suffer psychologically if they were not able to cope with it (Monteiro et al., 2013; Armagan, Engindeniz, Devay, Erdur & Ozcakir, 2006). It can be implied that the expectation towards firefighters such as resiliency and bravery are far from the reality as the firefighters were exposed and experienced multiple traumatic events far beyond ordinary man capabilities.

While the trauma exposure experienced by firefighters have been reported and received a lot of attentions from the policy makers (Fahy et al., 2010), study on trauma exposure among our firefighters are not available. Scant literature has shown that only one study was conducted to investigate accident and risks among firefighters working 12 and 24 hours shift in Malaysia (Osman et al., 2012). There were no reports on lifetime trauma exposure among Malaysian's firefighters specifically in Sarawak. Mental health issues were also not been documented or reported. The previous single study only focused on the risks of accident among firefighters. Thus, the needs to conduct present study is justified. This study investigates life-time trauma exposure including three types of trauma exposure in which

direct trauma exposure, indirect trauma exposure and job-related traumatic events exposure among our firefighters.

2.3 PTSD

Studies on trauma exposure and its relationship with PTSD have been well established (Sakuma et al., 2015; Lukaschek et al., 2013; Norris & Slone, 2013; Bodkin, Pope, Detke & Hudson, 2007). PTSD is believed to be one of the major consequences of traumatic exposure (Bodkin et al., 2007). Norris and Slone (2013) found several findings from various studies on PTSD in relation to trauma exposure among general population across the globe. Based on the analyses, it is found that firstly, men were more exposed to trauma exposure such as witnessing others who are severely murdered and injured, direct contact with fire or natural disasters, as well as events that involved severe accidents in the United States and Australian population (Creamer, Burgess & McFarlane, 2001). Secondly, victims of sexual assault (52%), involved in accident or fire (50%), sudden death of loved ones as a result of violence (49%), natural disaster (48%), witnessing the act of violence or abused and happened to witness threat and injury that happened to closed family (31%) were among the most predominant forms of trauma among the 3000 samples of adults in the United States (Kilpatrick, et al., 2013). Thirdly, 83% among men from 2509 adults from four cities in Mexico faced lifetime trauma exposure due to sudden death of loved ones, witnessing someone badly injured or murdered as well as life-threatening accident (Norris & Slone, 2013). These percentages indicate that some participants experienced more than one traumatic event in their lifetime. Lukaschek and colleagues (2013) found that 41% from 3080 subjects among Southern German population had experienced at least one traumatic event during their lifetime, 21.2% had exposed to severe cases/accident, fire and/or

explosion. Most of the studies on PTSD had found that those who had exposed to traumatic events have a higher tendency to develop PTSD and exposure to the traumatic event is recognized as the important pre-requisite for PTSD diagnosis (Sakuma et al., 2015; Lukaschek et al., 2013; Norris & Slone, 2013; Bodkin et al., 2007).

Meanwhile in Malaysia, 72.6% from 201 emergency trauma patients developed trauma as they involved in motor vehicle accidents and 97% of the patients had involved in road accidents (Syed Jaapar, Abidin & Othman, 2014). In different study, the lifetime prevalence of PTSD among 250 adult respondents in Malaysia following tsunami disaster were 48% of them having one exposure to traumatic events, 28.4% had two traumatic events exposures, 12.8% with 3-4 exposures and 6.4% of survivors have exposed with more than 5 traumatic events during their lifetime (Ghazali et al., 2012). A study of lifetime trauma prevalence and PTSD was also conducted among Malaysian adolescents showed that 77.6% respondents experienced at least one traumatic event which includes road accident, death of loved ones and almost drowning (Ghazali, Elklit, Balang, Sultan & Kana, 2014). Evidently, trauma exposure involved physical injuries and life-threatening events that may lead the survivors to have symptoms of PTSD at least once in their lifetime.

Based on the findings reported by the previous studies, it can be concluded that by experiencing and witnessing someone who were badly injured directly or indirectly in life-threatening accidents are among the major contributors to the development of PTSD. Those who involved in trauma related profession such as firefighters for example had exposed them to numerous harmful substances during fire incidents (Chen et al., 2007), experiencing and witnessing fatal or none fatal accidents which could threaten their own life for the sake of saving and rescuing the unknown victims. Analysis from previous studies also found that trauma exposure significantly affected individuals' life and have a negative impact towards

individuals' daily functioning. These include their marital and intimate relationship with their significant others (Chen et al., 2007; Dirkzwager et al., 2005).

2.3.1 PTSD and Special Profession in DSM-5

PTSD had been categorized as a new chapter in DSM-5 on Trauma and Stress related disorder. Previously PTSD was once categorized under anxiety disorder in the DSM-IV-TR (APA, 2013). DSM-5 recognizes that the rates of PTSD are higher among higher risks occupational groups for instances firefighters, policeman and emergency medical personnel as a result of the exposure to multiple trauma events (APA, 2013; Skogstad, Skorstad, Lie, Conradi, Heir & Weisaeth, 2013). One of the most important criteria in diagnosing PTSD is trauma exposure, at least once in a lifetime (APA, 2013). However, the effects of traumatic events on individual are varied widely. Interestingly, several studies found that the frequencies, duration in job experiences and the frequencies of trauma exposure were the risk factors of the occurrences of PTSD symptoms (Ghazali et al., 2014; Javidi & Yadollahie, 2012; Chang, Lee, Connor, Davidson & Lai, 2008; Chang et al., 2003; Wagner, Heinrichs & Ehlert, 1998) despite of the severity of the traumatic events and the nature of occupation itself (Berger et al., 2012). Conversely, Angleman (2010) proved otherwise and concluded that the development of PTSD symptoms is not solely depends on the frequencies of traumatic events, nonetheless it based on the reaction of the individual towards the situation itself. Lukascheck and colleagues (2013) also mentioned that the impact of traumatic events depend on two aspects; the nature of trauma and the nature of self. It can be concluded that the development of PTSD is not affected by the numbers of exposures to traumatic events but it depends on how the individual perceived the traumatic stress events and their frequencies of exposures to multiple types of trauma. Therefore, the present study would

determine if the frequencies of traumatic events experienced by our firefighters affect their scores on having depressive symptoms, PTSD symptoms as well as their marital conflicts.

2.3.2 Prevalence of PTSD among General Population and Rescue Workers

The PTSD prevalence among general population has been well established abroad. For example, previous study among Southern German population found that 41% of 3080 respondents who were exposed to trauma, 1.7% has a high tendency to develop full PTSD and 8.8% develop partial PTSD (Lukascheck et al., 2013). Meanwhile, different prevalence of PTSD was found among general population in four post conflict countries; 37.4% in Algeria, 28.4% in Cambodia, 15.8% in Euthopia and 17.8% in Gaza (De Jong et al., 2001). As a result of high prevalence of trauma exposure in these four countries, it was reported that the PTSD prevalence was higher in comparison with the country that had lower trauma exposure (Lukascheck et al., 2013; De Jong et al., 2001).

In Asia, studies on PTSD received less attention until the 2004 tsunami hit Asia continent and various natural disasters occurs within this continent. Several studies were conducted to investigate trauma exposure and PTSD prevalence following 2004 tsunami and other natural disasters. Udomratn (2008) collected several findings on the studies related to PTSD among Asian survivors and found that the prevalence of PTSD and its symptoms varied from 8.6% in relation to victims of flood in Hunan (Liu et al., 2006) to 57.3% among school students in Phaug Nga Thailand who were affected by tsunami in the year 2004 (Piyasil et al., 2007). Kukihara and co-researchers (2014) found that the symptoms of PTSD among Japanese survivors who were affected by several natural disasters in the area were 33.2% from the number of 241 total respondents in this study. The prevalence numbers of

PTSD varied among countries might be because of the different in assessment tools used by each study, targeted participants as well as differences in methodological aspect of each study. Meanwhile, a study conducted by Fullerton, Ursano and Wang (2004) reported that about 16.7% rates of PTSD found among disaster workers in Taiwan. The study also linked the presence of acute stress disorder among disaster workers with the existence of PTSD. It is believed that those workers who suffer acute stress disorder were 7.33 times have a tendency to meet PTSD symptoms at 13 months after the traumatic events.

In Malaysia a few studies were conducted on PTSD and trauma exposure. For example, Syed Jaapar, Abidin and Othman (2014) reported that the prevalence of PTSD among 50 trauma patients involving Motor Vehicle Accident (MVA) in Kelantan were 24.9% based on Malay Trauma Screening Questionnaire (TSQ-M). Meanwhile, Ghazali, Yaman and Ahmad (2012) found that from the total 250 adult respondents in the affected area of tsunami in Malaysia, 18.8% of them met the criteria of DSM-IV PTSD, followed by 14.8% having mild symptoms, 36.1% suffered moderate symptoms, 42.5% having moderate to severe symptoms and 6.3% having severe symptoms (Ghazali et al., 2012). In another study by Ghazali, Elklit, Yaman and Ahmad (2013) among the adolescents in Malaysia following four years tsunami had showed that 8.3% from 216 adolescents in affected areas had developed severe symptoms of PTSD, 39.8% having moderate symptoms and 42.1% with mild symptoms of PTSD. Findings from Ghazali and colleagues (2013) and Ghazali and colleagues (2012) found out that the lifetime trauma among Tsunami survivors play significant roles in the scores of PTSD symptoms. From these studies, trauma exposure and life trauma can affect the population mental health which manifested in PTSD symptoms exhibitions and diagnosis.

A few literatures were found to report the prevalence of PTSD among firefighters and rescue workers in Asia. Those who work as rescuers (including firefighters and policeman) in Asia reported higher estimated prevalence of PTSD as compared to the European countries as geographically Asia continent exposed more on natural disasters (Berger et al., 2012). The probability of rescue workers to develop PTSD is 6.77 times higher than their European counter part (Fullerton et al., 2004). This study signifies that those who have experiences in dealing with natural disaster had higher tendency to develop PTSD than those who had less past trauma exposures. Interestingly, study by Fullerton and colleagues (2004) further confirmed that the significant risk factor of PTSD is when an individual has been exposed to previous disaster experiences such as dealing with dead bodies, assisting survivors and exposure to physical danger during the disaster. However, this study only explores the effects of trauma on disaster workers. While PTSD and trauma exposure prevalence among Asian rescue workers have been well established. The relationship between PTSD and trauma exposure among our firefighters in Malaysia remain unknown.

2.3.3 Prevalence of Trauma Exposure and PTSD among Firefighters

The prevalence of PTSD reports among firefighters are varied depends on the severity and repeated exposure to traumatic events (Berger et al., 2012). Various studies were conducted extensively to explore on trauma exposure and PTSD among firefighters in Western and Asian countries (for example in the United States, Brazil, German, Taiwan, and Japan). The prevalence rates on PTSD reported were varied widely from 6.5% to 37% among U.S. firefighters (Del Ben, Scotti, Chen & Fortson, 2006). The various number of the prevalence of PTSD reported in this study was as a result of different assessment tools used to measure PTSD among firefighters specifically among U.S. firefighters. A study by

Monteiro and colleagues (2013) were conducted to explore whether those who worked in traumatized working conditions specifically firefighters may cost them to suffer from mental disorders such as anxiety, depression and PTSD. Based on the study, there is none of the firefighters suffered all the criteria of PTSD based on the DSM-IV criteria. However, all of the participants reported to fulfill the criteria of; (a) exposure to traumatic events and (b) re-experiencing the traumatic events and most of the participants reported the persistence of avoiding distressing traumatic events (Monteiro et al., 2013). A different prevalence was reported on PTSD among firefighters in Taiwan and Japan; 21.4% reported having PTSD morbidity among Taiwan firefighters (Chang, Davidson & Lai, 2003); 1.6% and 9.7% reported having PTSD in these two studies (Saijo et al., 2012; Sakuma et al., 2015). The prevalence of PTSD among Japanese firefighters was significantly lower in comparison with other countries. Different assessment tools were used in the studies (Sakuma et al., 2015; Saijo et al., 2012; Chang et al., 2008) as to measure PTSD among targeted sample. The lower rates of PTSD among targeted samples in Japanese study might be because of the used of their own revised version of PTSD scales which suit the best for culture in Japanese population.

Based on the American Psychiatric Association and National Comorbidity Survey Report, firefighters developed 16% to 24% higher rates on the level of PTSD following traumatic events and 6-9% lifetime prevalence as compared to the general population (Gawrych, 2010).

2.4 Depression

Depression has been long recognized as a mood disorder since in the first edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-I). The causes of depression might be varied upon individual reactions towards any events happened in their life. Based on a study conducted by Arslan, Ayranci, Unsal, and Arslantas (2009), causes of depression might be due to low socioeconomic status, high risks professions, chronic illnesses and loneliness, and family history of distressed. Depression was evolved as an ailment that affect mind with a division of its severity by the term psychotic and neurotic (Richards, 2011). Richards (2011) further stressed that those with neurotic symptoms have much more favorable outcomes in comparison with those who have psychotic symptoms. Treating depression with psychotic symptoms would be more challenging. With the evolution of the mood disorders research, the diagnostic criteria of mood disorders had been introduced in DSM-III and the term was changed to Major Depressive disorder (MDD) in DSM-IV. DSM-IV described the specific aspects of the symptoms and duration of the symptoms occurs being emphasized in order to predict the severity of MDD (Richards, 2011). Meanwhile, as characterized by DSM-5, individuals with depression must possess at least five symptoms for about two weeks that includes deterioration in everyday functioning in terms of their; a) affective (depressed mood and overwhelm with the feeling of guilt); b) behavioral loss of interest of pleasure in doing daily activities, sleep disturbance, loss of weight, fatigue, physical agitation or retardation; c) cognitive - inability to think or focus; d) disruption in social interaction, job performance and other important areas of functioning (APA, 2013).

2.4.1 Prevalence of Depression among General Population

Depression is believed to be the prominent cause of mental illness over the past decade among the general population world widely (WHO, 2017; Guan, 2014; Richards, 2011). Numerous literatures reported the prevalence of depression across the world regardless of the risk factors. It was found that 66.8% suffered from symptoms of depression among Japan disaster survivors in Fukushima with 14.5% had severe depressive symptoms and 19.1% showed moderate symptoms (Kukihara et al., 2014). Meanwhile, 21.8% among Turkish students were depressed which related to health-related quality of life that includes family history of depressed, acne problem, physical flaws (Arslan, Ayranci, Unsal & Arslantas, 2009).

In Asian countries, abundant of studies were conducted to record depressive symptoms prevalence regardless of the targeted groups. One significant study reported by WHO (2017) found that the prevalence of depressive symptoms in South East Asia in 2015 ranged from 3% for Timor-Leste, 3.2% for Laos, 3.3% for Philippines, Cambodia 3.4%, Myanmar and Indonesia 3.7%, Malaysia 3.8%, Brunei and Vietnam 4%, Thailand 4.4% and Singapore 4.6%. However, Guan (2014) reported slightly higher prevalence of depression in Malaysia in which the depression were ranged from 8 to 12% among Malaysians population regardless of the risk factors of it.

2.4.2 Prevalence of Depression among Firefighters

The prevalence of depression among firefighters varied widely across the world. As the focus of the present study is among firefighters, a lot of past literatures explored on the

prevalence of depression among firefighters across the globe. For example, a study among Brazilian firefighters found that 5.5% from 711 male firefighters reported having a depression due to socioeconomic factors and life-threatening situations at work (Lima, Assuncao & Barreto, 2015); 5.4% of 410 firefighters in Kaohsiung Taiwan were depressed as a result of direct exposure to toxic substances as well as trauma-related events at work (Chen et al., 2007). For New Orleans firefighters, 27% of them were depressed were more likely due to suffer physical health problems aftermath Hurricane Katrina as well as received low in supervisor support (Tak, Driscoll, Bernard & West, 2007). Low support received from supervisor, group conflict and role vagueness also contributes to the prevalence of depression among Japan firefighters which is reported 28.4% out of 1667 participants (Saijo et al., 2012). Meanwhile, 53.3% among Saudi firefighters were depressed as a result of experiencing life-threatening working environment (Alghamdi, Hunt & Thomas, 2017). A total of 10.8% were having depressive symptoms among 112 professional United States firefighters (Carey, Al-Zaiti, Dean, Loralee & Deborah, 2011). The estimation of depression prevalence among current and retired firefighters in Australia were 4.9% and 18.1% respectively (Harvey, Milligan, Patterson, Harkness, Marsh, Dobson et al., 2016); 39.6% among current and retired U.S. firefighters developed symptoms of depression due to sleep disturbance and insomnia (Hom et al., 2016). Of 4446 Korean firefighters, 3.9% were diagnosed with serious depression which believe to be significant contributing factors in PTSD diagnosis among Korean firefighters (Jo & Park, 2013). The differences in the prevalence reported in the previous studies might be due to the different assessment tools used as well as the number of sample size.

