

# **EXPOSURE TO NON-DOMESTIC VIOLENCE**

## **Short- and long-term psychological reactions and the impact on quality of life**

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Dissertation for the degree of doctor rerum politicarum (Dr.polit)  
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Norway, 2007



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Norway, 2007



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## ACKNOWLEDGEMENTS

I wish to express my deepest gratitude to all who have supported me throughout my work with this thesis.

Most of all I thank the participants who shared with me their experience of being exposed to violence. Without their willingness to contribute to this project, this research would not have been possible.

I am grateful to my supervisors for their help and support. First, I would like to thank Astrid K. Wahl, my principal supervisor, for co-authorship and for her enthusiastic and firm support through all the stages of my work,. She guided and inspired me through the whole process with great charm, insight and capacity for the work. I would also like to thank my co-supervisors Lars Weisæth and Berit R. Hanestad for their supervision, co-authorship, valuable advice, support and continuous encouragement throughout the whole project. I am sincerely indebted to Dag Erik Eilertsen for being an excellent adviser in statistical issues and co-authorship. I also thank Kari Martinsen for her valuable supervision during the work with the “scientific essay”, the co-authorship on the paper based on the essay and her valuable advice in early stages of the project.

Many thanks to the local police and the local outpatient’s department staff in Bergen and Oslo for their assistance in the recruitment of victims of violence. I am indebted to Superintendent Tron Sundt, Oslo police, for his classification of victims into the categories of “assault” and “inflicted bodily harm”.

I am deeply grateful to all my friends and colleagues for their support. A special thanks to Bente Albrigtsen for her inspiration, positive support and deep friendship. I especially thank Liv Mellesdal and Tove A. Hansen for reading all my papers and providing valuable inspiration for my further work with the thesis. I would like to acknowledge psychiatrist Páll Eiriksson for his positive support, friendship and in particular for his evaluation of the victims of their possible need for intensive care.

I also thank the Faculty of Health, Buskerud University College for financing the research

scholar position project (through employment as a “stipendiat”), and the Faculty of Health and Social Sciences, Bergen University College and Resource Centre on Violence, Traumatic Stress and Suicide Prevention (RVTS-West), Helse Bergen, Haukeland University Hospital for giving me opportunity to finish the thesis. I would also like to express my gratitude to the Section of Nursing Science, ISF, University of Bergen for providing office facilities throughout my work.

I would also like to thank the Norwegian Ministry of Justice and the Police, the Norwegian Ministry of Health and Care Services and the Resource Centre for Violence, Traumatic Stress and Suicide Prevention, Western Norway (RVTS-West) for financing the transcription of the interviews. I am grateful to Julie Tønsaker Watkins and my son Bjarne I. Johansen for transcriptions of the interviews.

Last but not least, I give my greatest thanks to my two sons Bjarne and Magne for their patience and positive support over all these years. I also want to thank my dear friend Jan Helge for his thoughtful support.

May 2007

Venke A. Johansen



## ABSTRACT

The purpose of this study was to describe characteristics of exposure to non-domestic violence, and to evaluate short- and long-term psychological consequences and the impact on quality of life. Demography, physical injuries, crime characteristics, and emotions during the assault were described, based on a cross-sectional design that combined data collected by questionnaires and semi-structured interviews. The association between these factors was also evaluated (Paper I). Our results showed that most of the victims were young men assaulted by unknown attackers in public places. Seventy-six per cent of the participants suffered injuries to the head, face or eyes. Anxiety was the most frequent emotion felt during the assault. About 60% experienced a combination of subjective factors, such as fear of serious injury or fear of being killed during the assault, and actual physical injury.

Acute and subacute post-traumatic reactions were described through the examination of frequency and intensity of peritraumatic dissociation (PD), post-traumatic stress disorder (PTSD) symptoms, and anxiety and depressive symptoms, and the relationships between psychological reactions, level of physical injury, perceived threat, and sociodemographic variables were explored (Paper II). Thirty-three per cent of the victims scored as probable PTSD cases according to the PTSS-10; the corresponding IES-15 score identified prevalence of 34% respectively. Forty-four per cent scored as cases with probable anxiety and depression, according to the HSCL-25. Severity of perceived threat predicted higher scores on all measures of psychological reactions. Analyses of acute or subacute reactions showed no statistical significant differences between elapsed time since exposure to violence and PD, PTSD, anxiety and depression, or threat level.

The prevalence of PTSD symptoms was measured in a one-year longitudinal perspective of physically injured victims. Furthermore, the predictors of PTSD symptoms were analysed in relation to PD, physical injury, perceived life threat, prior experience of violence, perceived social support, and perceived self-efficacy (Paper III). Results showed a high prevalence and severity of PTSD on all outcomes. Either injury severity or prior experience of being a victim of violence predicted PTSD in this study. Perceived life threat was a predictor of PD and early PTSD predicted subsequent PTSD in the present study. Low perceived self-efficacy was a predictor of PTSD and influenced perceived social support at T1. Furthermore, lack of

perceived social support was a predictor of PTSD symptoms at T3.

Quality of life (QoL) was also assessed in a one-year longitudinal perspective, and finally, possible predictive factors of QoL (prior experience of violence, level of physical injury, perceived life threat, cohabitation, and PTSD symptoms) were examined (Paper IV).

Generally, WHOQOL-Bref values associated with probable PTSD were lower than values associated with no cases. Individuals who scored as probable PTSD or as risk level cases had significantly lower scores on the QoL domains such as physical health, psychological health, social relationships and environmental than those without PTSD symptoms. For each category of PTSD (probable cases, risk level cases and no cases), the mean levels of the WHOQOL-Bref subscales (the four domains and the two single items) were stable across time of assessment. PTSD symptoms predicted lower QoL at all three assessments. Similarly PTSD symptoms at T1 predicted lower QoL at T2 and PTSD symptoms at T2 predicted lower QoL at T3.

Our findings support the understanding of PTSD as a complex phenomenon. Early identification of important risk factors, included in an optimal treatment strategy, would perhaps protect against the development of PTSD. Being aware of symptoms such as perceived life threat and PD during the event and PTSD symptoms in the acute phase, would help to identify some of those in need of special follow-ups.

## **ORIGINAL PAPERS**

### **Paper I**

Johansen, V. A., Wahl, A. K., & Weisaeth, L. (2007). Assaulted victims of non-domestic violence in Norway—injury, crime characteristics, and emotions during the assault.

**Scandinavian Journal of Caring Science**, in press.

### **Paper II**

Johansen, V. A., Wahl, A. K., Eilertsen, D. E., Hanestad, B. R., & Weisaeth, L. (2006). Acute psychological reactions in assault victims of non-domestic violence: Peritraumatic dissociation, post-traumatic stress disorder, anxiety and depression. **Nordic Journal of Psychiatry**, 60, 452–62.