Meanwhile, firefighters who used to experience job-related accidents and physical injuries due to rescue operations, the tendencies for them to suffer from depression is about

6.9 times higher than non-injured firefighters (Chung & Park, 2011). Most importantly, Chung and Park (2011) added that those firefighters who were saved from any misfortune or injuries happened during potentially risk events were five times higher to develop symptoms of depression than those who did not exposed to such experiences. Perhaps job-related injuries can be considered as one of the risk factors of depression and one of the contributing factors to the significant prevalence of depression among firefighters.

From the previous studies viewpoints, depression is high among firefighters across the globe with the exposure to traumatic events become one of the important factors that contribute to the development of depression. However, there is no study conducted to study the prevalence of depression among firefighters in Malaysia. The differences in the prevalence reported from the previous studies signify the present study to explore more on the prevalence of depression among firefighters in in Sarawak. This study is important to provide a framework for mental health promotion among our firefighters in Malaysia.

2.5 Marital Conflicts

Marital conflicts and marital satisfaction research have been well-established in our literatures. Marital satisfaction has been defined as a perception and subjective interpretation of individuals towards their marital relationship (Li & Fung, 2011; Hawkins, Carrere & Gottman, 2002; Roach, Frazier & Bowden, 1981). There are numerous aspects that were counted in marital relationships including mutual understanding in communication between partner, ability to resolve conflict, empathy with partner, time with each other (Giblin, 1994) as well as cooperation between husband and wife in raising a family (Li & Fung, 2011). Each partner needs to play significant roles in ensuring both parties finding a middle ground

as to provide adequate emotional aids, financial aids, esprit de corps or companionship as well as provides assistance for each other (Renne, 1970). For instance, some of the traumatic experiences contribute to the satisfaction in marital relationship in terms of providing social and moral support to their partner usually for partner whose suffered from terminal illness (Stone & Shackelford, 2007), yet for some, it happened otherwise (Haddock, Jahnke, Poston, Jitnarin & Day, 2015; Whisman, 2014; Dirkzwager et al., 2005).

Traumatic experience can affect relationship. Whisman (2014) reported that any types of lifetime trauma can cause negative interaction except for the victims of natural disasters in which they exhibit positive interaction with their partner. As a result of involving in any types of traumatic experience, the quality of individuals' marriage deteriorates over time (Torres et al., 2016; Whisman, 2014; Stone & Shackelford, 2007) especially among high risk professions and their spouse (Torres et al., 2016; Riggs, 2014; Taft et al., 2011; Schonbrun & Whisman, 2010; Dirkzwager et al., 2005).

Marital conflicts are common among married couples. It might lead to marital dissatisfaction and distress in marriage. Stone and Shackelford (2007) believed that in the early stage of marriage, most couple satisfied with their marriage. However, after long period of time the dissatisfaction increase eventually based on the U-shaped trajectory. U-shaped trajectory is an essential idea about satisfaction over marriage among married couple that will either gradually or dramatically decrease over ten years of relationship which leads to distress in relationship (Stone & Shackelford, 2007). Robinson and Price (1980) elucidate that over a period of time, distressed partner will not perceive the actions by their partner as pleasurable as compared to none distressed partner and this might be because of the feeling of dissatisfaction towards their partner (as cited in Hawkins, Carrère & Gottman, 2002).

In other studies, it is believe that those who had experienced marital conflicts suffered various range of psychiatric condition which also include major depressive disorder (Whisman, 2007) and weakened their social relationship with others (Renne, 1970). Thus, the general ideas presented by the present study would focus and explore the dissatisfaction and distress happen in relationship and the present study preferred to use the term "marital conflicts" which is more appropriate to signify individuals' dissatisfaction or distress that happened in marriage.

2.5.1 Aspect of Marital Conflicts

Marital conflicts consist of several components. Past literatures proposed that poor communication, aggression, physical violence as well as lack in problem solving have substantial impact in marital relationship (Harper & Sandberg, 2009; Stone & Shackelford, 2007; Jackman-Cram, Dobson & Martin, 2006; Rogge, Bradbury, Hahlweg, Engl & Thurmaier, 2006; Fincham, 2003). As for distressed couples, they tend to display violent behaviors (Jackman-Cram, Dobson & Martin, 2006) and have higher tendencies to inflict harm to their spouse which indicate a greater likelihood of disassociation and dissatisfaction in marriage (Stone & Shackelford, 2007; Rogge et al., 2006). Fincham (2003) study in the United States also found that about 30% physical aggression reported among married couple and it definitely leads to physical injuries among the couples.

In other study conducted by Amato and Hohmann-Marriot (2007) major findings found that overall dissatisfaction in relationship related to marital quality and commitment are the prominent cause of divorce. Frequent disagreements and aggressive behavior proved to have direct effect on marital happiness (Amato & Hohmann-Marriot, 2007; Fincham, 2003). At

this point, most of the couples decided to disengage in marriage (Amato & Hohmann-Marriott, 2007) and decided to divorce. Family history of divorce or parental marital relationship also can be an influential aspect to individuals' current marital relationship. This was consistent with the statement by Stone and Shackelford (2007) that couples' marital satisfaction was associated with their parents' satisfactions on marriage.

There is also evidence that financial condition does affect satisfaction over marriage. Dew (2008) conducted a study over the satisfaction in marriage in relation to debt changes among newly married couples and it was found that argument over financial problems significantly related to marital conflicts between the couples. When the couples argued over financial things, they definitely loss their time together in which is believe to affect their satisfaction in marriage (Dew, 2008).

Various abovementioned aspects in marriage proved to have significant impact in individuals' marriage (Harper & Sandberg, 2009; Stone & Shackelford, 2007; Jackman-Cram et al., 2006; Rogge et al., 2006). Based on the various aspects which contribute to marital conflicts among married couples, present study wants to examine the relationship between the abovementioned aspects in marital conflicts with trauma exposure, PTSD as well as depression. In addition, present study would like to seek whether aspects in marital conflicts can be risks factors of depression among firefighters specifically in Sarawak population.

2.5.2 Marital Conflicts, PTSD and Depression

PTSD and depression can increase marital conflicts. There are abundant of studies investigate the association between PTSD and marital relationship among various population

especially among prisoners of wars (POWs), army/military, victims of abused and etc. It is believed that soldiers who had lower marital satisfaction were found to have higher level of PTSD symptoms than those who had good marital satisfaction (Carter et al., 2011). Meanwhile, Monson and Taft (2005) from The National Center for Posttraumatic Stress Disorder had summed up the result of several studies that explored the association between PTSD on intimate relationship. Several studies had found that PTSD was "highly related with marital conflicts" (Whisman, 1999); "severe relationship problems, greater parenting problems, poorer family adjustment" and poor in communication with partner (Cook, Riggs, Thompson, Coyne & Sheikh, 2004; Jordan et al., 1992); discomfort with sexual interaction and relationship with partner (Riggs, 2014); family dysfunction was one of the contributing factor to high tendency in committing and perpetrating in intimate partner violence (Orcutt, King & King, 2003); divorce is comorbid of PTSD (Javidi & Yadollahie, 2012); having relationship distress result in separated and divorce (Riggs, Byrne, Weathers & Litz, 1998); overwhelm with the feeling of anger and aggression as well as nightmare and social isolation as a result of deployment in war zone area (Gerlock, Grimesey & Sayre, 2014; as cited in Monson & Taft, 2005).

PTSD leads to various problems which affect the life of individual and those who related with them especially partners, family members and their close friends. The aftermath of traumatic events not just only affecting the traumatized person, it could also negatively affect the environment in the family as well as their significant others (Dirkzwager et al., 2005). In relation to the findings by Dirkzwager and colleague (2005), marital relationship with spouse who reported to have PTSD symptoms were found to be negatively judge by the significant others of the peacekeeping soldiers (Riggs, 2014). These are presumably due to the histories of trauma experienced by one of the spouse that lead to increase risk in

developing PTSD symptoms and unfortunately both of the couples suffered with symptoms of PTSD that makes things more complicated which leads to negative impact in marital satisfaction and marital functioning (Riggs, 2014). In addition, a study revealed that PTSD was highly associated with marital conflicts and it is estimated that the likelihood of those who suffered with PTSD to divorced were three to six times higher than those without PTSD (Monson & Taft, 2005). Thus, the importance of identifying the seriousness of PTSD affect the wellbeing of the firefighters is crucial as to help them to gain social support and understanding among the couple and minimize problem faced in their marital relationship.

"Intimate relationship can be markedly impacted by the stresses and spillover from the workplace" (Wagner & O'Niell, 2012). The impact of trauma exposure and PTSD among firefighters does not only affect intimate relationships (Haddock et al., 2015), it also disrupts marital relationship as a result of emotional stresses following the trauma (Torres et al., 2016; Barnes, 2000). Based on previous studies, 34.5% of firefighters in Taiwan having marital discorded as a result of suffering from current PTSD (Chen et al., 2007). Similarly, Gagliano (2009) suggested that the divorce rate for firefighters is the highest rate in the country and it is three times higher than general population. However, the claimed by Gagliano (2009) is not statistically proven by any empirical evidences. Therefore, the present study attempts to determine if repeated trauma exposure and PTSD has significant impact in firefighters' marital relationship with their spouse specifically among firefighters in Sarawak.

Depression can also affect marriage. Currently, there are still little studies conducted in relation to marital conflicts and depression among high risk professions especially in Malaysia context. High level of depressive symptoms perceived by the husband was significantly and positively related to marital conflicts (Kouros & Cummings, 2011). The finding is consistent with the study conducted by Fink and Shapiro (2013) that suggested

that higher marital dissatisfaction have a direct association with symptoms of depression. Meanwhile, for wives, the higher the conflict in relationship denotes increase in depressive symptoms throughout the marriage (Kouros & Cummings, 2011). A study was conducted among Chinese population in China regarding the marital satisfaction in relation to depressive symptoms. The result showed that both husbands' and wives' depressive symptoms were relied upon their own satisfaction over marriage (Miller et al., 2013). Miller and colleagues (2014) also examined that wives' dissatisfaction towards marriage believe to affect the husbands' symptoms of depression but it does not happen otherwise. The study also emphasized that in the context of collectivistic societies, marital conflict can be seen as risks factors for depressive symptoms. Meanwhile, findings of some studies suggested that the increase in depressive symptoms were found among those partner who involved in intimate partner aggression (Watkins et al., 2014; Kim & Lee, 2013).

There are also studies conducted in relation to depressive symptoms and marital status in general population. It is proposed that marital status can be considered as predictor and was highly interrelated with the symptoms of depression (Kamiya, Doyle, Henretta & Timonen, 2013; Zhang & Li, 2011). Meanwhile, other study revealed that the likelihood of unmarried elderly individuals', widowed, divorced and non-married individuals' to suffer from depression is higher compared to married elderly couple (Yan, Huang, Huang, Wu & Qin, 2011). However, Yan and colleagues (2011) added that non-married individuals' were found to be less likely than unmarried and divorced individuals' to exhibit depressive symptoms but more likely when compared to married individuals'. Overall, the result can be concluded that unmarried individuals were at higher risks of developing depressive symptoms as compared to other marital status.

2.6 Conceptual Framework

Repeated trauma exposures were highly associated with the firefighters. Most of the previous studies conducted overseas have shown that firefighters were highly associated with aftermath effect of trauma which is having depressive symptoms and PTSD symptoms based on the previous studies (Greenberg, Brooks & Dunn, 2015; Lukaschek et al., 2013; Angleman, 2010). There is no further details or research on the intervention taken for this high-risk profession in dealing with their trauma experiences. Currently in Malaysia, counselling session is suggested as to help firefighters increase their motivation and job performance. It is good as to increase the motivation level and job performance of the firefighters, however, it will be better if the top management of the firefighters emphasizing the importance of having good mental health in order to minimize the risk of suffering depression and PTSD among firefighters. Higher level of occupational stress such as frequent exposure to trauma-related events does also have an impact on intimate relationship (Torres et al, 2016; Wagner & O'neill, 2012). However, there is not much information gained from the previous studies in determining in which specific areas of marital conflict will be impacted by trauma exposure among firefighters and their spouse. Thus, the present study attempts to determine is there any significant relationship between trauma exposure, depressive symptoms, PTSD symptoms as well as marital conflict among firefighters specifically within Sarawak.

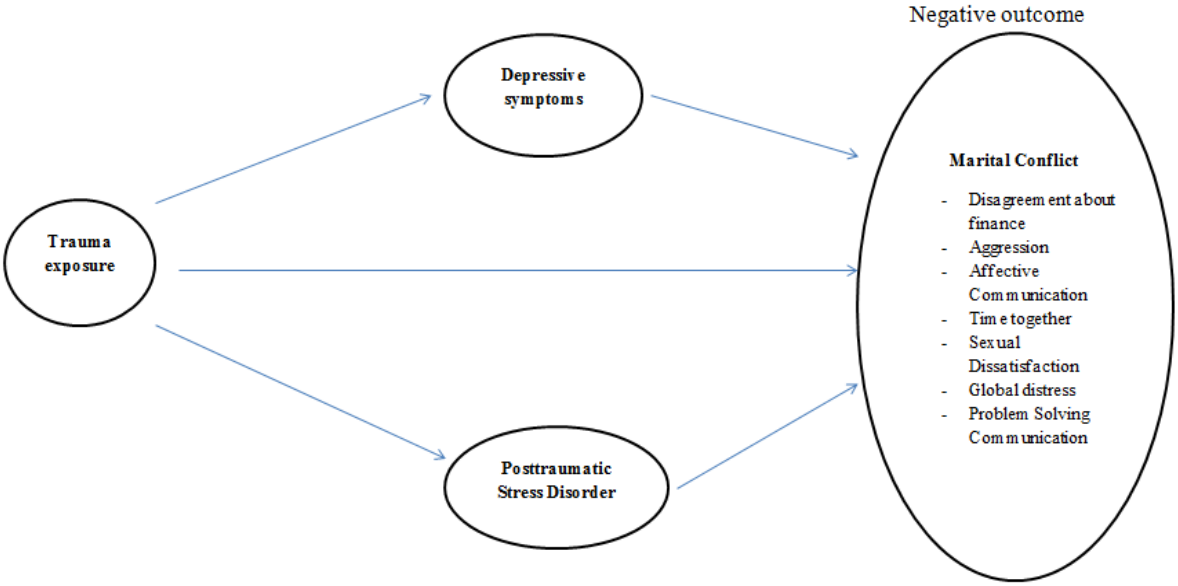

Figure 2.1: Conceptual Framework of the Study

Based on this conceptual framework, the present study attempts to determine the relationship between trauma exposure, depressive symptoms, PTSD symptoms and its impact on marital conflicts among married and widowed firefighters. The findings of the study would systematically document and justify that our firefighters might need ongoing psychological supports and assistance aftermath various occupational traumatic events in their career.

2.7 Summary

The importance of conducting this study had been mentioned earlier in this chapter. High risk group profession in Malaysia received less attention regarding their mental health status aftermath various types of trauma exposure encountered by the firefighters. Thus, this study was conducted as to provide information and baseline data regarding mental health among the firefighters. Following chapter will be focusing on the materials and methods used in this study and the procedure of conducting this study.

CHAPTER 3

MATERIALS AND METHODS

3.1 Research Design

A cross-sectional research design was adopted to examine the relationship between trauma exposure, PTSD symptoms, depressive symptoms and marital conflicts. The cross-sectional design selects participant from the population at one time and provides the description of characteristics of a population in a specific time frame as to examine the association among the variables involved in the study (Shaughnessy, Zechmeister & Zechmeister, 2012). By using cross-sectional design, the time span for this research is shorter and inexpensive (Salkind, 2009).

3.1.1 Participants

According to the Fire and Rescue Department of Sarawak statistics, total populations of firefighters in Sarawak are 1262. The sample size was determined using Epi Info (version7) programme. It was determined that the prevalence of PTSD in our community in Sarawak is 7.1% (Ghazali, Elklit, Balang & Sultan, 2014), with the worst acceptable result of 5% and confidence interval of 99.9%. It is proposed that the minimal respondents recruited for this study was 233.