### **Paper III**

Johansen, V. A., Wahl, A. K., Eilertsen, D. E., & Weisaeth, L. (2007) Prevalence and predictors of post-traumatic stress disorder (PTSD) in physically injured victims of non-domestic violence. A longitudinal study. **Social Psychiatry and Psychiatric Epidemiology**, 127, 42: 583-93.

### **Paper IV**

Johansen, V. A., Wahl, A. K., Eilertsen, D. E., Hanestad, B. R., & Weisaeth, L. (2007). The predictive value of post-traumatic stress disorder symptoms for quality of life: a longitudinal study of physically injured victims of non-domestic violence. **Health and Quality of Life Outcome**, May 21; 5:26.



## ABBREVIATIONS

ASD: Acute stress disorder

CAPS: Clinician Administered Post-traumatic Stress Scale

DSM–IV: The American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition, 1994

GSE: Generalized Self-Efficacy Scale

HSCL–25: Hopkins Symptoms Check List–25

ICD–10: World Health Organization. International Classification of Diseases, 10<sup>th</sup> Edition

IES–15: Impact of Event Scale–15

IES–22: Impact of Event Scale–22

ISCO–88: Norwegian Standard Classification of Occupations

PD: Peritraumatic dissociation

PTSD: Post-traumatic stress disorder

PTSS–10: The Post-traumatic Symptom Scale–10

QoL: Quality of life

SCL–25: Symptoms Check List–25

SEM: Structural Equation Modelling

SPS: Social Provision Scale

WHO: The World Health Organization

WHOQOL–Bref: World Health Organization Quality of Life–Bref



## 1.0 INTRODUCTION

Violence is a negative and depressing part of the human relationship. The consequences of interpersonal violence cause severe public health problems (WHO, 2002) and affect many people. Severe physical injuries from interpersonal violence may cause early death or prolonged health problems (WHO, 2002), but physical injuries seem easier to treat than psychological and social consequences. While the economic costs of physical treatment are estimated to be high, the human suffering caused by violence extends well beyond the economic cost. Prevalence of psychological problems is higher among assault victims than victims of other traumatic events such as accidents (Shepherd et al., 1990a), and many victims of violent assault experience diverse post-event emotional problems and may develop multiple simultaneous emotional problems (WHO, 2002, Breslau, 2001a). The psychological costs, however, are difficult to estimate: it is impossible to calculate the human cost in grief and pain (WHO, 2002).

Descriptive studies into the nature of injury problems and the mechanisms behind increased injury rates among specific groups are an ongoing priority (van Beeck, 2004). In the general Western population, yearly incidence rates of violence of 3–7% have been registered (Steen and Hunskaar, 2000, Stene, 2004, WHO, 2002). The number of unrecorded cases is probably high and we do not know the true volume of violence in our society. Norwegians have a violent past as Vikings, and historically the occurrence of violence in Norway was greater in earlier years than it is now. For instance, in Bergen, a city included in the present study, the frequency of murders in the 16th century is similar to the frequency in recent years in the most dangerous parts of Chicago (Sandmo, 1999). Fortunately, violence is now quite a rare occurrence in Norway, compared with most other countries (Skjørten, 1999, WHO, 2002). Nevertheless, violence has become more frequent in Norway as well, and such events are referred to daily in the news. The damaging effects of exposure to violence are also considered to be a significant public health problem in Norway (Hjemmen et al., 2002, Skjørten, 1999). Providing health care for the victims is an interdisciplinary challenge involving all personnel groups in the public health sector.

Information about violence in general is usually based on crime statistics, research on living conditions, and occasionally, health care registrations. Violence is a broad concept with

several definitions and various subcategories, such as domestic, sexual, elderly and non-domestic. Research on living conditions shows that more than 180,000 (6%) adult Norwegians are exposed to violence or serious threats of violence each year (Statistics, 2002a). However, reports on the frequency of violent assaults and the extent of the impact they create may be inaccurate because of a lack of information. Research on living conditions is based on self-reported information without a specific definition of violence, and populations often exposed to non-domestic violence such as the homeless, those living in institutions, or those younger than 16 years are not included as participants. Crime statistics are not reliable as a picture of the dimensions because many assault victims, even when seeking medical assistance, do not report the assault to the police (Engeland and Kopjar, 2000, Steen and Hunskaar, 2000, Stene, 2004). Research on living condition and crime statistics shows that less than 15% of violence was reported to the police in 2001 (Stene, 2004), even though the frequency of reported cases of assault physical injuries (12,000 in 2001) increased by nearly 70% since 1980 (Statistics, 2002b). Corresponding increases in more serious injuries, such as inflicted bodily harm cases, have not occurred (Statistics, 2002b). The available literature also suggests that only a minority of adult assault victims seek medical treatment (Hembree and Foa, 2003): only 16% of victims in Norway sought medical assistance in 2001 (Stene, 2004). Oslo Accident and Emergency Department (Storgt. 40), systematically registers all patients exposed to violence, but generally health care registrations of injuries caused by violence are occasional.

A literature review revealed that few studies have been concerned with non-domestic violence. Only a few studies of prevalence, and predictor investigation after the exposure, including mixed-gender samples, deal with victims exposed to non-domestic violence. We have little knowledge about this specific population from Norwegian statistics or research (Skjørten, 1999), although some studies include non-domestic victims as a part of their sample. Several years ago, a Norwegian pilot study focused on the acute psychopathologic reaction after exposure to non-domestic violence (Dahl and Varvin, 1986), but there has been no follow-up until the present study.

We therefore need to increase our knowledge of those who are exposed to non-domestic violence in Norway, and describe several characteristics and reactions after this kind of exposure. The risk of being assaulted may vary with gender, age, socio-economic status, education level, prior victimization history, and substance use (Kilpatrick and Acierno, 2003).



Low income has been found associated with increased victimization (WHO, 2002, Kilpatrick and Acierno, 2003). A higher prevalence of violence victimization has been found among those who receive social benefits or have financial problems than in the general population of Oslo (Pape and Stefansen, 2004). Another study conducted in Bergen reported an equivalent result (Steen and Hunskaar, 2004a). Men are more likely to be seriously injured than women (Brink et al., 1998, Steen and Hunskaar, 2004b). Several studies indicate that facial injuries caused by violence occur most frequently among young men assaulted by strangers (Brink et al., 1998, Kvaal and Kvaal, 2000). For example, Melhuus and Sorensen's (1997) study found that two out of every three victims suffered facial injuries at the Oslo Accident and Emergency Department. Kilpatrick and Acierno (2003) point out, in their review of crime victims, that subjection to violence increases the future risk of physical assault (Kilpatrick and Acierno, 2003). Prior victimization appears to elevate the risk of emotional problems after subsequent victimization (Kilpatrick and Acierno, 2003).

Studies on the psychopathological consequences of violence have focused primarily on post-traumatic stress disorder (PTSD) and the development of long-term psychological reactions. Acute psychological reactions, such as peritraumatic dissociation (PD), acute PTSD, anxiety, and depression, during the first period after the incident have been less focused (Bryant and Harvey, 1996, Fullerton et al., 2000, Jaycox et al., 2003). Early distress reactions such as PD and perceived life threat have been found to predict later problems (Brewin et al., 1999). During the first week after the incident, violence and accidents have been found to cause similar levels of psychological reactions, such as anxiety and depression, (Shepherd et al., 1990a). However, 3 months after the event people injured in assaults have much higher level of anxiety and depression than those injured in accidents (Shepherd et al., 1990a).

The crime characteristics of assault violence potentially cause psychopathological reactions (Kilpatrick and Acierno, 2003). For instance, the risk of post-traumatic emotional problems such as PTSD is greatest in victims who report that during the assault they feared they would be killed or seriously injured, or actually were injured (Kilpatrick and Acierno, 2003). Because perceived life threat, perceived threat of severe injuries, and actual injuries has been found to increase the risk of developing post-traumatic psychopathology such as PTSD, in both acute and prolonged perspectives it is important to identify the forms of violence associated with such experiences (Kilpatrick and Acierno, 2003). Comparatively few studies have investigated the impact of physical injury in non-domestic violence on the prevalence

and severity of PTSD in both acute and prolonged perspectives (Zatzick et al., 2002, Holbrook et al., 2001, Holbrook et al., 2005, Jaycox et al., 2003).

Several studies of stress exposure, such as natural disasters, spousal bereavement, military traumatisation, terrorist attack, and physical and sexual assault of females have examined the role of self-efficacy (Benight and Bandura, 2004). Perceived self-efficacy is reported to function as a focal mediator in post-traumatic recovery. These findings concurs with social cognitive theory and emphasizes the enabling and protective function of belief in one's capability to exercise some measure of control over traumatic adversity (Benight and Bandura, 2004). Perceived uncontrollability is a source of distress that is an important contributor to PTSD (Benight and Bandura, 2004). Many traumatized individuals experience a core conflict between a fear of revictimization and a need for external reassurance. Their behaviour reflects an extraordinary sense of helplessness or extreme aggression, and often results in isolation or possibly being victimized several times (McFarlane and van der Kolk, 1996).

Generally, social support has been found to be an important protective factor that may reduce stress and depression in general (Benight and Bandura, 2004). It has been convincingly documented that social support may be beneficial to victims of violence, particularly in sexually and physically abused female and child victims (Yap and Devilly, 2004). Both perceived social support (Brewin et al., 2000, Ozer et al., 2003) and perceived self-efficacy (Yap and Devilly, 2004, Benight and Bandura, 2004) have been found as important psychosocial resources with protective functions against PTSD.

Psychopathological symptoms that occur after exposure to violence often have a negative influence on perceived quality of life (QoL) (Priebe et al., 1999). They also affect victims' families, who may then experience reduced quality of life. One important requirement for QoL for most people is safety from crime and violence. In addition, the widest consequences are through the reduced freedom and mobility of all those afraid of being exposed to violence. Despite the extensive literature about QoL, most research is based on empirical constructions, and there are few conclusive suggestions of how to build a theory (Priebe et al., 1999). Focusing on QoL is an important health-related political goal in Norway (Stmeld.nr.25, 1996-97).

Studies of Vietnam veterans examining the impact of PTSD on QoL, show that PTSD have negative influence on QoL (Schnurr et al., 2006, Zatzick et al., 1997, Magruder et al., 2004). Also QoL studies based on civilian populations have been shown to predict QoL impairment in patients diagnosed as suffering from PTSD (Hansson, 2002, Howgego et al., 2005, Mendlowicz and Stein, 2000, Rapaport et al., 2005). Still there is an obvious lack of research on the implications of PTSD for QoL (Hansson, 2002, Howgego et al., 2005, Mendlowicz and Stein, 2000, Rapaport et al., 2005). How PTSD symptoms after exposure to non-domestic violence influence QoL is less known, as well the impact of PTSD on QoL over time. As far as we know, no longitudinal studies of civilians have evaluated the relationship between QoL and PTSD after exposure to non-domestic violence.

Knowledge about people's reactions during and following exposure to non-domestic violence is needed to improve the understanding of these complex psychopathological processes. Identification of vulnerable persons in at-risk populations is important, as it will increase the opportunities to establish preventive interventions (Kilpatrick and Aciermo, 2003). Such knowledge and improved understanding might provide guidance to implement differential preventive and early intervention strategies as follow-ups in this group of victims, according to several professions involved with assault victims. If it were possible to identify individuals who are at increased risk of developing PTSD after exposure to a violent event, these persons could be treated early to possibly prevent symptoms from emerging (Yehuda, 2004). The aim of the present thesis is therefore to gain an increased understanding of the relationship between PD, physical injury, perceived life threat, prior experience of violence, perceived social support and perceived self-efficacy, PTSD, and QoL in a longitudinal perspective in victims of non-domestic violence.

## 2.0 THE AIMS OF THE STUDY

The main aim of the present study was to describe characteristics of exposure to non-domestic violence and to evaluate short- and long-term psychological consequences, as well as the impact on quality of life.

The aims of the study, presented according to the study progress and the papers produced were to:

- (1) Describe socio-demographic characteristics, injury, crime characteristics and emotions during the event in assault victims of non-domestic violence, and further evaluate possible associations between these factors.
- (2) Describe acute and subacute post-traumatic reactions in victims of physical non-domestic violence by examining the frequency and intensity of peritraumatic dissociation (PD), post-traumatic stress symptoms (PTSD), and anxiety and depressive symptoms. Explore the relationship between the psychological reactions, level of physical injury, perceived threat, and sociodemographic variables.
- (3) To measure the prevalence and analyse the predictors of PTSD symptoms, in relation to PD, physical injury, perceived life threat, prior experience of violence, perceived social support, and perceived self-efficacy, in physically injured victims of non-domestic violence in a one-year longitudinal perspective.
- (4) To assess quality of life (QoL) and possible predictive factors (prior experience of violence, level of physical injury, perceived life threat, cohabitation, and post-traumatic stress symptoms) of QoL in victims of non-domestic violence in a one-year longitudinal perspective.