The total firefighters for this study were of 282 firefighters in Sarawak (22.3%). Of 282 firefighters, only 258 of them were included in this study with the age ranged between 19 to 60 years-old (M_{age} = 37.3, SD = 9.68), 91.9% were male and only 8.1% were female

firefighters. Another 24 firefighters were excluded from this study as they did not fill out the instruments completely. The firefighters were recruited from ten Fire and Rescue Stations in Sarawak.

3.1.2 Data Collection Procedures

The firefighters were selected based on multi-stage sampling. Fire and Rescue Department of Sarawak was contacted through the person in charge and it was agreed that ten fire and rescue station were selected for this study. The firefighters were approached shift by shift according to their shift schedule. Time and date of data collection were determined and scheduled based on their availability. During the data collection process, all firefighters were gathered in a meeting room with minimum three to fifteen firefighters per shift. Brief explanations about the study were explained to the firefighters. All firefighters gave their permission to participate in the study and their written consent was obtained prior to data collection. Issues of confidentiality, their rights to withdraw and possible risks of the study were addressed to the firefighters. The firefighters were also informed that they were required to answer four different instruments (for married firefighters) and three instruments for (unmarried firefighters) including their demographic background.

This study was approved by the Research and Ethics Committee Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak and permission from the Fire and Rescue Department of Sarawak. Letter of permissions were sent to the fire and rescue stations as to seek approval from the head stations.

3.2 Measure

Socio-demographic characteristics. All basic demographic data were included in this measure including age, gender, race, level of education, marital status, number of children, years of services and name of their fire stations and locations.

The Life Events Checklists (LEC-5; Weathers et al., 2013). The LEC-5 was developed to measure the potentially traumatic events that was experienced by an individual. The LEC-5 facilitates the diagnosis of PTSD in which it fulfills the first PTSD criteria for traumatic event exposure. The LEC-5 consists of 22 items. It measures if an individual had any one of the stressful or traumatic throughout their life. Firefighters were required to answer whether they have been exposed to traumatic events directly and/or indirectly and/or job-related traumatic events. The list of possible traumatic events includes; natural disaster, fire or explosion, near drowning, motor-vehicle accident, other serious accident in workplace/home, exposed to toxic substance, physical assault, assaulted with weapon, sexual assault, rape, war, captivity, robbery, death of closed family, serious accident or death caused by participant, divorce, childhood neglect, bully in school/hostel, absence of parent, sudden death, sudden death caused by accident, other trauma. Each item coded as 0 for no and 1 for yes. The LEC showed sufficient in temporal stability, good convergence and was strongly associated with PTSD symptoms (Gray, Litz, Hsu & Lombardo, 2004). For the full sample in the present study, the Cronbach's alpha of this traumatic event checklist was α = .842.

The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013). It consists of 20 self-report items that measures the symptoms of PTSD in individuals. The PCL-5 is corresponds to the DSM-5 symptoms criteria for PTSD. The rating scale for each symptom ranged

between 0 to 4. Each scale is labelled with 0 denotes “Not at all”, 1 denotes “a little bit”, 2 denotes “moderately”, 3 denotes “quite a bit” and 4 denotes “extremely”. The degree of severity in PCL-5 is obtained by summing up all items and the possible scores ranged from 0 to 80. The cutoff score of 33 is used to determine individual with or without PTSD symptoms. The PCL-5 found to be well-validated measure, good in internal consistency (α = .96) and test re-test validity (*r* = .84) as well as convergent validity (Bovin et. al., 2016; Weathers et. al., 2013). In the present study, the PCL-5 showed good internal consistency (α = .93).

The Centre for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). The scale consists of 20 items that measure the symptoms of depression that might disturb individual’s everyday functioning includes feelings of guilt, worthlessness, helplessness, sleep disturbance and depressed in moods and feelings (Ghazali et al., 2014). It has been widely used as a good tool to measure depressive symptomatology in general population (Radloff, 1977). The CESD was scored using 4 likert-scale; 0 denotes absent, 1 denotes rarely, 2 denotes sometimes and 3 denotes always. The CESD total symptoms severity score was obtained by adding the scores for all items with the range scores from 0 to 60. A recommended standardized cutoff score for general population is 16 (Radloff, 1977), however, it is suggested that cutoff score for Malaysian population is 27 (Ghazali, et al., 2014). The CESD possess high internal consistency with Cronbach alpha ranging from .85 to .90 (Radloff, 1977). Thus, present study decided to adopt cutoff score based on Malaysian population as proposed and published by Ghazali et al. (2014).

Marital Satisfaction Inventory-Revised (MSI-R, Snyder, 1997*)*. The MSI-R was established to measure the nature and extent of relationship distress. The present study used 8 subscales in MSI-R comprises; (i) Global distress – measures the overall dissatisfaction

towards the relationship with their partner, (ii) Affective communication – evaluates merely over affective and understanding aspects in the relationship between the partner, (iii) Problem solving communication – measures the inability to resolve differences in the relationship, (iv) Aggression – evaluates the physical aggression experienced by the respondent's from their partner, (v) Time together – measures couple companionship and time spent together, (vi) Disagreement about finance – evaluates relationship distress in finance managements, (vii) sexual dissatisfaction – assesses the sexual displeasure in respondents towards their partner and (viii) family history of distress – evaluates on individual's distress relationship in individual's family internal consistency (α = .70 to α = .93) and temporal stability (α = .74 to α = .88; Snyder, 1997). Yes or No responses were required in answering this scale. The relationship distress measured by adding items in each subscale and the higher the scores indicates the higher the level of severity in the marital conflicts that can be labeled as good, possible problem and problems. The full scale of MSI-R possesses high level of both internal consistency (α = .70 to α = .93) and temporal stability (α = .74 to α = .88) (Snyder, 1997). In this study, the internal consistency of the instrument is α = .80.

Translation. All instruments were translated into Malay language (Bahasa Melayu) and were back-translated by two expert academicians who are experts in English and Malay language for the purpose of the study. The translated version of all instruments were tested and evaluated for reliability and validity during pilot study.

3.3 Pilot Study

A pilot study was conducted to test the appropriateness of the instruments with the representatives for targeted firefighters. There were 39 firefighters recruited for pilot study purpose. Their age ranged between 26 to 53 years old (*Mage* = 39.9, *SD* = 8.35), 87.2% were male and 12.8% were female. Most of the firefighters were married 97.4% and only one participant reported as widow (2.6%). The ethnicity of the firefighters was reported; 43.5% Malay, 23.1% Iban, 12.8% Bidayuh, 7.7% were Chinese and Melanau, 2.6% others and 2.6% were not stated. Based on the pilot study data, it is reported that all instruments used in this research were reliable with the Cronbach's alpha ranging from .76 to .96 and were suitable to be used in actual research. Test-retest reliability for PCL-5 was r = .96, followed by CESD r = .868, and MSI-R was r = .796. A construct validity (convergent) was also established to determine the validity of CESD, PCL-5, LEC, and MSI-R. Convergent validity refers to the degree to which two measures of constructs that theoretically should be related, are in fact related (Campbell & Fiske, 1959). Previous studies have demonstrated that those who reported having PTSD symptoms, would also have higher score in depressive symptoms (Ghazali et al., 2014). Pearson correlation analysis in this pilot study showed that CESD was positively correlated with PCL-5 with r = .708. Previous study has established to indicate that those who have more trauma exposure tend to exhibit significant depressive symptoms. Thus, in this study Pearson correlation analysis was also conducted between LEC and CESD (Ghazali et al., 2014). Results showed that LEC was significantly correlated and positively with CESD, r = .231. Similarly, Butterworth, Rodgers, and Windsor (2009) found that financial problems (subscale of MSI-R) and depression were strongly correlated. Thus, Pearson correlation analysis was conducted to establish a construct validity between MSI-R and CESD. Results showed that both instruments were correlated with r = .385.

Moreover, MSI-R total score was also strongly correlated with the financial distress subscale with $r = .705$. Therefore, the pilot study concluded that the validity and reliability tests of all instruments to measure history of trauma exposure, PTSD, depressive symptoms, and marital conflicts in the present study was appropriate and suitable.

3.4 Data Analysis

Data entry and analysis were done by using IBM SPSS statistics version 21. Prior to the analysis, data checking and data cleaning were performed. The frequency and percentage including the prevalence of trauma, depression, PTSD and marital conflicts, means and standard deviation for socio-demographic information were done using descriptive analysis.

Two-ways ANOVA and independent t-test were used to explore the significant difference between socio-demographic information associated with trauma exposure, PTSD symptoms, depressive symptoms and marital conflicts. Chi-square analysis was used as to determine the risk factors of trauma exposure on depressive symptoms and PTSD symptoms. For not normally distributed data, Mann-Whitney U test was used to explore the significant difference between groups. Pearson chi-square was used to explore the association between variables especially in relation to marital conflicts among firefighters. As to analyze trauma exposures and marital conflicts domains among married and widowed firefighters, multivariate analysis of variance analyses were run to explore the relationship. Further, multi regression analyses were done as to explore the predictive variables for marital conflicts and depressive symptoms among married and widowed firefighters. Statistical significance for all analyses for p value was set at a $p < .05$. Table 3.4 below is a summary of data analysis that were used in the present study.

Table 3.4: Summary of Data Analysis

No	Research objectives	Data analysis
1	To determine the prevalence of trauma exposure, PTSD and depressive symptoms among firefighters in Sarawak.	Independent sample t-test and Pearson Chi-square analysis
2	To establish relationships between trauma exposures with PTSD and depressive symptoms among firefighters	Independent sample t-test, One way Analysis of variance (ANOVA) and Pearson correlation analyses
3	To determine the associations between years of services, PTSD symptoms and depressive symptoms among junior and senior firefighters.	Pearson Chi-square analyses
4	To determine the relationship between marital status and marital conflict with trauma exposure, PTSD symptoms and depressive symptoms among firefighters in Sarawak.	One way Analysis of variance (ANOVA), Mann-Whitney U-test
5	To establish relationship between trauma exposure, PTSD, depressive symptoms with marital conflicts among the firefighters.	Chi-square analyses
6	To examine the predictive factors for marital conflict and depressive symptoms among married and widowed firefighters.	Multi linear regression analyses

3.5 Summary

As the present study used cross-sectional research design, four main instruments will be used to measure the trauma exposure happened to the firefighters, to identify the prevalence of PTSD and depressive symptoms among the firefighters and how it is related to marital conflict that encountered by the firefighters in this study. All procedure before starting the data collection process were done accordingly. The sum up for data analysis were showed in above table as to provide clearer information on data analysis used in this study.

CHAPTER 4

DATA ANALYSIS

In this chapter, the results are presented according to the research objectives and research questions. The result includes the analysis of the prevalence of trauma exposure, PTSD and depressive symptoms among firefighters. The results on different marital status in relation to PTSD and depressive symptoms were also presented in this chapter. Two comparison were made between married and widowed firefighters in relation to PTSD symptoms, depressive symptoms as well as on marital conflict variables were also included in this chapter. Tables and graphs were provided as to facilitate the interpretation of numeric or categorical data.

4.1 Prevalence

4.1.1 Demographic Characteristics

Out of 258 firefighters, 84.1% (n = 218) were married, 3.1% (n = 8) widowed and 12.8% (n = 33) were single. The ethnicities of the firefighters were; 52.3% (n = 135) Malays, 16.7% (n = 43) Iban, 10.1% (n = 25) Bidayuh, 9.7% (n = 12) Melanau, 4.7% (n = 26) were Chinese and 5.4% (n = 14) stated as others. For the level of education; 9.3% (n = 24) had *Penilaian Menengah Rendah (PMR)* or Lower Secondary Assessment, 72.9% (n = 188) had *Sijil Pelajaran Malaysia (SPM)* or Upper Secondary School Certificate, 10.1% (n = 26) *Sijil Tinggi Persekolahan Malaysia (STPM)* or equivalent with A-Level qualification and pre university certification, 3.9% (n = 10) Diploma, 3.1% (n = 8) Degree and 0.4% (n = 1)

reported as others. The range for years of services among all firefighters were between 1 year to 36 years (*M* = 14.70, *SD* = 9.49). The present study classified junior officers as those who serve between one to ten years which consisted of 36% (*n* = 93) from total firefighters t and 61.6% (*n* = 159) were senior officers which serve between 11 to 36 years as firefighters. The analysis for single firefighters also included together with married and widowed firefighters in trauma exposure, depressive symptoms and PTSD symptoms. However, single firefighter will be excluded in relation to marital conflict variables. Table 4.1 shows the details of demographic characteristics of the firefighters.

Table 4.1: Descriptive Characteristics of Firefighters with Trauma Exposure based on Marital Status

Characteristic	Married firefighters (*n* = 217)	Widowed (*n* = 8)	Unmarried firefighters (*n* = 33)	Total firefighters (*n* = 258)
Age (*M, SD*)	39.04 (9.22)	34.57 (8.14)	27.15 (7.0)	37.3 (9.77)
Gender (%, *n*)				
Male	93.1 (202)	75 (6)	87.9 (29)	91.9 (237)
Female	6.9 (15)	25 (2)	12.1 (4)	8.1 (21)
Race (%, *n*)				
Malays	51.2 (111)	75 (6)	54.5 (18)	52.3 (135)
Iban	15.7 (34)	0	27.3 (9)	16.7 (43)
Melanau	9.2 (20)	0	15.2 (5)	9.7 (25)
Chinese	5.1 (11)	0	3.0 (1)	4.7 (12)
Bidayuh	11.5 (25)	12.5 (1)	0	10.1 (26)
Others	6.0 (13)	12.5 (1)	0	5.4 (14)
Trauma exposure % (*n*)				
Direct exposure	84.9 (185)	87.5 (7)	81.8 (27)	84.6 (219)
Indirect exposure	66.5 (145)	75 (6)	60.6 (20)	66 (171)
Job-related exposure	95 (107)	87.5 (7)	97 (32)	95 (246)
Education % (*n*)				
PMR	9.7 (21)	0	9.1 (3)	9.3 (24)

Table 4.1 continued

SPM	72.8 (158)	75 (6)	72.7 (24)	72.9 (188)
STPM	10.6 (23)	12.5 (1)	6.1 (2)	10.1 (26)
Diploma	2.8 (6)	12.5 (1)	9.1 (3)	3.9 (10)
Degree	3.2 (7)	0	3.0 (1)	3.1 (8)
Others	0.5 (1)	0	0	0.4 (1)
Years of services* (*M* , *SD*)	14.28 (9.22)	14.25 (9.59)	4.77 (5.66)	14.70 (9.49)

Note. * Years of services = study administration (year) – year of start service

4.1.2 Trauma Exposure

Prevalence of trauma exposure was measured by the LEC-5. All firefighters, 100% (*n* = 258) reported having at least once traumatic event in their lifetime regardless of the types of exposures. Most of the firefighters exposed to all three type of trauma exposure including direct exposure, indirect exposure and job-related trauma exposure. Results showed that 84.5% (*n* = 218) of firefighters encountered direct trauma exposure at least once and 65.9% (*n* = 170) had indirect trauma exposure. For job-related trauma exposures, 95% (*n* = 245) of firefighters reported that they have exposed with job-related trauma. Results also showed that firefighters scored higher in job-related trauma (*M* = 4.73, *SD* = 2.98) than lifetime traumatic experience which comprise of direct exposure to traumatic experience (*M* = 3.04, *SD* = 2.60) and indirect exposure (*M* = 2.55, *SD* = 2.93). The firefighters were exposed to the following lifetime trauma exposure; fire or explosion (94.6%), natural disaster (87.2%), motor vehicle accident (84.5%), death of family members (76.7%), exposed with toxic substance (67.4%), near drowning (59.7%), serious accident at work (58.1%), sudden death

caused by accident (36.8%) and physical assault (31.8%). Table 4.2 elucidates the descriptive analysis for the prevalent of other traumatic events.

Analyses on direct trauma exposure found that firefighters who reported to have exposure at least once traumatic events scored higher in PTSD scale (M = 19.85, SD = 12.97) than those who did not have exposure directly to the trauma events (M = 13.92, SD = 11.1) ($t_{(256)}$ = -2.713, p = .007). The score for depressive symptoms also reported to have significantly higher for those who have exposure to trauma (M = 18.43, SD = 9.12) than those who did not have trauma exposure (M = 14.85, SD = 7.77), $t_{(256)}$ = -2.33, p = .02.

Analyses on indirect trauma exposure, firefighters who reported experiencing indirect trauma, scored significantly high in PTSD symptoms (M = 20.4, SD = 12.36) than other firefighters (M = 16.1, SD = 13.4), $t_{(257)}$ = -2.57, p = .01. Of 258, 171 firefighters reported that they were exposed with indirect types of trauma significantly scored higher in depressive symptoms (M = 18.73, SD = 8.98) than those who did not exposed to it (M = 16.23, SD = 8.88), $t_{(257)}$ = -.256, p = .03.

For job-related trauma exposure, there is no significant mean differences of PTSD symptoms between firefighters who had job-related trauma (M = 19.01, SD = 12.61) and those who did not have job related trauma (M = 17.38, SD = 17.39), $t_{(256)}$ = -.445, p = .657. Similarly, there is no significant mean differences of depressive symptoms between those who experienced high scores in job-related trauma (M = 17.88, SD = 8.91), with those who had less-likely experienced in job-related trauma (M = 17.69, SD = 11.24), $t_{(256)}$ = -.077, p = .939.

The most prevalent types of job-related trauma experienced by firefighters are fire 88.4%, natural disaster 81.5%, death of family members, 61%, followed by motor vehicle

accident 56.8%, serious accident at workplace 42.9%, near drowning 35.9% and sudden death caused by accident 29%. For direct trauma exposure experienced by the firefighters, the most prevalent types of trauma are death of family members 62.2%, followed by motor vehicle accident 52.5%, natural disaster 31.3%, fire 25.5%, near drowning 24.7%, exposed with toxic substance 16.6% and serious accident at workplace 15.8%. For indirect trauma exposure, firefighters reported death of family members 38.6% as the most prevalent types of trauma experienced followed by motor vehicle accidents 27.8%, fire 27.4%, natural disaster 23.2%, near drowning 17%, serious accident at workplace 16.2% and divorce 14.3%. Table 4.2 elucidates the descriptive analysis for the prevalent of other traumatic events. Further analysis showed that firefighters who had high exposure to traumatic events were more likely to develop depression (odds ratio = 2.081, 95% CI = 1.056 – 4.102, p = .03) than PTSD (odds ratio = 1.489, 95% CI = .737 – 3.01, p = .266).

4.1.3 PTSD and Depressive Symptoms

PTSD symptoms were measured by PCL-5. Of 258 firefighters, 18.2% (n = 47) reported having PTSD symptoms based on the standardized PCL-5 cutoff score of 33. Depressive symptoms were measured by CESD. Analysis showed that 18.2% (n = 47) reported having depressive symptoms using CESD cut off score of 27. Further analyses were also found that 10.9% (n = 28) out of 258 firefighters exhibited both PTSD and depressive symptoms. Pearson-Chi Square analysis showed a significant association between PTSD symptoms and depressive symptoms (χ^2 = 65.98, p < 0.001). It is found that firefighters with depressive symptoms were 14.89 times more likely to develop PTSD symptoms (95% CI = 7.039 – 31.507, p < .001) compared to those who without (refer Table 4.3).

Table 4.2: Frequency of Trauma Exposures Based on Type of Trauma

Types of trauma exposure	Direct exposure % (n)	Indirect exposure % (*n*)	Job-related exposure % (*n*)	Total % (*n*)
Natural disaster	31.3 (81)	23.2 (60)	81.5 (211)	87.2 (226)
Fire	25.5 (66)	27.4 (71)	88.4 (229)	94.6 (245)
Near drowning	24.7 (64)	17.0 (44)	35.9 (93)	59.7 (154)
Motor vehicle accident	52.5 (136)	27.8 (72)	56.8 (147)	84.5 (219)
Serious accident at workplace	15.8 (41)	16.2 (42)	42.9 (111)	58.1 (151)
Exposed with toxic substance	16.6 (43)	4.6 (12)	61.0 (158)	67.4 (175)
Physical assault	15.1 (39)	12.7 (33)	10.0 (26)	31.8 (82)
Attack with weapon	4.6 (12)	7.7 (20)	8.1 (21)	17 (44)
Sexual assault	.8 (2)	3.9 (10)	4.2 (11)	8.5 (22)
Rape	1.2 (3)	1.9 (5)	1.9 (5)	5.0 (13)
Combat	.8 (2)	1.5 (4)	2.3 (6)	4.3 (11)
Captivity	1.2 (3)	1.2 (3)	1.9 (5)	4.2 (11)
Robbery	4.6 (12)	9.7 (25)	1.9 (5)	15.1 (39)
Death of family members	62.2 (161)	38.6 (100)	13.5 (35)	76.7 (199)
Serious injury, damage or death caused by oneself	7.7 (20)	6.2 (16)	3.9 (10)	13.9 (36)

Table 4.2: continued

Divorce	7.3 (19)	14.3 (37)	2.3 (6)	20.9 (54)
Childhood neglect	1.9 (5)	5.8 (15)	1.2 (3)	8.5 (22)
Bullying	8.1 (21)	8.5 (22)	1.5 (4)	15.8 (41)
Absence of parents/ guardian	13.1 (13)	8.5 (22)	3.9 (10)	20.1 (54)
Sudden death caused by murder or suicide	1.9 (5)	5.0 (13)	14.7 (38)	19.7 (51)
Sudden death caused by accident	5.4 (14)	10.8 (28)	29.0 (75)	36.8 (96)
Other trauma	3.1 (8)	3.1 (8)	7.3 (19)	11.6 (30)

Table 4.3: The Association of PTSD and Depressive Symptoms among Firefighters

	PTSD Cut-off Score		
Depression	PTSD % (*n*) (*n* = 47)	No PTSD (%) (*n*) (*n* = 211)	Chi-square (χ^2)
Depressed (*n* = 47)	59.6 (28)	9.0 (19)	$\chi^2 = 65.98$, $p < .001$
Non-depressed (*n* = 211)	40.4 (19)	91.0 (192)	

***Note*.** Percentage is based on PTSD symptoms

4.2 Trauma Exposure, PTSD Symptoms and Depressive Symptoms

4.2.1 Trauma Exposure in relation to PTSD Symptoms

There was significant mean difference between firefighters with PTSD symptoms (M = 12.23, SD = 6.48) or without PTSD symptoms (M = 9.93, SD = 5.84) in the total numbers of trauma exposure, $t_{(257)} = -2.44$, $p = .01$. Regardless of trauma exposure types (direct versus indirect), firefighters who had higher trauma exposure were more likely to develop PTSD symptoms than those who reported less numbers of traumatic event. Further analysis using one way ANOVA also showed that only direct exposure to traumatic events have a significant relationship with PTSD symptoms ($F_{(12, 245)} = 2.612$, $p = .003$).

Independent t-test showed that, there are statistically significant mean difference found between firefighters with PTSD symptoms (M = 4.02, SD = 2.76) and without PTSD symptoms (M = 2.84, SD = 2.52) in direct trauma exposure $t_{(256)} = -2.87$, $p = .004$. For indirect trauma exposure however, there is no significant difference between firefighters with PTSD symptoms (M = 3.23, SD = 3.35) and without PTSD symptoms (M = 2.41, SD = 2.81), $t_{(256)} = 1.574$, $p = .08$. Similarly, there is no significant mean difference between firefighters with PTSD symptoms (M = 4.97, SD = 3.28) and without PTSD symptoms (M = 4.68, SD = 2.91) in job-related trauma exposure ($t_{(256)} = -.636$, $p = 0.526$). The results indicate that firefighters who experienced direct trauma exposure and become primary victims of traumatic events are prone to suffer from PTSD symptoms. Those who exposed with indirect trauma by witnessing the traumatic events happened to family members or relatives and job-related trauma exposure - search and rescue process during traumatic events were less likely to suffer from PTSD and depression.

4.2.2 Trauma Exposure in Relation to Depressive Symptoms

Independent t-test analysis on direct trauma exposure showed significant mean difference between firefighters with depressive symptoms (M = 4.08, SD = 3.50) or firefighters without symptoms (M = 2.82, SD = 2.31), $t_{(256)}$ = -2.95, p = .003. However, there is no significant mean difference between firefighters with depressive (M = 11.83, SD = 6.39) and without depressive symptoms (M = 10.01, SD = 5.90) for the total numbers of trauma exposure ($t_{(256)}$ =-2.73, p = .09). For indirect trauma exposure also showed no significant difference ($t_{(256)}$ = -.292, p = 0.77) between firefighters with depressive symptom (M = 2.71, SD = 2.87) than those who without the symptoms (M = 2.52, SD = 2.95). Meanwhile, for job-related trauma exposure ($t_{(257)}$ = -.64, p = .526), firefighters with depressive symptoms scored (M = 5.04, SD = 3.31) and firefighters without depressive symptoms were much lower than those who without (M = 4.67, SD = 2.91). Pearson correlation analyses result also found that trauma exposure was significantly correlated to depression with r = .191, p = .002.

4.2.3 PTSD Symptoms in Relation to Length of Services

Chi-square analysis was conducted to see if PTSD symptoms were associated with length of services. Results showed that there is no significant differences in PTSD symptoms reported between junior (17.2%) and senior firefighters (18.1%) with PTSD symptoms, χ^2 = .19, p = .655 and depressive symptoms in junior (11.5%) and senior (6.7%), χ^2 = 1.09, p = .29.

4.3 Marital Conflicts among Firefighters

Marital conflicts among firefighters were measured using MSI-R. There were eight domains included in the present study. Aggression, global distress, financial problems and affective communication were among the conflicts that highly reported by married and widowed firefighters.

Table 4.4: Marital Conflicts Domains among Firefighters

Marital Conflict Domain	% (*n*)
Disagreement about finance	14.3 (32)
Aggression	18.4 (41)
Family history of distress	2.7 (6)
Affective communication	12.1 (12.1)
Time together	6.3 (14)
Sexual dissatisfaction	2.7 (6)
Global distress	17.5 (39)
Problem solving communication	9.4 (21)

4.3.1 PTSD Symptoms in Relation to Marital Status

One-way analysis of variance (ANOVA) showed that there are statistically significant different between group of married, widowed and unmarried firefighters reporting PTSD symptoms, $F_{(2, 255)} = 3.089$, $p = .047$ and depressive symptoms, $F_{(2, 255)} = 9.87$, $p < .001$.

Based on the result, widowed group scored higher PTSD and depressive symptoms than the married and the single group (refer Table 4.5).

Descriptive analysis also showed that the overall married and widowed firefighters general mean score for marital conflicts was 29.63 and the standard deviation was 16.32. Married firefighters (*Mdn* = 26.0) also showed a significant difference from widowed firefighters (*Mdn* = 59.0) in marital conflicts, $U = 253.5$, $z = -2.96$, $p = .003$. A Mann-Whitney U test showed that there was a significant difference between married (*Mdn* = 16.0) and widowed firefighters (*Mdn* = 28.0) in reporting depressive symptoms, $U = 242.5$, $z = -3.05$, $p = .002$. Analysis on PTSD symptoms also showed that married firefighters (*Mdn* = 17.0) did not differ significantly from widowed firefighters (*Mdn* = 19.0), $U = 534.5$, $z = -1.30$, $p = .192$.

Table 4.5: PTSD, Depressive Symptoms and Marital Status among Firefighters

Marital Status	PTSD Symptoms		Depressive Symptoms	
	M (SD)	ANOVA	*M (SD)*	ANOVA
Married	18.91 (12.71)	$F_{(2,255)} = 3.089$	17.81 (8.91)	$F_{(2,255)} = 9.869$
Widowed	29.13 (16.29)	$p = 0.047$	30.5 (8.16)	$p < 0.001$
Unmarried	16.63 (12.14)		15.27 (7.44)	

4.3.2 Marital Conflicts and Trauma Exposure

Analysis of variance was used to determine whether trauma exposure have significant association with marital conflicts among the firefighters. It was found that there was a significant association between the numbers of trauma exposures with marital conflicts

among married and divorced and/or widowed firefighters, $F_{(26,196)} = 1.94$, $p = 0.006$. There was also significant relationship between direct exposures to trauma ($F_{(10, 49)} = 2.101$, $p = .042$) and job-related trauma with marital conflicts ($F_{(15, 49)} = 2.243$, $p = .017$). This indicated that regardless of the respondent being as victims or as rescuers, firefighters were directly involved with the trauma events which relatively related to firefighters' marital conflicts.

Multivariate analyses were also conducted to identify the effects and interaction between marital conflicts domain and trauma exposure. It was found that disagreement about finance ($F_{(26, 196)} = 1.828$, $p = .012$), global distress ($F_{(26, 196)} = 1.828$, $p = .012$), problem solving communication ($F_{(26, 196)} = 1.843$, $p = .01$) and time together ($F_{(26, 196)} = 1.804$, $p = .013$) have significant association with trauma exposure.

4.3.3 PTSD Symptoms among Married and Widowed Firefighters

Descriptive analysis showed that of 222 married and widowed firefighters, 18.2% ($n = 47$) had PTSD symptoms. By using chi-square analysis, firefighters with PTSD symptoms reported having problems in aggression (36.6%, $\chi^2 = 3.84$, $p = .004$), family history of distress (7.3%, $\chi^2 = 8.59$, $p = .01$), sexual dissatisfaction (2.4%, $\chi^2 = 13.29$, $p = .001$) and problem-solving communication (24.4%, $\chi^2 = 13.78$ $p = .001$) than those who without (refer Table 4.6). This implied that problem in aggression, family history of distress, sexual dissatisfaction and problem-solving communication were highly associated with PTSD symptoms among the firefighters.

4.3.4 Depressive Symptoms

Descriptive frequency analysis showed that 18.2% (n = 47) among married and widowed firefighters reported to exhibit depressive symptoms. Pearson chi-square analyses showed that firefighters with depressive symptoms scored significantly high in all marital conflicts domains including disagreement about finances (31%, χ^2 = 12.81, p = .002), aggression (33,3%, χ^2 = 7.64, p = .022), family history of distress (7.1%, χ^2 = 11.45, p = .003), affective communication (28.6%, χ^2 = 14.73, p = .001), time together (14.3%, χ^2 = 8.28, p = .016), sexual dissatisfaction (7.1%, χ^2 = 15.27, p < .001), global distress (38.1%, χ^2 = 18.31, p < .001) and problems solving communication (26.2%, χ^2 = 20.6, p < .001). Based on the result, firefighters with depressive symptoms exhibit more problems in marital conflicts domains compared to those without (refer Table 4.6).

Table 4.6: Marital Conflicts among Firefighters with and without PTSD Symptoms and Depressive Symptoms

Marital conflicts subscales (problem)	With PTSD symptoms % (n) (n = 41)	Without PTSD symptoms % (n) (n = 182)	Chi-square (χ^2)	With depressive symptoms % (n) (n = 43)	Without depressive symptoms % (n) (n = 180)	Chi-square (χ^2)
Disagreement about finance	24.4 (10)	12.2 (22)	χ^2 = 4.57 p = 0.102	31 (13)	12.2 (19)	χ^2 = 12.81 p = .002*
Aggression	36.6 (15)	14.4 (26)	χ^2 = 10.97 p = .004*	33.3 (14)	15 (27)	χ^2 = 7.64 p = .022*
Family history of distress	7.3 (3)	1.7 (3)	χ^2 = 8.59 p = .01*	7.1 (3)	1.7 (3)	χ^2 = 11.45 p = .003*
Affective communication	19.5 (8)	10.5 (41)	X^2 = 3.84 (p = .146	28.6 (15)	8.3 (21)	χ^2 = 14.73 p = .001*

Table 4.6 continued

Time together	9.8 (4)	5.5 (10)	$\chi^2 = 1.62$ $p = .44$	14.3 (6)	4.4 (8)	$\chi^2 = 8.28$ $p = 0.016$*
Sexual dissatisfaction	2.4 ($n = 1$)	2.8 (5)	$\chi^2 = 13.29$ $p = .001$*	7.1 ($n = 3$)	1.7 (53	$\chi^2 = 15.27$ $p < 0.001$*
Global distress	26.8 ($n = 11$)	14.9 (27)	$\chi^2 = 3.91$ $p = .142$	38.1 ($n = 16$)	12.2 (22)	$\chi^2 = 18.31$ $p < 0.001$*
Problem solving communication	24.4 ($n = 10$)	12.2 (11)	$\chi^2 = 13.78$ $p = .001$*	26.2 ($n = 11$)	5.6 (10)	$\chi^2 = 20.43$ $p < 0.001$*

Note: The percentage is based on the cut-off score of PTSD and depressive symptoms

4.4 Predictive Factors of Marital Conflicts and Depressive Symptoms

Linear regression was used to examine the predictive factors of marital conflicts and depressive symptoms within married and widowed firefighters.