### **3.0 THEORETICAL FRAMEWORKS AND CONCEPTS**

Systematic research on psychological aspects of criminal violence started only a few decades ago, so the field has a short history. There is growing evidence that several factors may influence the individual post-traumatic experience. A number of variables have been suggested as possible contributors to post-traumatic psychopathology and its persistence after assault violence in general. With respect to appraisal, the key variables that have been highlighted in this study are threat level, prior experience of violence, physical injury, PD, PTSD, anxiety and depression, self-efficacy, social support, and quality of life.

#### **3.1 VIOLENCE**

The concept of violence is used to describe many different circumstances, but there are no generally accepted definitions of violence or its different subtypes, such as domestic violence, non-domestic violence, child abuse, elder abuse, or sexual violence. Exposure to violence is a hallmark of insult to personal integrity. The exposed individual is often perceived as a victim.

The World Health Organization defines violence as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation” (WHO, 1996).

The categories of “assault” and “inflicting bodily harm” used in this thesis are based on legal categories used by the police, according to §§230–232 of the Norwegian Criminal Code, in their registration of violence (Statistics, 2002b). “The legal definition of violence” is an offence with the use of physical force against the victim’s body. The police classify each case according to legal practice, using a combination of the level of physical injury and the intentions of the perpetrator. The level of physical injury is the most important criterion (Andenæs and Bratholm, 1996).

The frequency and consequences of violence will change according to the choice of definition and contextual differences, such as cultural and geographical conditions. The lack of

generally accepted definitions of violence makes comparisons of different studies on violence, both nationally and internationally, difficult.

In this thesis, we use a restricted definition of violence comprising only intentional physical violence. The definition includes behaviour in which one or more persons intentionally hurts another person physically, for instance, by beating, pushing, kicking, biting, or by using weapons such as knives, broken glass, axes, or guns. Non-domestic violence is defined in this thesis as violence where a person other than a family member or a present or former intimate partner assaults the victim. The context in this thesis is “occasional violence” in the civilian society.

### **3.2 POST-TRAUMATIC STRESS REACTIONS**

The construction of the diagnostic criteria of the post-traumatic stress reaction, officially recognized in the DSM–III in 1980 (American Psychiatric Association, 1994), was based on empirical research and material from the fields of psychology, biology, and epidemiology, and treatment experiences (Brewin and Holmes, 2003). Post-traumatic stress reactions were identified worldwide within humanitarian and medical institutions, mainly through research focusing on populations that had experienced traumatic events such as violence (Breslau, 2004). Increasing knowledge and acceptance of PTSD has been accompanied by the development of several theories, based on the stress response theory in the early stages, and followed by more complex theories, such as emotional processing theory and dual representation theory (Brewin and Holmes, 2003). Theoretical papers that attempt to explain the anxiety-based disorder PTSD have increased in the past two decades (Buckley et al., 2000).

Exposure to assault violence often results in a combination of physical injury and psychological stress, which causes both physical and psychological pain afterwards. A potentially traumatizing event such as violence may confront a person with such horror and threat that he or she may temporarily or permanently alter both the capacity to cope and the concept of self. The human response to psychological trauma, including violence, is one of the most important public health problems in the world (WHO, 2002). Violence has been found to cause psychological reactions such as PTSD, anxiety, and depression during the first

week after the incident (Kilpatrick and Acierno, 2003, Shalev, 2001, Shepherd et al., 1990a). Three months after the event, people injured in assaults have much higher levels of anxiety and depression than those injured in accidents (Shepherd et al., 1990a).

### **Historical view**

The history of psychotraumatology extends back to 1900 BC, as evidenced by the Egyptian physicians' descriptions of traumatic reactions. Emotional reactions to extreme events have always been described in connection with human behaviour (Veith, 1965). The descriptions had a lot in common, while the theories of causal explanations ranged from being caused by God to being caused by the devil (Wilson and Raphael, 1993). Physical trauma, as a perceived causal factor to psychological reactions, is impressively described in Homer's "Iliad" (van der Kolk et al., 1996a). Homer's description of the relationship between physical trauma and war experiences was not matched until the 19th century. He anticipated the modern research in his work (Weisaeth, 2002).

Post-traumatic stress responses were not accepted as a psychiatric diagnosis until recent decades. Descartes's dualistic understanding of human nature, in addition to the claim of objective causal explanations of symptoms and diseases as a scientific necessity, dominated medicine, including the psychiatric tradition (Foucault, 2000 {1963}). According to the French philosopher Foucault, the established scientific view was mostly based on biological thinking and included a scientific understanding of human nature. This understanding did not include the individual's experience or the patient's own perception. On the contrary, it was important to avoid the influence of subjective comprehension on psychiatric judgement (Foucault, 1971 {1954}). In the psychiatric tradition, understanding of traumatic stress reactions was often connected to different aetiological explanations. Psychotraumatic reactions were understood to be caused by organic cerebral injury, extreme individual vulnerability, moral weakness, or lack of ability to take care of one's own life (van der Kolk et al., 1996a). Physical symptoms of anxiety were misunderstood as organic illness (Weisaeth, 2002). Mental problems were not acceptable in the sense of the heroic ideal of the British soldiers and were associated with moral weakness (Weisaeth, 2002). Myers, who was the first to use the expression "shell-shock" in medical literature in 1915, first explained the illness as a combination of war neuroses and molecular brain activity injury. Later, he stated that the sufficient cause was emotional disturbance (Weisaeth, 2002). Hysterical symptoms were seen as the origin of these psychological problems. Babinski's theory of traumatic neurosis as

simulation behaviour by easily influenced persons dominated in France, for instance, for several years (Weisaeth, 2002). The consequence was a strong negative attitude towards individuals with traumatic neurosis, and it was considered important to fight against simulations. Post-traumatic symptoms were characterized as lack of willpower, and the treatment was painful and involved great suffering. The psychiatrist Wagner-Jauregg was, for instance, charged with the use of electrical torture in treating a medical condition in 1920, with Freud as an expert witness (van der Kolk et al., 1996a). After World War 1, more than 200 British soldiers were executed for desertion. However, these 200 were just 11% of those sentenced to capital punishment for desertion (Weisaeth, 2002).

Stierlin presented opposing theories during the first decade of the 20th century and stated that traumatic neurosis was the only psychiatric illness that did not require individual predisposition (van der Kolk et al., 1996a). He argued that fear and strong emotions were the most important aetiological explanations of post-traumatic reactions. Bonhoeffer opposed this and stated that the reactions were a result of economic compensation to predisposed and weak individuals, an opinion that spread from Germany to several other European countries and to the USA. The latter opinion argued that persons with post-traumatic problems should not get pensions and economic compensation because such arrangements would stop possible healing processes. Such economic punishment continued until 1950 (van der Kolk et al., 1996a).

Pierre Janet and Sigmund Freud were able to unravel the nature of traumatic neurosis and move away from the somatic explanation and align it more closely with psychological experience (van der Kolk et al., 1996a). Janet's theories of mental dissociation with layered traumatic memories were forgotten, while Freud's theories, with their psychodynamic, psychogenetic, ego psychological, and adaptational perspectives concerning the role of psychic trauma, influenced the field for many years. The movement from focusing on the "unbearable situation" to the "unacceptable impulse" reduced the importance of external reality. Understanding the function of the human psyche often prioritized fantasy neglecting the effect of real life experiences. The negative effects were, for instance, several years without research and "real-life understanding" of sexual abuse of children (van der Kolk et al., 1996a).

Several military researchers tried to transfer the knowledge of post-traumatic reactions to the context of civilian life. One was Kardiner, who in 1941 described the complex picture of



symptoms connected to traumatic events. His work was the basis for further understanding of post-traumatic stress reactions in the 20th century (van der Kolk et al., 1996a).

Norwegian psychiatrists have been pioneers in the research and understanding of the concentration camp syndrome and the war sailor syndrome (Weisaeth, 2002). Their findings of unpredictable, excessive, uncontrollable, and long-lasting stressful situations as causes of permanent psychological injury led to aetiological diagnoses based on external factors. This has been important for understanding post-traumatic suffering and the construction of the diagnostic concept.

The psychologically traumatic experience was not accepted as a sufficient cause of psychopathological sufferings until 1980, only as a partial, worsening, prolonging factor in addition to other causal agents such as individual vulnerability and/or predispositions.

Scientific work in Europe in the field of traumatic stress in the past decade has been inspired by the USA, in the wake of the Vietnam experience and modern feminism (Weisaeth, 2002). However, some differences continued through the maintenance of the concept of neurosis in the ICD–10 classification of diagnosis (WHO, 1992), in contrast to the DSM–IV (American Psychiatric Association, 1994). Omitting the concept of neurosis entails the apparent risk of ignoring perspectives of primary and secondary gain, resistance, unconscious meaning, and transference issues (Weisaeth, 2002).

### **Acute post-traumatic reactions**

There are some differences related to the diagnoses PTSD and Acute Stress Disorder (ASD) in the two diagnostic classification systems, but both agree that the persistent, intrusive re-experiencing of the traumatic event is the characteristic hallmark of PTSD that differentiates it from other psychiatric pathologies (Shalev, 2001). The ICD–10 makes no stipulations regarding the duration of symptoms for a formal diagnosis of PTSD to be made. The disorder is termed as acute PTSD when symptoms persist for less than three months, and as chronic when symptoms last beyond three months, according to DSM–IV criteria. When the symptoms develop six months or more after the traumatic event, “delayed-onset” PTSD is diagnosed. The DSM–IV criteria state that the symptoms of PTSD must be present for at least one month. Traumatic reactions suffered for a minimum of two days and a maximum of four weeks which occurs within four weeks after the stress exposure are diagnosed as ASD, a

disorder that is dominated by dissociative symptoms. ASD symptoms include dissociative symptoms such as numbing, detachment, a reduction in awareness of the surroundings, derealization, re-experiencing of the trauma, avoidance of associated stimuli, and significant anxiety, including irritability, poor concentration, difficulty sleeping, and restlessness (American Psychiatric Association, 1994). The stressor criterion is identical in PTSD and ASD, but the symptom criteria of ASD requires that the patient exhibit at least three of five dissociative symptoms (Zoellner et al., 2003).

### **Peritraumatic dissociation (PD)**

Dissociation is defined as a “disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment” (American Psychiatric Association, 1994). PD is dissociation during or immediately following a violent event (Panasetis and Bryant, 2003). PD is thought to impede access to and resolution of associated affect and traumatic memories and has been found to be related to the later development of post-traumatic psychopathology (Panasetis and Bryant, 2003, Zoellner et al., 2003). Dissociation refers to a compartmentalization of the traumatic event where the experience is not integrated into a whole in the memory, but is stored as isolated fragments consisting of sensory perception or affective states (van der Kolk and Fisler, 1995).

Dissociation may have a protective function by reducing the awareness of the experience and enabling less encoding of a traumatic event (van der Kolk et al., 1996b), or it may contribute to ongoing psychological problems (Panasetis and Bryant, 2003). Dissociation may be seen as a mechanism to protect the person from experiencing highly aversive emotions that occur during or immediately after a traumatic event (van der Kolk et al., 1996b). Dissociative reactions that occur during an event are quite common, but the effect regarding later psychopathology is unclear. Dissociation may be a marker of vulnerability, the result of a defensive operation acquired during previous stress exposures. Alternatively, dissociation may be a defensive mechanism of restrictive stress-related behaviour in which traumatic experiences are split apart from other parts of the self, thereby impairing reprocessing and integration of the trauma (Shalev et al., 1996a). Five dissociative symptoms are frequently reported: a subjective sense of numbing or detachment, reduced awareness of one’s surroundings, derealization, depersonalization, and dissociative amnesia (Zoellner et al., 2003). In this thesis, PD includes experiences of one’s own body as unreal, perceiving the environment as unreal, and amnesia.

### **Post-traumatic stress disorder (PTSD)**

The diagnosis concerning traumatic symptoms introduced in 1980 in the DSM III is relatively new, both in the ICD–10, published by the World Health Organization in their 10th revision of the International Classification of Diseases (WHO, 1992), and in the DSM–IV, developed by the American Psychiatric Association (American Psychiatric Association, 1994). PTSD is considered an important anxiety disorder with quite high prevalence. The diagnosis is not only frequent but also has a high risk of a chronic and disabling course, including the impairment of both psychological and physical health, and becoming a burden to society (Ballenger et al., 2000).

The ICD–10 and the DSM–IV agree that stress exposure is a necessary but not always sufficient aetiological element regarding PTSD (WHO, 1992). The DSM–IV encourages multiple diagnoses, considering the amount of comorbidity reported, while the ICD–10 system prefers one diagnosis at a time (Shalev, 2001). The event that triggers the condition may be easy to determine, but the distressing disorders are a mixture of social, biological, and psychological processes and represent an important challenge to psychiatric experts and society (Shalev, 2001).

Primarily, the phenomenological description of PTSD is defined by the presence or absence of typical symptoms. Several psychological, cognitive, and biological processes may characterize PTSD. Three clusters of symptoms, namely re-experiencing, avoidance, and hyperarousal, define PTSD. In almost all people, intrusive and repetitious symptoms develop after exposure to extreme stress. However, only a certain proportion develops avoidance and hyperarousal symptoms (van der Kolk, 2001). Intrusive re-experiencing of the traumatic event, persistent emotional numbing, or avoidance of stimuli associated with the trauma, and exaggerated arousal symptoms are the characteristic hallmarks of PTSD (American Psychiatric Association, 1994, WHO, 1992).