For marital conflicts, the possible predictors accounted in this model included socio-demographic background, types of trauma exposure including direct, indirect, job-related trauma exposure, total number of trauma exposure, types of traumatic events, PTSD symptoms and depressive symptoms. The analysis revealed that this model is significant predictors for marital conflicts ($F_{(34,174)} = 3.5$, $p < .001$) which accounted 29% of the total variance ($R = .63$, $R^2 = .406$, $R^2_{adjusted} = .29$). Linear regression analyses further found that gender (t (208) = -2.54, $p < .05$), marital status (t (208) = .279, $p = .006$), depressive symptoms (t (208) = 3.19, $p < .05$), traumatic events including serious injuries, damage and death (t (208) = 2.13, $p < .05$), traumatic events – sudden death cause by suicide and/or murder (t (208) = 2.82, $p < .05$), traumatic events – sudden death cause by accident (t (208) = 2.81, $p < .05$) are predictive factors of marital conflict among firefighters in this study.

Linear regression analysis was also been conducted to examine the predictive factors of depressive symptoms when related to marital conflict domains. The predictive factors included were affective comunication, aggression, family history of distresses, disagreement about finances, global distress, problem solving communication, sexual dissatisfaction and time together. The analysis accounts fot 14.2% of the total variance ($R = .42$, $R^2 = .17$, $R^2_{adjusted} = .14$). This model is a significant predictor for depressive symptoms: $F_{(8,213)} = 5.57$, $p < .001$. The predictive factors of depressive symptoms when relate to marital conflicts among married and widowed firefighters were found to be problems solving communications (t (212) = 2.59, $p = .01$) and global distress (t (212) = 2.17, $p < .05$).

4.5 Summary

From these findings, the general findings of this study found that all firefighters have been exposed to traumatic events at least once regardless of the types of trauma exposure. Fire and natural disaster were reported to be the most prevalent trauma exposure reported during job-related trauma by the firefighters. Meanwhile, the total of 28 firefighters suffer both PTSD and depressive symptoms in which 47 firefighters suffered from PTSD symptoms and 47 firefighters suffered from depressive symptoms. The prevalence of firefighters reported to suffer from both PTSD and depressive symptoms should bring worrisome to the firefighters as well as related bodies in dealing with firefighters aftermath various traumatic events they were encountered. This study believed that these findings on PTSD and depression can be work as a baseline for firefighters in Malaysia which might having the same problems faced by firefighters in Sarawak. Marital conflict also proved to have significant relationship with PTSD and depression among firefighters in Sarawak. The findings will be discussed further in the discussion section later.

CHAPTER 5

DISCUSSION

5.1 Research Findings

The present study explored the prevalence of trauma exposure, its association with PTSD and depression. The present study also investigated if trauma exposure, PTSD and depressive symptoms affected the firefighters marital conflict. The following paragraphs discuss and describe the major findings of this study. Some clinical and practical implications are also discussed and suggested.

5.1.1 Trauma Exposure Prevalence

Finding from this study suggest that all firefighters (100%, n = 258) have at least one lifetime trauma experience that includes direct trauma, indirect trauma, and job-related trauma. Finding also suggests that the highest prevalence of trauma exposure is job-related trauma (95%), followed by direct lifetime trauma (84.6%), and indirect lifetime trauma exposure (66%) . Job-related trauma exposure was commonly found among high risk profession specifically among firefighters and this finding was consistent with the previous studies (Watkins et al., 2014; Kilpatrick et al., 2013; Fahy, LeBlanc & Molis, 2010) in which firefighters were usually exposed with unexpected traumatic experiences such as death and severe injuries throughout their duties.

The most prevalent types of trauma exposure reported by the firefighters in this study which consistent with the previous findings among general population were fire and explosions (Lukaschek et al., 2013), natural disaster (Whisman, 2014; Ghazali et al., 2013;

Berger et al., 2012) motor –vehicle accidents (Syed Jaapar, Abidin & Othman, 2014) and the death of family members. When compared to the prevalent of trauma exposure in other study conducted in Malaysia, the present study showed higher prevalent in trauma exposure as the participants from present study are among high risk group. Current finding consistent with the study conducted by Fahy, LeBlanc and Molis (2010). They reported that the common type of trauma experienced by the U.S. firefighters was fire and explosion operation other than involved in transportation accidents while returning from operation.

Results also suggest that our firefighters commonly exposed to the following job-related trauma such as fire, natural disaster, death of family members, motor vehicles accidents, serious accidents at workplace, near drowning, sudden death cause by accidents as well as exposure to toxic substance during their duties. They also were commonly exposed to the following direct trauma exposure which incudes death of family members, motor vehicle accidents, experiencing natural disaster, fire, near drowning outside working hours, exposed with toxic substance, physical assault and serious accident at workplace. They also were commonly exposed to the following indirect trauma exposure such as death of family members, motor vehicle accidents, fire, natural disaster, near drowning, serious accident at workplace and divorce. Regardless of the exposure related to their job, or direct and indirect trauma exposure, the prevalence of exposure among firefighters population is high. These findings provide baseline data and justification for the policy makers and our firefighters administration to evaluate the needs to provides inhouse mental health services to help firefighters in dealing with various kinds of traumatic experiences that might bothered them throughout their lifetime.

5.1.2 Prevalence of PTSD and Depressive Symptoms

The present study found that the prevalence of PTSD symptoms was 18.2% using PCL-5 cutoff score of 33. The prevalance of the present finding consistent with the previous studies on PTSD prevalence among firefighters as reported by American Psychiatric Association and National Comorbidity Survey Report which reported firefighters developed 16% to 24% higher rates on the level of PTSD following traumatic events and 6-9% lifetime prevalence as compared to the general population (Gawrych, 2010). The findings in the present study is also in line with the findings reported in the U.S. (Lee et al., 2014; Del Ben et al., 2006). However, in comparison to the study among firefighters in Taiwan, 21.4% were reported to suffer PTSD morbidity which is higher than the prevalence of the current findings (Chang, Davidson & Lai, 2003).

When compared to the prevalance of PTSD between firefighters and general population which were exposed to specific types of trauma, the prevalence of PTSD symptoms reported in the present study was consistent with the prevalence reported among the general population. For example, the prevalence on PTSD symptoms reported among other general population such as 18.8% the prevalence of PTSD conducted among victims of tsunami in Malaysia (Ghazali, Yaman & Ahmad, 2012) with almost the same number of sample size, among 16.7% rescue workers in Taiwan (Fullerton et al., 2004), and within the post-conflict countries such as Euthopia 17.8% and Cambodia 15.8%.

Scant literatures has shown that most of the previous trauma exposure studies among firefighters were conducted as a results of specific traumatic events or natural disasters such as Hurricane Katrina, Tsunami and man-made destruction for instance, the tragedy of 9/11 (Saijo et al., 2012; Del Ben et al., 2006; see Chang, Davidson & Lai, 2003). This is contradict with the present study as trauma exposure experienced by the firefighters was not measure

based on specific events. The present study interested to measure lifetime trauma exposure including direct and indirect trauma expposure as well as job-related trauma among our firefighters. Although there is no specific event being specified in present study, the finding of the prevalence of PTSD is still high among our firefighters. This indicates that, mental health workers should be made available within their organizational system to assist them with PTSD symptoms. Efforts should be made to reduce this high prevalence rate among our firefighter through systematic and frequent mental health prevention and intervention programs.

Findings have also shown that the prevalence of depressive symptoms among our firefighters was 18.2% (*n* = 47). This finding is consistent with the study conducted by Harvey and colleagues (2015) among retired firefighters in Australia. However, when compared to other studies which explored on the prevalence of depression among current firefighters, the prevalence of the present study is much lower in comparison with the study among firefighters in Saudi (Alghamdi et al., 2017); U.S. (Hom et al., 2016); Japan (Saijo et al., 2012); New Orleans (Tak et al., 2007) but higher than other studies (Jo & Park, 2013; Carey et al., 2011; Chen et al., 2007). The prevalence of depression was different across many countries because each study explored different causes that trigger the depressive symptoms among firefighters for examples conflict with those with higher positions (Saijo et al., 2012; Tak et al., 2007), education background (Alghamdi et al., 2017) as well as physiological cause such as insomnia and sleep disturbance (Hom et al., 2016). Also, the different finding could be due to the different assessment tools used to survey depressive symptoms.

In addition, PTSD was found to be significantly associated with depressive symptoms. It was found that 10.9% (*n* = 28) among total number of firefighters exhibited both PTSD and depressive symptoms. The present finding showed that traumatized firefighters were

14.15 times more likely to develop depression which higher than previous study conducted by Chung and Park (2011). Based on Chung and Park (2011) study, it is stated that the likelihood of the firefighters suffering from depression following the injuries due to their job was 6.9 times higher than non-injured firefighter. However, the difference between the present findings and Chung and Park (2011) finding might be because of the finding of present study only observed on the occurence of depressive symptoms based on various traumatic events experienced by firefighter which also includes injuries while on duties.

Meanwhile, when compared to the previous finding, it isshowed that there was slightly lower risk for developing PTSD among depressed rescue workers. They found that within seven months of the tragedy, the tendency for the depressed rescue workers to developed PTSD was 9.5 times greater than after thirteen months of the tragedy by 7.96 times (Fullerton et al., 2004). Therefore, unsurprisingly the finding showed that those who suffered from PTSD might as well suffered from depression based on previous studies which also consistent with the current finding from the present sample. The work of Fullerton and colleagues (2004) indicates that there could be some possibility as the time passes, the PTSD symptoms and prevalence of PTSD symptoms reported will be lot more reduced. It is speculated that with the prevention and intervention programs, some recue workers learn how to deal with their job-related traumatic experience effectively. Perhaps, similar study should be conducted to determine if prevention, mental health promotion and intervention that conducted among other PTSD symptoms victims would yield to similar effect among our firefighters.

The present study found that the prevalence of PTSD was 18.2% using cutoff score of 33. This finding equivalent with the prevalence of PTSD conducted among victims of tsunami in Malaysia (Ghazali et al., 2012) with almost the same total of firefighters. The

present finding of the prevalence of PTSD was corresponding with the previous prevalence rate of PTSD among firefighters in U.S. (Fullerton et al., 2004; Gawrych, 2010; Del Ben et al., 2006) and Southern Brazil (Monteiro et al., 2013). With this finding, we can estimate that in 100 firefighters, approximately 20% might have suffered from PTSD in their lifetime. This prevalence is quite high in comparison with other general population such as Brazilian firefighters (Lima et al., 2015), firefighters in Kaohsiung Taiwan (Chen et al., 2007) and United States firefighters (Carey et al., 2011). Present study speculates that the differences of the prevalence might be due to the numbers of the sample size taken for each study.

However, compared to the nature of traumatic exposures from other studies, most of the previous studies were conducted among firefighters who experiencing specific traumatic events or natural disasters such as Hurricane Katrina, Tsunami and man-made destruction for instance, the tragedy of 9/11 (Saijo et al., 2012; Del Ben et al, 2006; Chang, Davidson & Lai, 2003). Unlike the firefighters in the present study, there is no specific events to measure the exposure on traumatic events as present study measured together the lifetime trauma exposure and job-related trauma of the firefighters. Although there is no specific event being specified in present study, the finding of the prevalence of PTSD is high among our firefighters. This findings can be used as a baseline for the governments and any related bodies to help the firefighters who struggle with their own mental health problems to seek help from the professional as to live their life as a normal person when they are off-duties.

It is also recommended that at least each and every fire department should have qualified counsellors that deal with the on duties firefighters' aftermath the serious emergencies cases. This should be done as to ensure the psychological wellbeing of the firefighters is in a good conditions aftermath their job related-traumatic events. Periodic assessments and evaluation by the counsellors are needed to ensure the mental health

conditions of the firefighters. Special intervention program for the firefighters with high-risk of PTSD and depression symptoms need to be organized by the authorities as to help them build inner strength in dealing with unavoidable traumatized experienced during their duties.

Many studies have shown that depression can affect job performance and other social functioning including relationship with their significant others (Fink & Shapiro, 2013; Kouros & Cummings, 2011). Perhaps, following depressive symptoms screening, clinical diagnosis should be included as well so that they would receive proper psychological treatment. Depression is highly treatable mental condition but when left untreated, it can affect many aspects of life (APA, 2013).

5.1.3 Trauma Exposure in Relation to PTSD and Depressive Symptoms

5.1.3.1 Trauma Exposure in Relation to PTSD

The present findings revealed that there are significant and strong positive relationships between direct trauma exposure and PTSD symptoms among our firefighters. Predictably, it is known that trauma exposure does have significant relationship with PTSD. The more the individuals' experience direct trauma exposure, the stronger possibility for them to suffer from PTSD. Kilpatrick and colleagues (2013) suggested that the greater the trauma experiences individuals encountered, the higher the prevalence of PTSD will be reported. This can be further explained that those who exposed with numerous lifetime traumatic experiences which referred to become a victim of direct traumatic events and experiencing primary stress disorder were prone to be associated with PTSD which consistent with most of previous studies on PTSD (Sakuma et al., 2015; Kukihara et al., 2014; Kilpatrick et al.,

2013; Lukaschek et al., 2013; Norris & Slone, 2013; Bodkin et al., 2007; Wagner, Heinrichs & Ehlert, 1998; Breslau, Davis & Andreski, 1995).

5.1.3.2 Trauma Exposure in Relation to Depressive Symptoms

The present study found that those who were exposed by numerous lifetime traumatic experiences and become the victims of trauma are associated with depressive symptoms. This result consistent with the previous studies related to depression (Sakuma et al., 2015; Kukihara et al., 2014; Kilpatrick et al., 2013; Lukaschek et al., 2013; Norris & Slone, 2013; Bodkin et al., 2007; Wagner, Heinrichs & Ehlert, 1998; Breslau, Davis & Andreski, 1995). The resent findings support the notion that when individuals experiencing direct trauma exposure, it increases the risks of the individuals to suffer from depressive symptom (Arslan et al., 2009). Firefighters have a tendency to develop depressive symptoms as they were exposed to various types of traumatic events in their career. It is concluded that frequent job-related trauma exposure can be strong predictors of the occurrence of depressive symptoms among the firefighters. On the other hand, those who experience indirect trauma exposure or witnessing someone that experiencing traumatic events and job-related trauma, the probability to develop depressive symptoms is significantly less than those who experiencing direct trauma exposure.

Studies on PTSD and depressive symptoms and its relationship with types of trauma exposure (direct, indirect or job-related) was very limited. However, it is speculated that the differences in the PTSD and depressive symptoms in relation with different types of trauma exposures could verily depend on the reactions of individuals towards the events itself. This claim supported the notion proposed by Angleman (2010). As firefighters were well-trained in handling critical events and the first responders need to ensure the safety of the victims as

well they need to control and suppressed their emotions during the critical events (Monteiro et al., 2013). However, the reactions towards the traumatic events might differ when the firefighters himself become the victims of the traumatic incidents. They would suffer as well when the trauma directly experienced. Although it is found that job-related and indirect trauma does not significantly affect our firefighter in reporting PTSD and depressive symptoms, careful psychological assessments should be conducted routinely to ensure their mental and emotional wellbeings by conducting programs such as employee-assistance programs or pscyhological campaign to encourage seeking help from the professionals (Kim et al., 2018; Chen et al., 2007).

5.1.4 PTSD and Depression and Years of Services

Finding in this study shows that depressive symptoms among our firefighters is not significantly associated with years of services. Those who served longer years of services tend to report similar depressive symptoms with those who have shorter years of services. The result is inconsistent with the previous studies. Previous studies reported that experienced or senior firefighters which defined by the longer years of services were expected to be more traumatized and more prevalent in PTSD than the junior firefighters as they were exposed to various and numerous types of traumatic events throughout their career (Chang et al., 2013; Monteiro et al., 2013; Javidi & Yadollahie, 2012; Wagner et al., 2012; Chang et al., 2008) despite of the severity of trauma (Berger et al., 2012). However, the findings from the present study corresponding to the findings of previous study conducted by Angleman (2010). Angleman (2010) reported that the response perceived by individuals on traumatic events rather than the incidents itself played important roles in the development of PTSD disregarding the longer years of experiences served in fire services.

As firefighters were well-trained to become tougher and resilience (Monteiro et al., 2013), current finding showed that there are no differences between the length of services between junior and senior firefighters in terms of PTSD and depressive symptoms regardless of the occurrences of trauma reported by firefighters. The present finding indicates that longer years of services do not have significant impact on PTSD and depressive symptoms among junior and senior firefighters. There are some explanations on this result. First, perhaps both senior and junior firefighters were exposed with almost the same traumatic events throughout their years of services. Second, previous study has shown that, the individual nature of the traumatic event itself such as the severity of trauma could contribute more to the risk of developing PTSD and depressive symptoms than the frequencies of trauma exposure (Angleman, 2010) and times of their services. Third, it is speculated that perhaps even a single or twice trauma exposure can lead to PTSD diagnosis. In other countries, different pattern of results may be found due to the nature of traumatic events experienced by the firefighters which involve wide range of severe natural disaster such as earthquake, Tsunami (Meyer et al., 2012; Creamer, Burgess & Mcfarlane, 2001). Thus, the present study rejects the proposed hypothesis that earlier mentioned in literature section.