An overwhelming sense of reliving the traumatic event, with feelings of fear and panic combined with corresponding physiological reactions, such as tachycardia, are hallmarks of re-experiencing symptoms (American Psychiatric Association, 1994, WHO, 1992). Re-experiencing is accompanied by avoidance symptoms that arise from attempts to block out unpleasant feelings and memories. In addition to situations and places associated with the

traumatic event, avoidance may be generalized to unrelated situations and all kinds of activities that cause anxiety. Often these symptoms also include feelings of detachment and estrangement from others, and one may have a sense of a foreshortened future. This part of the symptomatology resembles the picture of major depression. The manifestation of the third cluster, hyperarousal, may include symptoms of insomnia, anger, difficulty in concentrating, hypervigilance, and an exaggerated startle response (Shalev, 2001). The complexity of PTSD is also illustrated here by events that, although unrelated, act as reminders of the original traumatic event and cause the same symptoms.

PTSD is classified as an anxiety disorder in the DSM–IV and as a stress-related disorder in the ICD–10. PTSD usually develops shortly after the traumatic event. Those who experience PTSD symptoms shortly after the traumatic event often recover, but 10–25% of those who initially meet the diagnostic criteria continue to experience the symptoms over time and establish chronic PTSD that may persist for months, years, or for life (Shalev, 2001). Some potentially traumatizing events, such as sexual and physical assault, are associated with a high risk of PTSD (Frans et al., 2005, Kilpatrick and Acierno, 2003). Female victims have twice the risk of males of developing PTSD after exposure to any type of potentially traumatizing event (Breslau, 2001a). The response to a life-threatening event often includes intense fear and an experience of powerlessness. Individuals who are exposed to such events have an increased risk of developing PTSD and other related diagnoses, such as major depressive disorder and generalized anxiety disorder, compared to others without these traumatic experiences (Yehuda, 2004).

In this thesis, PTSD symptoms are measured by three questionnaires: the Impact of Event Scale–22 (IES–22), the Impact of Event Scale–15 (IES–15), and the Post-Traumatic Symptom Scale–10 (PTSS–10). The IES–22 and PTSS–10 measure all three clusters of PTSD, while the IES–15 measures only the intrusion and avoidance clusters. According to prevalence based on cut-off points applied in this study, the “probable PTSD” and “risk-level cases” are used to classify PTSD symptoms. Presentation of predictive analyses based on the IES–15 is referred to as “PTSD symptoms”, while presentation of predictive analyses based on the IES–22 is referred to as “PTSD symptoms” or “PTSD”. In discussions both the expressions PTSD symptoms and PTSD have been used.

## **Anxiety and depression**

Anxiety is characterized as the ordinary reaction occurring during dangerous situations, often when a perception of threat is experienced. Weisæth and Ruud (2000) describe anxiety as the psychological signal of threat, comparable to pain as the parallel signal of bodily threat.

Anxiety may include three dimensions: (1) cognitions with threatening content; (2) physical reactions, such as increased sweat and blush reactions, and tachycardia; and (3) a behavioural state of fight, flight, surrender, or paralysis (Weisaeth, 1990). Traumatic experiences often include loss of control, anxiety, and helplessness. Individuals suffering from PTSD commonly show deterioration in their overall psychological health, and comorbidity with other psychiatric diagnoses such as anxiety, depression, and alcoholism are common (Yule, 2001, Conner et al., 2001). Depression is the most common comorbid disorder with PTSD (Ursano et al., 1996).

Depression is not an ordinary reaction to “everyday difficulties” or sorrow. Clinical depression is characterized as emotional, cognitive, and behavioural disturbance with strong intensity, experienced as changes, lasting at least for two weeks. The diagnosis also includes symptoms such as apathy, anxiety, irritability, and reduced interest in surroundings (WHO, 1992).

In this thesis, anxiety and depressive symptoms are measured using a questionnaire, the Hopkins Symptom Check List–25 (HSCL–25). Prevalence, based on the applied cut-off points, is categorized as “probable anxiety and depression” and as “risk-level cases”, and the expression “anxiety and depression” is also used to indicate anxiety and depressive symptoms in discussions.

## **3.3 SELF-EFFICACY**

Bandura’s social cognitive agent theory is based on the understanding that humans are direct agents in shaping and responding to environmental conditions (Bandura, 1997). To be an agent is to make things happen intentionally through one’s own behaviour. The core of this theory is that people are able to play a part in their self-development, adaptation, and self-renewal over time (Bandura, 2001). A person’s belief in their ability to exercise some control over their own function and over environmental events is the most central and pervasive mechanism of the agent theory (Bandura, 2001).

“Perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments.” (Bandura, 1997, p.3).

Perceived self-efficacy is gathered as the belief in one’s ability to manage one’s reactions to an unexpected event such as assault violence, and to produce desired effects by one’s actions in a given activity, problem, or unexpected pursuit (Bandura, 1997). Such beliefs influence whether the individual thinks pessimistically or optimistically. Through cognitive interpretation of internal and environmental feedback after experiencing some event, individuals self-regulate in order to direct behaviours toward desired results in the future (Benight and Harper, 2002). Reciprocal interactions between one’s behaviour, self-evaluation, and the environmental evaluation direct the subsequent behaviour and perception of coping effectiveness. The individual utilizes self-evaluation to modify his or her own behaviours, and in this self-evaluation process the perception of self-efficacy is determined. Perceived self-efficacy beliefs provide a basis for predicting the occurrence, generality, and persistence of behaviours, and they are defined and measured independently of performance (Bandura, 1997). In ongoing pursuits, perceived self-efficacy predicts the goals individuals set for themselves and thus their performance attainment (Bandura, 1997). Perceived efficacy affects adoption and change directly and through the impact on other determinants (Bandura, 2001, Schwarzer, 1995). Self-efficacy is based on experience, knowledge, and situation, but also on personality (Schwarzer, 1995). Perceived self-efficacy plays a primary role in the development of vigilance towards potential threats, composition of coping behaviours, and handling of emotions (Benight and Harper, 2002).

Situation, behaviour, and personality are three reciprocal factors that influence coping strategies. A combination of self-efficacy and expected results are important predictors of the phase of motivation (Schwarzer, 1995). The next step is action, where knowledge and perceived control have great implications. Risk factors and a high level of threat may influence the result. Negative attitude and low self-esteem often predict unsuccessful results, whereas positive self-efficacy regarding one’s own capacity predicts successful scenarios (Bandura, 1997). Coming up against traumatic events, persons with high self-efficacy recover their balance faster than others (Schwarzer, 1995). Consequently, individuals need firm confidence in their ability to overcome difficult and traumatic experiences.

People’s beliefs of self-efficacy regulate their function through cognitive, motivational, affective, and decisional processes. The agentic perspective demonstrates that self-efficacy

helps establish social support, by people's ability to go out and find supportive relationships and to cultivate and maintain them (Benight and Bandura, 2004). Perceived self-efficacy affects whether individuals think in self-enhancing or self-debilitating ways; it affects the quality of their emotional life, vulnerability to stress and depression, resiliency to adversity, and perseverance in the face of difficulties (Benight and Bandura, 2004). It influences the choices one makes at important points in one's life. In the face of taxing stressors, belief in one's ability to exercise some measure of control promotes resilience through diverse means (Benight and Bandura, 2004). Resilience to adversity relies more on personal enablement than on environmental protectiveness, according to the agentic perspective (Bandura, 1997). Beliefs of personal efficacy influence how much people strive to control the events that affect their lives, and the level of stress and depression they experience in coping with all kinds of difficulties (Bandura, 1997). Self-efficacy influences their resilience to adversity. Self-efficacy has great importance in handling stress reactions and in the quality of coping in threatening situations such as exposure to violence.

In this study, Bandura's view of self-efficacy was adopted because it incorporates the person's belief in their own ability to respond to difficult situations and to deal with a large variety of stressors (Schwarzer, 1993). The phenomenon is assessed by a questionnaire, the Generalized Self-Efficacy Scale (GSE), in this thesis.

### **3.4 SOCIAL SUPPORT**

The concept of social support refers to qualitative aspects, such as the content and availability of relationships with significant others, in contrast to the concept of a social network, which refers to quantitative and structural aspects of relationships (Sarason et al., 1990a). Social support is not a unitary concept. It is a multidisciplinary construct understood from a subjective view, where most conceptualizations include: emotional support, esteem support (self-esteem building), social integration or network support, provision of information or feedback, and tangible assistance (Cutrona, 1986a, Sarason et al., 1990a). Weiss (1973) focused on the person's needs to interact with others. He differentiates between the primary relationship, hallmarked by warm, close, frequent, and obligated family and friendship, and the secondary relationship, which includes working relationships of less emotional importance than the primary ones, even though they may have great influence (Weiss, 1973). The literature reflects closeness, through emotional and practical support with significant others,



as very important when dealing with challenges such as negative life events (Sarason et al., 1990a). Much of what we usually call socially supportive behaviour is offered when an individual is clearly exposed to stressful parts of life, rather than experiencing daily living in less difficult circumstances (Cutrona, 1986a). These qualities of supportive behaviour may depend on whether the individual is perceived to be coping or not (Weiss, 1974). It is of great importance how the individual defines supportive needs and values primary relationships (Weiss, 1973).

There seems to be a consensus that useful differentiations can be made between social network structure, degree of social involvement or integration, the function of support, the perceived adequacy of received support, and the supportive behaviour (Cutrona, 1986a). An important statement in the social support literature is the agreement that perceived social support, or the belief of help being available if needed, rather than help and support that is actually received, is related to health outcomes (Sarason et al., 1990b). Perceived social support might be considered to be a personality variable, as it remains quite stable over time, even during periods of environmental change (Sarason et al., 1990b). Sarason et al. (1990b) define this type of perceived social support as having a sense of acceptance, heightened interpersonal skills, sense of self-efficacy leading to adaptive behaviour under stress, low level of anxiety, positive self-image, positive expectation of interaction with others, and positive view of others' adjustment. Individuals with a positive sense of acceptance are more likely to perceive an intention to support from others and to be more satisfied with the behaviour of others. A positive sense of acceptance also protects against negative emotions such as guilt, anger, and shame.

Two main models of the relationships among social support, stressful life events, and physical and mental health status have been proposed. The "buffering theory" states that perceived social support protects or "buffers" the individual from the potentially pathological influence of stressful events as an interaction effect, depending on the level of social support (Cohen and Wills, 1985). Social support functions as a protective factor, primarily during times of stress, by enhancing adaptive coping behaviour. According to the "direct effects theory", perceived social support has positive effects on health outcomes in both the presence and the absence of stressful events. The "direct effects theory" predicts social support, with a positive influence upon physical and mental health, independently of the effects of stress (Russell and Cutrona, 1991).



In this study, Weiss's (1974) multidimensional view of social support was adopted, because the framework of the "provision of social relationships" incorporates the major elements of most current conceptualizations of social support (Cutrona, 1986b). A questionnaire, the Social Provision Scale (SPS), was used in this thesis. Each of its six provisions is often obtained from a particular kind of relationship, but several provisions may be obtained from the same person. Social support may affect coping efficacy indirectly, through appraisal processes, and directly, through the provision of information and functional assistance. Social support and self-efficacy may influence the perceived quality of life through the protective and positive effect upon health outcomes after exposure to violence.

### **3.5 QUALITY OF LIFE**

Humans have always dealt with concepts such as happiness and "the good life". The research on quality of life is relatively new, but there has been a huge emphasis in the past few decades in fields such as economics, sociology, medicine, psychology, and nursing. Quality of life (QoL) has become an important concept within health sciences and international health policy. Fifteen citations appeared in Index Medicus on the term QoL in 1972, and in May 2007 nearly 90,000 QoL citations appeared in PubMed. The journal *Quality of Life Research*, established in 1992, was the first journal to focus specifically on the area.

The motivation for focusing on QoL in health sciences comes partly from the effect of Western changes in disease patterns. Patients tend to live longer, the consequences of which include increased suffering and pain related to long-lasting treatment, diseases, and normal ageing. Another aspect is that evaluation of treatment in terms of reduced symptoms, morbidity, and mortality is no longer adequate for measuring the effect of care and treatment (King and Hinds, 2003, Anderson and Burckhardt, 1999). Earlier traditions of medicine and nursing science focused on the broad understanding of the concept of health. Health was defined, in 1948, as a part of a broader "health-declaration" by World Health Organization, and included physical, psychological, and social well-being (WHO, 1988). An approach based on a subjective and broad definition of the two concepts, QoL and health, reflects several equivalent core points in understanding patient outcomes (Mæland, 1987), and the dynamic and holistic complexity of health problems has influenced the development of QoL in health sciences (Anderson and Burckhardt, 1999). Concepts such as QoL, disability, well-being,

health, and satisfaction with life have been used interchangeably, and the relationships between these concepts are complex. According to Padilla (1993), the emphasis in QoL perspectives is laid on the current need to distinguish between QoL domains and their determinants.

In health sciences, the concept of QoL has been used in a non-theoretical manner and was often based upon consensus about operational definitions reached in medical expert groups (Hunt, 1997). One important concern has been to develop valid and reliable instruments to assess the phenomenon in several patient groups (Spilker, 1996), whereas less work was invested in conceptual issues such as theoretical foundations and explanation of the relationship between QoL and the specific disease, treatment, and style of care determinants (Padilla, 1993).