5.1.5 Marital Conflicts

5.1.5.1 Marital Status in Relation to PTSD and Depressive Symptoms

Finding showed that there are statistically significant difference between group of married, widowed and unmarried firefighters in reporting PTSD symptoms. Widowed group scored higher PTSD and depressive symptoms than the married and the single group. Scant

literature shows that there is not many studies directly associate marital status with PTSD symptoms unlike depressive symptoms.

However, there are findings from the previous studies that areconsistent with the current study findings. It is found that among unmarried Saudi firefighters, the risk of getting PTSD symptoms is higher rather than married firefighters presumably due to lack of emotional support received from close family member than married firefighters (Alghamdi et al., 2017). Consistent with the previous study, the study conducted among Australian population revealed that the elevation of the prevalence on PTSD was found among single and divorced or widowed respondents (Creamer, Burgess & Mcfarlane, 2001). However, firefighters who are single or not married in the present, study did not report high prevalence in PTSD and depressive symptoms when compared to Saudi firefighters (Alghamdi et. al., 2017) and Australian population (Creamer, Burgess & Mcfarlane, 2001). Single or never-married firefighters in PTSD symptoms was lower compared to the mean of widowed and married group. Further study such as qualitative research is recommended to understand this phenomenon since the results of the present study is different than the previous study.

The current findings also show that there are significant difference between married, widowed and never-married firefighters in relation to depressive symptoms. It is revealed that widowed group is more prone to score higher in PTSD and depressive symptoms compared to those married and never-married firefighters. Current finding supports the notion that widowed group much more vulnerable to suffer from depressive symptoms than the married and never-married group (Kamiya et al., 2013; Zhang & Li, 2011; Jang et al., 2009). This indicate that divorced and widowed respondent were prone to report distress in their previous marriage during the study was conducted compared to married firefighters.

To support the current findings, a study conducted by Yan and colleagues (2011) among general population in China also found that unmarried individuals', widowed, divorced and non-married individuals' especially among elderly people were at higher risk of developing depression compared to married couple The present study also found that divorced and widowed respondent mean score on PTSD symptoms were significantly higher in marital conflicts than married firefighters based on their previous marital relationship . This indicate that divorced and widowed respondent were more prone to report distress in their previous marriage than married firefighters as it might be because of the stressful experience they faced in marriage in the past. As divorce can be regarded as traumatic yet stressful experience for the divorcee (Amato & Hohmann-Marriott, 2007). The present study assumed that this can answer why widowed reported more distress in their past marriage than currently married firefighters.

5.1.5.2 Marital Conflict among Firefighters

As widowed group reports more distress in marriage than married firefighter, present study has found that aggression was the highest reported by the firefighters in relation to marital conflicts followed by dissatisfaction towards partner which known as global distress and financial diagreement. The present finding was consistent with past literatures (Amato & Hohmann-Marriott, 2007; Fincham, 2003) which stated that aggression and dissatisfaction with spouse could badly affect marriage. Aggression was highly reported by the firefighters in the present study might be because of the stress and traumatic experience they faced during their duties which made them feel distress and displayed aggressive behavior toward their spouse which consistent with previous study (Jackman-Cram et al., 2006). However, present study did not focus the severity of aggression that was done by the firefighters

towards their spouse as what have been discussed in the other literature (Stone & Shackelford, 2007; Jackman-Cram et al., 2006; Rogge et al., 2006).

Dissatisfaction towards partner is a broader aspect in marital conflict which also include problems in communication and finance. Global distress was also included as the highest marital conflict reported in the present finding after aggression. Dissatisfaction towards partner such as having poor in relationship quality (Amato & Hohmann-Marriott, 2007) does really affect individual marriage which presumably become the prominent reason to be disengaged in marriage for the firefighters. Financial issues was also become the prominent aspect of marital conflict reported by the firefighters in the present study which is consistent with the past literature (Dew, 2008). Argument over finance usually ended up with disagreement and distress in the relationship (Dew, 2008) which affect individuals' dissatisfaction about their relationship with spouse. This is not healthy for the relationship as frequent argument might cause disharmony in the marriage. This might be one of the prominent causes that leads to divorce among the firefighters in the present study. However, there is no strong evidence to prove the claim which might need further researches as present study does not intended to search in depth regarding this matter.

Problem solving communication also one of the aspects that were highly reported among married and widowed firefighters in present findings. Affective communication between couple is an essential aspect in maintaining the satisfaction in marriage. Affective communication and problem skills communication will mitigate other various detrimental effect such as depressive symptoms among couples (Harper & Sandberg, 2009). Sandberg and colleagues (2002) also concluded that poor communication between couple and depressive symptoms will be more likely brings more harm in marriage. Yet, sexual

dissatisfaction and family history of distress less likely reported by married and widowed firefighters in the present study.

5.1.5.3 Marital Conflicts and Trauma Exposure

Trauma and PTSD was positively and significantly related with marital conflicts. There was also significant relationship between direct exposures to trauma and job-related trauma with marital conflicts. Meaning that, those who had more trauma exposure regardless if it is direct trauma exposure or job-related, firefighters tend to report significantly higher in their marital conflicts. This result is supported by the previous notion (Riggs, 2014; Whisman, 2014). The study among Vietnamese combat veterans with their spouse also found that relationship distress was interrelated with the trauma experienced by one of the partners (Riggs, 2014). As a result of undergoing traumatic experience, the couples might rate the marital relationship as less favorable (Dirkzwager et al., 2005) and at one point the marital relationship between the spouses deteriorates over time (Whisman, 2014). Even though the targeted respondent might differ across studies, it is important to denote that previous studies have supported the relationship between trauma exposures and marital conflicts. The resent study suggests that this finding would be important input to the firefighters, spouses as well as a counsellor and related agencies to have a better understanding of the effect of trauma towards firefighters' marital affairs. More systematic intervention can be proposed as to marital conflicts among high risk profession especially among firefighters.

The present study also revealed that problem solving communication was also included among the domain of marital conflicts that found to be significantly correlated with trauma exposure. Torres and his co-researchers (2016) reported that, poor communication during

problem solving communication does contribute to the rapid destruction in marital relationship between the couple. During emotional distress (exposure to traumatic events and PTSD) individuals tend to confine in their own world and experienced emotional numbness (APA, 2013). Many of them have difficulties to express their feelings. Some have reported frequent nightmares and severe emotional distress (Gerlock et al., 2014). Perhaps this is one of the reasons our firefighters reported high level of poor communication with their spouses. It is crucial to improve the communication skills between firefighters and their spouse in which by implementing ongoing mental health promotion to the firefighters, spouses and family members, this might help in minimizing the risks of having marital conflicts in their marriage.

However, previous literature stressed that poor communication alone cannot be the only basis arguments in marital conflicts issues (Rogge, Bradbury, Hahlweg, Engl & Thurmaier, 2006). Poor communication in marital relationship might also due to the manifestation of aggressive behavior as well as neuroticism (Javidi & Yadollahie, 2012). Studies have shown that many USA veteran reported aggressive behaviors upon their return from their military services. Unfortunately, majority of our firefighters reported aggressive behavior as a result of exposure to traumatic events which consistent with a study conducted by Javidi and Yadollahie (2012). This study highlights that a good communication is an important key-predictor for marital satisfaction and happiness.

5.1.5.4 Marital Conflicts and PTSD among Married and Widowed Firefighters

Finding also suggested that marital conflict is positively and significantly correlated with PTSD symptoms. Those who score high in marital conflicts tend to report higher score

for PTSD symptoms. Several issues in marriage were raised with PTSD as one of the contributors towards disruptions over satisfaction in marriage. PTSD was believed to cause marital conflicts (Torres et al., 2016), worsening relationship problems (Cook et al., 2004), leads to hostile behavior and intimate partner violence (Orcutt, King & King, 2003) and divorce. Findings by previous studies help in explaining the significant relationship between marital conflicts and PTSD in the present study. Even though previous study surveyed/investigated veteran of combat exposure, it was also signified the excessive exposure to traumatic events. Thus, it can be assumed that PTSD does have significant impact in individuals' marital relationships namely marital conflicts.

In terms of marital conflicts domain, the present study result revealed within current targeted sample, the manifestation of PTSD symptoms was highly associated with aggression, family with history of distress, sexual dissatisfaction as well as problem solving communication. Predominantly, previous studies have found the relationship between marital conflicts and PTSD (Taft et al., 2011; Monson & Taft, 2005; Cook et al., 2004). Most of the previous studies were conducted among ex-prisoner of war as well as combat veteran in manifestation of PTSD symptoms related to the issues in marital conflicts. Study conducted among Vietnamese combat veteran found that those partners who suffered PTSD symptoms do have problem in their sexual interaction with their spouse (Riggs, 2014). This might create the problem and breakdown in the relationships. The act of hostility and aggression towards intimate partner might as well lead to marital conflicts and contribute to the disruption in marriage (Stone & Shackelford, 2007; Rogge et al., 2006). These findings were consistent with the current result which found out that firefighters with PTSD symptoms portrayed that the acts of hostility and aggression which believed to have significant impact in individuals' marriage. This may lead to several other consequences in

the marital relationship. This claim was corroborated with the previous notions that men with PTSD symptoms were at higher risk of committing intimate partner violence due to their histories of trauma as well as several other marital problems arises in their marriage (Taft et al., 2005).

The present study also concerned that the marital conflicts problems elevated due to disagreement in communication between the partner namely in problem solving communication between the partner. Marital conflicts due to poor communication were rampantly reported in numerous literatures (Kamiya et al., 2013). Firefighters with PTSD symptoms in the present study reported to have poor communication with their spouse compared to those who did not have the symptoms. It is suggested that the frequent disagreement was precipitated by the symptoms which may influence their marriage negatively. Evidently, frequent disagreement and hostility behavior affect the overall satisfaction in individuals' marriage and influence the decision to disengage in marital relationship (Amato & Hohmann-Marriott, 2007).

Firefighters with PTSD symptoms in the present study also reported to have significant difference in sexual dissatisfaction and family history of distress compared to those who did not have the symptoms. Present findings were consistent with the study conducted by Riggs (2014) which claimed that PTSD symptoms influence the sexual interaction and relationship with partner among Vietnam combat veteran. Also, family dysfunction was one of the contributing factors in committing and perpetrating partner violence (Orcutt, King & King, 2003) as a result of PTSD symptoms.

5.1.5.5 Marital Conflicts and Depression

The firefighters with depressive symptoms scored significantly high in all marital conflicts domains including disagreement about finances, aggression, family history of distress, affective communication, time together, sexual dissatisfaction, global distress and problems solving communication. Those who reported more depressive symptoms exhibit more problems in marital conflicts domains compared to those without depressive symptoms. This finding consistent with the previous studies, depression was highly correlated with marital conflicts and dissatisfaction in relationship (Fink & Shapiro, 2013; Kamiya et al., 2013; Kouros & Mark Cummings, 2011). Marital conflicts problems encountered by firefighters with depressive symptoms including difference about finance, aggression and hostility, history of distress in family, affective and problem-solving communication, sexual dissatisfaction, lack of time spent together with partner as well as the overall dissatisfaction towards own marriage namely global distress. Predominantly, previous studies on depression have substantial influence on individuals' issues in marital conflicts problems. Either in terms of communication, problem solving skills, aggressive and violent act towards partner or even with overall perception towards individuals' dissatisfaction in marriage were included as marital conflicts problems (James & Harper, 2009; Amato & Hohmann-Marriot, 2007; Stone and Shackelford, 2007; Jackman-Cram, Dobson & Martin, 2006; Rogge et al., 2006). The manifestation of depression can be seen when the partner having frequent disagreement and hostile act in which it might affect overall satisfaction in individuals' marriage. This might influence the decision to disengage in marital relationship (Amato & Hohmann-Marriott, 2007).

Also, previous studies on depression have suggested that depression substantially influence on individuals' ability to manage issues in marital problems (James & Harper, 2009; Amato & Hohmann-Marriot, 2007; Stone and Shackelford, 2007; Jackman-Cram, Dobson & Martin, 2006; Rogge et al., 2006). As this study was cross sectional, it is impossible establish causation whether problem solving communication and global distress among married firefighters contribute to the development of PTSD and depressive symptoms or vice-versa among firefighters. Torres and colleagues (2016) suggested that studying spouses of the firefighters will help in better understanding of the firefighters' marriage. This indirectly could help in minimizing health risks such as depression and PTSD among firefighters. However, this result might noteworthy for future researches and counselors to take into consideration when designing appropriate program to increase awareness among firefighters about the consequences of PTSD and depression to their marital relationship.

5.1.5.6 Predictive Factors for Marital Conflicts and Depressive Symptoms

Findings from simple linear regression analysis suggested that gender, marital status, depressive symptoms, traumatic events including serious injuries, damage and death, traumatic events – sudden death cause by suicide and/or murder, and traumatic events – sudden death cause by accident are predictive factors for marital conflict among firefighters in this study. Based on this findings, most traumatic events which become the predictive factors of the marital conflict among firefighters involving serious injuries and death. As those traumatic events become the predictive factors of marital conflict, present study can conclude that traumatic experiences that faced by the firefighters can be a prominent cause of marital conflict between the firefighters and their spouse. Torres and colleagues (2016)

also claimed that high risk profession which exposed to various traumatic events somehow having a problems in maintaining their relationship with their spouse.

Current finding also provides an insight regarding the specific issues in marital conflicts faced by our firefighters. Firefighters with depressive symptoms tend to report the overall dissatisfaction towards their marriage and their inability to resolve discrepancies with their partner are among the biggest challenges faced by them. Problem solving communication was served as strong predictors and risks factors for depressive symptoms. When a spouse experiences depressive symptoms, theability to have better communication and problem solving skills in marriage will be decreased (Harper & Sandberg, 2009). Global distress was also found to be significant predictors for depression. The present study assumed that problem solving communication and global distress were interrelated yet essential aspect in determining the satisfaction in marriage between couple especially among firefighters in this present study. When couples experiencing ineffective communication, the tendency for the couple feel dissatisfaction towards their partner might be elevated over time.

As this study was a cross sectional research design, it is impossible to conclude from these results whether problem solving communication and global distress among married firefighters contribute to the development of PTSD and depressive symptoms or vice-versa among firefighters. However, this result might be noteworthy for future researcher and counselors to take into consideration when designing appropriate program to increase awareness among firefighters about the consequences of PTSD and depression to their marital relationship. Yet, further research should be done as to initiate better interventions to help married firefighters and their spouse to understand and communicate better to each other and minimize the conflict in their marriage.

5.2 Implication of Study and Recommendation

The current study revealed notable findings on the prevalence of PTSD and depressive symptoms among firefighters as a result of repeated exposure to traumatic events. The finding suggests that it is important to take into consideration on the detrimental effect of trauma exposure in the life of firefighters especially related to their marital relationship.

It is important for the future research to plan a more in-depth study on traumatic experiences encountered by the firefighters in order to design proper treatment and intervention. These might include their help seeking behavior pattern, their stigma towards receiving mental health treatment, or their stigma peers who have been diagnosed with PTSD, depression, job-stress and other types of mental illness. It is recommended that a specific prevention and intervention should be designed specifically for our firefighters since the current findings have provided a very clear needs on such program. The prevention program can include more knowledge and awareness among firefighters about the consequences of PTSD and depression to their marital relationship. Considering the trauma exposure is high among our firefighters, a systematic mental health prevention program should be implemented for the firefighters in Malaysia. Even though under Human Resources of Fire and Service Department of Malaysia included the counselling services for firefighters, it however only focuses more on improving work performance of the firefighters and their motivation. There is no psychological assistance provided formally in dealing with psychologically affected firefighters following constant exposure with various traumatic events in their job setting. Garner and colleagues (2016) suggested that emergency management programs organized in a counselling setting would help those first responders in dealing with trauma responses as well as providing a social support for the responders in

positive settings in integrate with the trauma. This might help firefighters to deal with their traumatic experiences and how to handle and controlled their emotions from affecting their social interaction with others especially in their marriage. In addition, the roles of counsellors played significant roles in acknowledging the trauma experienced by the first responders by encouraging them to share their private trauma with counsellors (Garner et al., 2016) and assisted them in dealing with the situations.

5.3 Limitation of Study

Although this study provides insights on the prevalence of trauma exposure, PTSD and depression and the associations with marital conflicts among high risks profession specifically among firefighters in Sarawak, several numbers of limitation exist. For instance, the sample size is limited especially with female firefighters, therefore there is no comparison was made between male and female firefighters in the present study. There are very limited number of female firefighters in services (Fox, Hornic & Hardin, 2006) across the globe. Since the present study relied upon retrospective reports from the firefighters regarding the trauma experiences, some experiences might be under-reported or recall-bias by the participants. However, this might not influence their report on the lifetime trauma as well as job-related trauma exposure as firefighters were usually exposed with numerous traumatic events either in the past or throughout their years of services.

5.4 Conclusion

The present study suggests that there is significant association between lifetime trauma exposure, PTSD and depression in relation to marital conflicts among firefighters in

Sarawak. However, no relationship was found in the present study related to the years of services among firefighters with the numbers of trauma exposure, PTSD and depression. The high prevalence of PTSD and depressive symptoms among firefighters in Sarawak call for urgent action from all related government and non-government bodies or agencies especially from Department of Fire and Rescue Service of Malaysia and government. Further action should be taken into consideration especially in terms of providing firefighters with psychological assistance from time to time as to ensure their psychological well-being at its best in order to serve for people.

The present study found that strong association was found between firefighter who fulfilled both PTSD and depressive symptoms were 14.15 more likely to develop PTSD. Overall, it can be concluded that trauma exposure contributes to the risks of suffering from PTSD and depressive symptoms among firefighters in Sarawak. Most important finding in present study is that some of marital conflicts domain served as one of the risks factors for PTSD and depression. In making comparison between married and widowed group, it is found that marital conflicts were mostly reported by widowed group. Present study concluded that widowed group received less emotional support than married firefighters based on the report from previous studies. This study provides insights for future researches, clinicians, counselors and Fire and Rescue Service Department of Malaysia in designing a proper intervention, treatment and counselling program to increase awareness about the effect of trauma exposure on the psychological well-being among high-risk profession specifically among the firefighters.

REFERENCES

Alghamdi, M., Hunt, N., & Thomas, S. (2017). Prevalence rate of PTSD, depression and anxiety symptoms among Saudi firefighters. *Journal of Traumatic Stress Disorders & Treatment*, *6*(01), 1-6.

Amato, P. R., & Hohmann-Marriott, B. (2007). A comparison of high and low-distress marriages that end in divorce. *Journal of Marriage and Family*, *69*(3), 621-638.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th Ed.). Arlington, VA.

Angleman, A. J. (2010). *Firefighter stress: Association between work stress, posttraumatic stress symptoms and cardiovascular disease risk* (Unpublished doctoral dissertation). Nova Southeastern University, Fort Lauderdale, Florida.

Armagan, E., Engindeniz, Z., Devay, A. O., Erdur, B., & Ozcakir, A. (2006). Frequency of Posttraumatic Stress Disorders among relief force workers after the tsunami in Asia: Do rescuers become victims? *Prehospital and Disaster Medicine*, *21*(3), 168-172.

Arslan, G., Ayranci, U., Unsal, A., & Arslantas, D. (2009). Prevalence of depression, its correlates among students, and its effect on health-related quality of life in a Turkish university. *Upsala Journal of Medical Sciences*, *114*(3), 170-177.

Barnes, P. H. (2000). The experience of traumatic stress among urban firefighters. *Australian Journal of Emergency Management*, *14*(4), 59-60.

Berger, W., Coutinho, E. S. F., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., Marmar, C. R., & Mendlowicz, M. V. (2012). Rescuers at risk: A systematic review

and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry and Psychiatric Epidemiology*, *47*(6), 1001-1011.

Bodkin, J. A., Pope, H. G., Detke, M. J., & Hudson, J. I. (2007). Is PTSD caused by traumatic stress? *Journal of Anxiety Disorders*, *21*(2), 176-182.

Bovin, M. J., Marx, B. P., Weathers, F. W., Gallagher, M. W., Rodriguez, P., Schnurr, P. P., & Keane, T. M. (2016). Psychometric properties of the PTSD checklist for Diagnostic and statistical manual of mental disorders–fifth edition (PCL-5) in veterans. *Psychological Assessment*, *28*(11), 1379-1391.

Brennan, M. (2002). *Reducing occupational mental stress for fire fighter/paramedics* (Unpublished doctoral dissertation). Eastern Michigan University, Ypsilanti, Michigan.

Breslau, N., Davis, G. C., & Andreski, P. (1995). Risk factors for PTSD related traumatic events: A prospective analysis. *American Journal of Psychiatry*, *152*(4), 529-535.

Butterworth, P., Rodgers, B., & Windsor, T. D. (2009). Financial hardship, socio-economic position and depression: results from the PATH through life survey. *Social Science & Medicine*, *69*(2), 229-237.

Carey, M. G., Al-Zaiti, S. S., Dean, G. E., Sessanna, L., & Finnell, D. S. (2011). Sleep problems, depression, substance use, social bonding, and quality of life in professional firefighters. *Journal of Occupational and Environmental Medicine/American College of Occupational and Environmental Medicine*, *53*(8), 928-933.

Carter, S., Loew, B., Allen, E., Stanley, S., Rhoades, G., & Markman, H. (2011).

Relationships between soldiers' PTSD symptoms and spousal communication during deployment. *Journal of Traumatic Stress*, *24*(3), 352-355.

Chang, C.-M., Lee, L.-C., Connor, K. M., Davidson, J. R. T., Jeffries, K., & Lai, T.-J. (2003). Posttraumatic distress and coping strategies among rescue workers after an earthquake. *The Journal of Nervous and Mental Disease*, *191*(6), 391-398.

Chang, C. M., Lee, L. C., Connor, K. M., Davidson, J. R. T., & Lai, T. J. (2008). Modification effects of coping on post-traumatic morbidity among earthquake rescuers. *Psychiatry Research*, *158*(2), 164-171.

Chen, Y.-S., Chen, M.-C., Chou, F. H.-C., Sun, F.-C., Chen, P.-C., Tsai, K.-Y., & Chao, S.-S. (2007). The relationship between quality of life and posttraumatic stress disorder or major depression for firefighters in Kaohsiung, Taiwan. *Quality of Life Research*, *16*(8), 1289-1297.

Chung, Y. K., & Park, C. Y. (2011). The effects of injury and accidents on self-rated depression in male municipal firefighters. *Safety and Health at Work*, *2*(2), 158-168.

Cook, J. M., Elhai, J. D., Cassidy, E. L., Ruzek, J. I., Ram, G. D., & Sheikh, J. I. (2005). Assessment of trauma exposure and post-traumatic stress in long-term care veterans: preliminary data on psychometrics and posttraumatic stress disorders prevalence. *Military Medicine*, *170*(10), 862-866.

Creamer, M., Burgess, P., & Mcfarlane, A. C. (2001). Posttraumatic stress disorders: Findings from the Australian national survey of mental health and well-being. *Psychological Medicine*, *31*(7), 1237-1247.

Crocq, M. A., & Crocq, L. (2000). From shell shock and war neurosis to posttraumatic stress

disorder: a history of psychotraumatology. *Dialogues in Clinical Neuroscience*, *2*(1), 47-55.

De Jong, J. T., Komproe, I. H., Van Ommeren, M., El Masri, M., Araya, M., Khaled, N., Van de Put, W., & Somasundaram, D. (2001). Lifetime events and posttraumatic stress disorder in 4 postconflict settings. *JAMA*, *286*(5), 555-562.

Del Ben, K. S., Scotti, J. R., Chen, Y.-C., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work & Stress*, *20*(1), 37-48.

Dew, J. (2008a). Debt change and marital satisfaction change in recently married couples. *Family Relations*, *57*(1), 60-71.

Dirkzwager, A. J., Bramsen, I., Adèr, H., & Van Der Ploeg, H. M. (2005). Secondary traumatization in partners and parents of dutch peacekeeping soldiers. *Journal of Family Psychology*, *19*(2), 217-226.

De Vries, G. J., & Olff, M. (2009). The lifetime prevalence of traumatic events and posttraumatic stress disorder in the Netherlands. *Journal of Traumatic Stress*, *22*(4), 259-267.

Fahy R. F., Leblanc P. R., & Molis, J. L. (2010). *Firefighter Fatalities in the United States* 1977-2009. Retrieved June 27, 2016, from https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reportsEmergency-responders/Old-FFF-and-FF-Injuries/2009FFF.ashx

Fincham, F. D. (2003). Marital conflict: Correlates, structure, and context. *Current Directions in Psychological Science*, *12*(1), 23-27.

Fink, B. C., & Shapiro, A. F. (2013). Coping mediates the association between marital instability and depression, but not marital satisfaction and depression. *Couple and Family Psychology: Research and Practice*, *2*(1), 1-13.

Fox, K. A., Hornick, C. W., & Hardin, E. (2006). *International association of fire fighters diversity initiative achieving and retaining a diverse fire service workforce IAFF diversity initiative achieving and retaining a diverse fire service workforce*. Retrieved from http://www.iaff.org/HR/media/IAFF_diversity_report.pdf.

Fullerton, C. S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder, and depression in disaster of rescue workers. *American Journal of Psychiatry*, *161*(8), 1370-1376.

Friedman, M. J. (2013). Finalizing PTSD in DSM-5: Getting here from there and where to go next. *Journal of Traumatic Stress*, *26*(5), 548-556.

Gagliano, A. (2009). What every firefighter's spouse should know. *Fire Engineering*, *162*(12), 89-95.

Garner, N., Baker, J., & Hagelgans, D. (2016). The private traumas of first responders. *The Journal of Individual Psychology*, *72*(3), 168-185.

Gawrych, A. L. (2010). *PTSD in firefighters and secondary trauma in their wives* (Unpublished doctoral dissertation). Hofstra University, New York, United States.

Gerlock, A. A., Grimesey, J., & Sayre, G. (2014). Military-related posttraumatic stress disorder and intimate relationship behaviors: A developing dyadic relationship model. *Journal of Marital and Family Therapy*, *40*(3), 344-356.

Gerson, R., & Rappaport, N. (2013). Traumatic stress and posttraumatic stress disorder in youth: Recent research findings on clinical impact, assessment, and treatment. *Journal of Adolescent Health*, *52*(2), 137-143.

Ghazali, S., Elklit, A., Yaman, K., & Ahmad, M. (2013). Symptoms of PTSD among adolescents in Malaysia 4 years following the 2004 Tsunami. *Journal of Loss and Trauma*, *18*(3), 260-274.

Ghazali, S. R., Elklit, A., Balang, R. V., Sultan, M. A., & Chen, Y. Y. (2014). Determining the cut-off score for a Malay language version of the Centre for Epidemiologic Studies Depression scale. *ASEAN Journal of Psychiatry*, *15*(2), 146-152.

Ghazali, S. R., Yaman, K., & Ahmad, M. (2012). O-16-DSM-IV PTSD symptoms, socio-demographic characteristics and lifetime traumas among adults exposed to 2004 Tsunami disaster in Malaysia. *European Psychiatry*, *27*, 1-2.

Giblin, P. (1994). Marital satisfaction. *The Family Journal*, *2*(1), 48-50.

Greenberg, N., Brooks, S., & Dunn, R. (2015). Latest developments in posttraumatic stress disorders: Diagnosis and treatment. *British Medical Bulletin*, *114*(1), 147-155.

Guan, N. C. (2014). A review of depression research in Malaysia. *Medical Journal of Malaysia*, *69*, 42-45.

Gray, M. J., Litz, B. T., Hsu, J. L., & Lombardo, T. W. (2004). Psychometric properties of the life events checklist. *Assessment*, *11*(4), 330-341.

Haddock, C. K., Jahnke, S. A., Poston, W. S. C., Jitnarin, N., & Day, R. S. (2016). Marriage and divorce among firefighters in the United States. *Journal of Family Issues*, *37*(16),

2294-2308.

Harper, J. M., & Sandberg, J. G. (2009). Depression and communication processes in later life marriages. *Aging & Mental Health*, *13*(4), 546-556.

Harvey, S. B., Milligan-Saville, J. S., Paterson, H. M., Harkness, E. L., Marsh, A. M., Dobson, M., & Bryant, R. A. (2016). The mental health of fire-fighters: An examination of the impact of repeated trauma exposure. *The Australian and New Zealand Journal of Psychiatry*, *50*(7), 649-658.

Hawkins, M. W., Carrère, S., & Gottman, J. M. (2002). Marital sentiment override: Does it influence couples' perceptions? *Journal of Marriage and Family*, *64*(1), 193-201.

Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress*, *5*(3), 377-391.

Hom, M. A., Stanley, I. H., Rogers, M. L., Tzoneva, M., Bernert, R. A., & Joiner, T. E. (2016). The association between sleep disturbances and depression among firefighters: Emotion dysregulation as an explanatory factor. *Journal of Clinical Sleep Medicine*, *12*(2), 235-245.

Jackman-Cram, S., Dobson, K. S., & Martin, R. (2006). Marital problem-solving behavior in depression and marital distress. *Journal of Abnormal Psychology*, *115*(2), 380-384.

Jang, S. N., Kawachi, I., Chang, J., Boo, K., Shin, H. G., Lee, H., & Cho, S. I (2009). Marital status, gender, and depression: Analysis of the baseline survey of the Korean longitudinal study of ageing (KloSA). *Social Science & Medicine*, *69*(11), 1608-1615.

Javidi, H., & Yadollahie, M. (2012). Posttraumatic stress disorders. *The International*

Journal of occupational and Environmental Medicine, *3*(1), 2-9.

Jo, S. D., & Park, J. B. (2013). The relationship between depression and posttraumatic stress disorders among firefighters. *Journal of Korean Society of Hazard Mitigation*, *13*(5), 219-224.

Jones, E. (2010). Shell Shock at Maghull and the Maudsley: the origins of psychological medicine. *Journal of the History of Medicine and Allied Sciences, 65*, 368-395.

Kamiya, Y., Doyle, M., Henretta, J. C., & Timonen, V. (2013). Depressive symptoms among older adults: The impact of early and later life circumstances and marital status. *Aging & Mental Health*, *17*(3), 349-357.

Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of Traumatic Stress*, *26*(5), 537-547.

Kim, J., & Lee, J. (2013). Prospective study on the reciprocal relationship between intimate partner violence and depression among women in Korea. *Social Science & Medicine*, *99*, 42-48.

Kouros, C. D., & Cummings, M. E. (2011). Transactional relations between marital functioning and depressive symptoms. *American Journal of Orthopsychiatry*, *81*(1), 128-138.

Kukihara, H., Yamawaki, N., Uchiyama, K., Arai, S., & Horikawa, E. (2014). Trauma, depression, and resilience of earthquake/Tsunami/nuclear disaster survivors of Hirono, Fukushima, Japan. *Psychiatry and Clinical Neurosciences*, *68*(7), 524-533.

Lima, E. De P., Assunção, A. Á., & Barreto, S. M. (2015). Prevalence of depression among firefighters. *Cadernos De Saude Publica*, *31*(4), 733-743.

Li, T., & Fung, H. H. (2011). The dynamic goal theory of marital satisfaction. *Review of General Psychology*, *15*(3), 246-254.

Liu, A., Tan, H., Zhou, J., Li, S., Yang, T., Wang, J., & Wen, S. W. (2006). An epidemiologic study of posttraumatic stress disorder in flood victims in Hunan China. *Canadian Journal of Psychiatry*, *51*(61), 350-354.

Lukaschek, K., Kruse, J., Emeny, R. T., Lacruz, M. E., Von Eisenhart Rothe, A., & Ladwig, K. H. (2013). Lifetime traumatic experiences and their impact on PTSD: A general population study. *Social Psychiatry and Psychiatric Epidemiology*, *48*(4), 525-532.

Malek, M. D. A., & Kamil, I. S. M. (2013). The moderating effect of work motivation and coping strategies on job satisfaction and psychological well being among fire fighters. In S. Ali, & D. N. Aspin (Eds.), *The Asian Conference on Psychology & the Behavioral Sciences 2013* (pp. 249-263). Nagoya, Japan: The International Academic Forum (IAFOR). Retrieved from http://papers.iafor.org/wp-content/uploads/conference-proceedings/ACP/ACP2013_proceedings.pdf.

Meyer, E. C., Zimering, R., Daly, E., Knight, J., Kamholz, B. W., & Gulliver, S. B. (2012). Predictors of posttraumatic stress disorder and other psychological symptoms in trauma-exposed firefighters. *Psychological Services*, *9*(1), 1-15.

Miller, R. B., Mason, T. M., Canlas, J. M., Wang, D., Nelson, D. A., & Hart, C. H. (2013). Marital satisfaction and depressive symptoms in China. *Journal of Family Psychology*, *27*(4), 677-682.

Monson, C. M., & Taft, C. T. (2005). PTSD and intimate relationships. *PTSD Research Quarterly*, *16*(4), 1-7.

Monteiro, J. K., Abs, D., Labres, I. D., Maus, D., & Pioner, T. (2013). Firefighters: Psychopathology and working conditions. *Estudos De Psicologia (Campinas), 30*(3), 437-444.

National Institute of Mental Health. (2017). *Coping with traumatic events.* Retrieved from https://www.Nimh.Nih.Gov/Health/Topics/Coping-With-Traumatic-Events/Index.Shtml.

Norris, F. H., & Slone, L. B. (2013). Understanding research on the epidemiology of trauma and PTSD. *PTSD Research Quarterly*, *24*(2-3), 1-13.

Osman, S., Yei, L. S., Bahari, I., Arifin, M. D. K., & Foong, M. C. T. (2012). Accident risk indices of Malaysia's firefighters working in 12 and 24 hours shift works. *Journal of Occupational Safety and Health*, *9*, 25-30.

Pam, M. S. (2013). *Marital conflict*. Retrieved from https://psychologydictionary.org/marital-conflict/

Piyasil, V., Ketumarn, P., Plubrukarn, R., Jotipanut, V., Tanprasert, S., & Aowjinda, S. (2007). Posttraumatic stress disorders in children after Tsunami disaster in Thailand: Two years follow-up. *Journal of the Medical Association of Thailand*, *90*(11), 2370-2376.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385-401.

Renne, K. S. (1970). Correlates of dissatisfaction in marriage. *Journal of Marriage and the Family*, *32*(1), 54-67.

Richards, D. (2011). Prevalence and clinical course of depression: A review. *Clinical Psychology Review*, *31*(7), 1117-1125.

Riggs, D. S. (2014). Traumatized relationships: Symptoms of posttraumatic stress disorder, fear of intimacy, and marital adjustment in dual trauma couples. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(3), 201–206.

Roach, A. J., Frazier, L. P., & Bowden, S. R. (1981). The marital satisfaction scale: Development of a measure for intervention research. *Journal of Marriage and the Family*, *43*(3), 537-546.

Roberts, D. (n.d.). *'Shellshock' and 'PTSD': Two different conditions, two different ways of understanding and handling war trauma*. Retrieved from https://www1.essex.ac.uk/journals/estro/documents/issue9/vol-9-no-1.pdf.

Rogge, R. D., Bradbury, T. N., Hahlweg, K., Engl, J., & Thurmaier, F. (2006). Predicting marital distress and dissolution: Refining the two-factor hypothesis. *Journal of Family Psychology*, *20*(1), 156-159.

Saijo, Y., Ueno, T., & Hashimoto, Y. (2012). Posttraumatic stress disorders and job stress among firefighters of urban Japan. *Prehospital and Disaster Medicine*, *27*(1), 59-63.

Sakuma, A., Takahashi, Y., Ueda, I., Sato, H., Katsura, M., Abe, M., Nagao, A., Suzuki, Y., Kakizaki, M., Tsuji, I., Matsuoka, H., & Matsumoto, K. (2015). Posttraumatic stress disorders and depression prevalence and associated risk factors among local disaster relief and reconstruction workers fourteen months after the great east Japan

earthquake: A cross-sectional study. *BMC Psychiatry*, *15*(58), 1-13.

Salkind, N. J. (2009). *Exploring research (7th Ed.).* Upper Saddle River, NJ: Pearson.

Schonbrun, Y. C., & Whisman, M. A. (2010). Marital distress and mental health care service utilization. *Journal of Consulting and Clinical Psychology*, *78*(5), 732–736.

Schulz, P. E., & Arora, G. (2015). Depression. *Continuum, 21*, 756-771.

Shantz, M. C. (2002). Effect of work related stress on firefighter/paramedic. Retrieved from https://ffc.wildapricot.org/Resources/Documents/Resources/Effect%20of%20Work%20Related%20Stress%20on%20the%20Firefighter%20Paramedic.pdf.

Shaughnessy, J., Zechmeister, E., & Zechmeister, J. (2012). *Research methods in psychology*. New York, NY: Mcgraw-Hill.

Skogstad, M., Skorstad, M., Lie, A., Conradi, H. S., Heir, T., & Weisaeth, L. (2013). Work-related posttraumatic stress disorders. *Occupational Medicine*, *63*(3), 175-182.

Stone, E., & Shackelford, T. (2007). Marital satisfaction. *Encyclopedia of Social Psychology*. Retrieved from http://sk.sagepub.com/reference.

Syed Jaapar, S. Z., Abidin, Z. Z., & Othman, Z. (2014). Posttraumatic stress disorder and its associated risk factors among trauma patients attending the orthopaedic wards and clinics in Kota Bharu, Kelantan. *International Medical Journal*, *21*(6), 541-543.

Snyder, D. K. (1997). *Marital satisfaction inventory, revised (MSI-R)*. Los Angeles, California: Western Psychological Services.

Taft, C. T., Pless, A. P., Stalans, L. J., Koenen, K. C., King, L. A., & King, D. W. (2005).

Risk factors for partner violence among a national sample of combat veterans. *Journal of Consulting and Clinical Psychology*, *73*(1), 151-159.

Taft, C. T., Watkins, L. E., Stafford, J., Street, A. E., & Monson, C. M. (2011). Posttraumatic stress disorder and intimate relationship problems: A meta-analysis. *Journal of Consulting and Clinical Psychology*, *79*(1), 22-33.

Tak, S., Driscoll, R., Bernard, B., & West, C. (2007). Depressive symptoms among firefighters and related factors after the response to Hurricane Katrina. *Journal of Urban Health*, *84*(2), 153-161.

Torres, V. A., Synett, S. J., Pennington, M. L., Kruse, M., Sanford, K., & Gulliver, S. B. (2016). The risks and rewards of marriage for fire fighters: A literature review with implications for EAP. *Journal of Applied Research in Memory and Cognition*, *5*(3), 239-245.

Udomratn, P. (2008). Mental health and the psychosocial consequences of natural disasters in Asia. *International Review of Psychiatry*, *20*(5), 441-444.

Wagner, S. L., & O'Neill, M. (2012). Job, life, and relationship satisfaction for paid-professional firefighters. *Journal of Loss and Trauma*, *17*(5), 423- 438.

Wagner, D., Heinrichs, M., & Ehlert, U. (1998). Prevalence of symptoms of posttraumatic stress disorder in German professional firefighters. *The American Journal of Psychiatry*, *155*(12), 1727-1732.

Watkins, L. E., Jaffe, A. E., Hoffman, L., Gratz, K. L., Messman-Moore, T. L., & Dilillo, D. (2014). The longitudinal impact of intimate partner aggression and relationship status on women's physical health and depression symptoms. *Journal of Family Psychology*,

28(5), 655-665.

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD checklist for DSM-5 (PCL-5)*. Retrieved from at www.ptsd.va.gov.

Whisman, M. A. (2007). Marital distress and DSM-IV psychiatric disorders in a population-based national survey. *Journal of Abnormal Psychology*, *116*(3), 638-643.

Whisman, M. A. (2014). Dyadic perspectives on trauma and marital quality. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(3), 207-215.

World Health Organization. (2017). *Depression: Let's talk says who, as depression tops list of causes of ill health.* Retrieved from https://www.who.int/news-room/detail/30-03-2017--depression-let-s-talk-says-who-as-depression-tops-list-of-causes-of-ill-health.

Yan, X. Y., Huang, S. M., Huang, C. Q., Wu, W. H., & Qin, Y. (2011). Marital status and risk for late life depression: A meta-analysis of the published literature. *Journal of International Medical Research*, *39*(4), 1142-1154.

Zhang, B., & Li, J. (2011). Gender and marital status differences in depressive symptoms among elderly adults: The roles of family support and friend support. *Aging & Mental Health*, *15*(7), 844-854.

APPENDICES

Appendix A

SURAT PERMOHONAN MENJALANKAN KAJIAN

11 Mei 2016

Pengarah
Jabatan Bomba dan Penyelamat Negeri Sarawak,
Jalan Setia Jaya, Tabuan Jaya,
93350 Kuching, Sarawak.

Tuan,
Memohon Kebenaran Menjalankan Penyelidikan di Balai-Balai Bomba Negeri Sarawak

Dengan segala hormatnya saya merujuk perkara di atas.

Sukacitanya dimaklumkan bahawa saya (seperti butiran di bawah):

Nama : Alia Fadaliana binti Majani
No KP : 910122-13-5580
No Pelajar : 15020297
Penyelia : Prof Dr Siti Raudzah Ghazali (019-8597933)

Saya merupakan seorang pelajar Sarjana Sains Psikologi, Fakulti Perubatan dan Sains Kesihatan, Universiti Malaysia Sarawak, ingin mejalankan kajian bertajuk *""Posttraumatic Stress Disorders (PTSD), Depressive Symptoms and Marital Conflict in Relation to Trauma Exposure among Firefighters in Sarawak"*.

Sehubungan itu, saya ingin memohon kebenaran dari pihak tuan untuk menjalankan penyelidikan di beberapa buah balai bomba yang akan dipilih secara rawak di negeri Sarawak. Aktiviti penyelidikan tersebut adalah melibatkan pengumpulan data menggunakan instrumen kajian iaitu kertas soal selidik yang akan diberikan kepada 234 pegawai bomba dari pelbagai balai yang akan dipilih nanti.
Tempoh penyelidikan untuk mengumpulkan data-data dari setiap balai bomba adalah seperti butiran di bawah:

Tarikh : 1 Jun 2016 – 31 Oktober 2016
Tempoh : 4 bulan
Bentuk penyelidikan : Mengumpul data menggunakan instrumen kajian iaitu kertas soal selidik

Secara ringkasnya, tujuan kajian ini dijalankan adalah untuk mengenal pasti kadar trauma sepanjang hayat serta tanda-tanda kecelaruan tekanan trauma yang mungkin dialami oleh

pegawai bomba yang terlibat secara lansung atau tidak lansung dalam operasi menyelamat. Disamping itu masalah rumahtangga yang berlaku dalam kalangan pegawai bomba juga dipengaruhi oleh kesan trauma yang dihadapi oleh mereka. Banyak kajian yang dijalankan di luar negara mendapati bahawa kadar kecelaruan tekanan trauma serta kadar perceraian dalam kalangan pegawai bomba adalah tinggi tetapi masyarakat dan ahli professional tidak mengetahui mengenainya dan ini. Adalah diharapkan hasil daripada kajian ini, banyak aktiviti yang boleh memberi manfaat kepada kesihatan mental pegawai bomba dapat dijalankan terutama sekali sekiranya tanda-tanda kecelaruan dapat dikesan diperingkat awal.

Segala pertanyaan serta perkara yang bersangkut-paut dengan penyelidik tersebut, pihak tuan boleh merujuk terus kepada saya untuk tindakan selanjutnya.

Besarlah harapan saya, sekiranya permohonan ini mendapat pertimbangan yang sewajarnya daripada pihak tuan dan kerjasama yang diberikan didahului dengan ucapan terima kasih.

Sekian.

Yang benar,

_____

Alia Fadaliana binti Majani
Pelajar Sarjana Sains Psikologi
Fakulti Perubatan dan Sains Kesihatan
Universiti Malaysia Sarawak

Appendix B

Participant Information

Research Title:
"Posttraumatic Stress Disorders (PTSD), Depressive Symptoms and Marital Conflict in Relation to Trauma Exposure among Firefighters in Sarawak"

Institution:
Universiti Malaysia Sarawak

Researcher:
Alia Fadaliana binti Majani

Supervisor:
Professor Dr Siti Raudzah Ghazali

Address:
Faculty of Medicine and Health Sciences, University Malaysia Sarawak, 94300 Kota Samarahan, Sarawak

11 May 2016

Dear participants,

Background of the Study

A researcher from Faculty of Medicine and Health Sciences, University Malaysia Sarawak will be conducted a study on repeated trauma exposure, Posttraumatic Stress Disorders and marital relationship among fire fighters in Sarawak. For the purpose of the study, you are selected and invited to participate in this study. Several questionnaires will be administered by the researcher from Faculty of Medicine and Health Science, UNIMAS.

The aim of this study is to investigate the relationship between trauma exposures, PTSD and marital relationship among fire fighters in Sarawak.

Procedure

If you agree to volunteer in this study, you will be asked to fill in your basic socio-demographic background and complete several questionnaires in an environment that you feel comfortable. This will take approximately 30 to 45 minutes to complete.

Potential risk for the research

According to previous experience, there is a minimal risk to participate in this study. You might feel uncomfortable or distressed as the questions asked about your past traumatic experience or when you do not understand the question.
If you experience the above situation in which feeling uncomfortable or distressed during the study, the study will be temporary stop, a debriefing will be given and you can continue to complete the study as you wish.

There may or may not be any benefits to you. Information obtained from this study will help to improve the treatment plan or management of other participant with the same condition.

Withdrawing from the study

You may withdraw from this study at any time prior to the completion of the study without feeling wrong, prejudiced, and worried toward the researcher. You do not have to provide any explanation for your decision to withdraw. If you choose to withdraw, all information gathered from you as part of the study will be destroyed. If you were affected by any of the issues raised in this study and/or if thinking about any negative experience you have had, please contact the direct line: 082-222000 or 082-416550. In case the researchers are busy or away and do not pick up your phone, please leave your message and the researchers will contact you as soon as possible.

Further contact details

If you have any concerns or complaints or having any further questions about any aspect of this research, you may contact:

Researcher:
Alia Fadaliana binti Majani
Faculty of Medicine and Health Sciences
014-8930858
aliafadaliana@gmail.com

Supervisor:
Dr. Siti Raudzah binti Ghazali, Ph.D.
Faculty of Medicine and Health Sciences
Tel: 019-8597933
gsraudzah@fmhs.unimas.my

As part of the research protocol, we will do our best to answer your question.

Voluntary basis

Once again, participation in this study is a voluntary basis, therefore, you as a participant you have the rights to withdraw from the study as mentioned above. No one can force to have your participation.

Confidentiality

Your participation in this study will be kept strictly confidential. Questionnaire results, and all other information you provide regarding your identity will be kept under lock and key. Any quotations for your interview used in this study will be carefully selected so as to provide no indications of your identity. Your anonymity in all aspects of this research is

assured. When publishing or presenting the study results, your identity will not be revealed without your expressed consent. Individuals involved in this study and in your medical care may inspect and copy your medical records, where appropriate and necessary. A token of appreciation will be provided for this study. Your free and voluntary participation in this research is highly valuable and appreciated. You can obtain the token once you have completed the study. If you are interested in the participation of the study, please sign your signature below and the following written consent form.

Researcher:	_____	Participant name:	_____
Signature:	_____	Signature:	_____

Appendix C

Written Consent Form

Research Title:
"Posttraumatic Stress Disorders (PTSD), Depressive Symptoms and Marital Conflict in Relation to Trauma Exposure among Firefighters in Sarawak"

I,_____ (name) have read or have been read for me this consent form and understand the terms of study participation it describes with clear explanation given by _____(researcher) regarding the study that I will be participated in.

I have had sufficient time to consider participation in the study and have had the opportunity to ask questions and all my questions have been answered satisfactory.

I have read or have been read for me about the consent form and understand that I will be provided with an explanation of the risk of the research. Thus, I **agree / disagree** to participate in this study.

I understand that participation in this research is not required and is voluntary and will give full co-operation to the researcher.

I understand that certain facts about the study might withhold from me and I understand that I may withdraw from the research at any time, for any reason and that all of my information will be removed from the study. The withdrawal will not affect my future treatment.

I understand that study staff, qualified monitors and auditors, the sponsor or its affiliates, and governmental or regulatory authorities, have direct access to my medical record in order to make sure that the study is conducted correctly, and the data are recorded correctly. All personal details will be treated as STRICTLY CONFIDNETIAL. I understand that the questionnaire results obtained was only used for research purpose. My anonymity in all aspects of this research is assured.

I will receive a copy of this subject information/ informed consent form signed and dated to bring home.

Participant name: _____ No IC: _____

_____ _____

Signature: _____ Date: _____

Researcher name: _____ No IC: _____

Signature: _____ Date: _____