QoL has been defined in a number of ways and numerous questionnaires have been developed for assessing the construct. Most authors agree that QoL should be approached as a complex and multidimensional construct (Rapaport et al., 2005, Mendlowicz and Stein, 2000).

QoL is certainly a broad concept which incorporates several aspects of an individual's life, including success in obtaining certain prerequisite circumstances, states of conditions, and the sense of well-being and satisfaction experienced during current life conditions (Oliver et al., 1996). Our perception of QoL may express the interaction of several essential parts of daily living. The consideration of one's own QoL includes emotional and cognitive elements based on this complexity, and incorporating values and state of mind (Tatarkiewicz, 1976, Naess, 2001). Not surprisingly, the definitions of QoL are numerous and varied. The phenomenon is complex and there is a complex relationship between core points of physical function, health status, and satisfaction with life (Hyland, 1992, Anderson and Burckhardt, 1999). Consensus, according to the multidimensional nature of QoL, is reflected through four frequently cited domains: physiological, psychological, sociological, and spiritual. The World Health Organization defines QoL as: "the individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL, 1998). This definition reflects the multidimensional nature of QoL, as a subjective evaluation is embedded in the individual's physical health, psychological state, level of independence, social relationships, personal beliefs, and relationships to salient features of the environment (WHOQOL, 1998).

According to Spilker (1996), QoL measurements may be structured at three different levels. The first level is the assessment of overall satisfaction with life, often measured by a single item asking for general satisfaction with life, or by summing the total score of all items. The second level is the generic assessment of different life domains such as physical, psychological, sociological, economic, and spiritual. The third level includes the components of each domain that is assessed; for instance, disease-specific symptoms and disability (Spilker, 1996). The WHO multidimensional view of QoL (WHOQOL–Bref) was adopted in this study because it reflects both the first level, relating to general satisfaction with life, and the second level, relating to different life domains.

#### **4.0 PRIOR RESEARCH**

In the “World report on violence and health” (2002), WHO points out a great need for increased research that focuses on the consequences of interpersonal violence, because an absence of knowledge is a major obstacle to defending against negative consequences (WHO, 2002). In February 2007, more than 82,000 violence citations appeared in PsycINFO and PubMed. A search for the combination “interpersonal violence” yielded nearly 4000 citations in total, “crime violence victims” 5000 citations, and “assault violence victims” a little less than 2000 citations. A search for concepts such as PTSD, dissociation, social support, self-efficacy, and QoL yielded high numbers of citations, but searches for combinations found fewer citations. For instance, the combination of “crime (or assault) victim” and “PTSD” resulted in less than 200 citations, the combination of “assault victim” and “social support” resulted in 50 citations, the combination of “QoL and PTSD” resulted in 270 citations, and the combination of PTSD, social support, and self-efficacy resulted in 17 citations. The combination of PTSD, social support, self-efficacy, and QoL yielded no hits. A search for PTSD at PsycINFO and PubMed produced more than 20,000 citations in total, but the combination of QoL and PTSD resulted in less than 200 citations.

The following presentation of prior research is not based on a systematic review of the area, but will, it is hoped, give a picture of prior research concerning psychological reactions and

consequences with regard to quality of life after exposure to assault violence by non-domestic victims.

It has been found necessary to present a broader view of prior research than the non-domestic violence field in this chapter, with the intention of illustrating the connection between the different variables, in a more general way. Due to a lack of prior research on non-domestic violence, a broader view will increase the reader's understanding of the population in the present study. Table 1 shows prior research that is specifically limited to the theme of this thesis (Appendix 1). The intention is to present some relevant studies that include non-domestic violence, either as the study population or as a part of the study population.

Just a few studies include only non-domestic violence, and some of them include only female victims, as shown in Table 1. It has been difficult to find relevant studies because of dissimilar inclusion criteria and different sample selections. The complexity of several different populations including non-domestic victims as a part of the investigations makes comparison with the present study difficult. For instance, studies of assault violence may include domestic, sexual, non-sexual, and non-domestic violence. The concept of crime violence usually refers to non-domestic violence, but it includes both assault and other aspects of crimes such as robbery. Community violence often includes violence between unrelated individuals, usually occurring in public places, and it often includes different kinds of violence such as robbery and assault violence. Therefore, the studies presented in Table 1 contain samples that include victims of domestic, non-domestic, crime, and assault violence.

#### **4.1 DEMOGRAPHY, PHYSICAL INJURY, CRIME CHARACTERISTICS, AND EMOTIONS EXPERIENCED DURING THE EVENT**

The risk of being assaulted varies with gender, age, socio-economic status, education level, prior victimization history, and substance use (Kilpatrick and Acierno, 2003). Research shows that assault violence against men is often quite different in character than assault violence against women. Men are likely attacked on streets, or in other public places, by strangers while women are more often assaulted at home by present or former partners (Kilpatrick and Acierno, 2003, Pape and Stefansen, 2004). Lately, assault violence committed against women by strangers has increased in Norway (Stene, 2004). Those aged between 16 and 24 years of age have the highest risk of being exposed to violence (Statistics, 2002a). The risk of physical

injury is highest among young men (Brink, 2000, Hjemmen et al., 2002, Kilpatrick and Acierno, 2003, WHO, 2002). Nevertheless, research on living conditions show that young men mostly feel secure while young women have the greatest fear of being exposed to non-domestic violence (Statistics, 2002a). Non-Western immigrants are registered as victims of violence more often than others in Norway (Gundersen et al., 2000). Previous experience of violence has been found to be one of the best predictors of future victimization (Kilpatrick and Acierno, 2003). The association between violence and alcohol has been documented in several studies (Kilpatrick and Acierno, 2003, Shepherd et al., 1988, Steen and Hunnskaar, 2000).

The increased risk of health problems associated with lower social class have been documented in several studies (Muntaner et al., 2004), and generally low income is associated with the increased risk of being a victim of violence (Kilpatrick and Acierno, 2003). Despite several findings showing that socio-economic inequality plays a central role in the occurrence of criminal victimization, socio-economic inequality has received limited attention in the trauma literature (Shalev et al., 1996b, Wohlfarth et al., 2001).

Research indicates that facial injuries caused by violence occur most frequently among young men assaulted by strangers (Brink et al., 1998, Kvaal and Kvaal, 2000). Melhuus and Sørensen (1997) found, in a study at the Oslo Accident and Emergency Department, that two out of every three victims suffered facial injuries. Shepherd et al. (1990b), in a study of assault victims in the UK, found facial injury as the most common. They found 83% of all fractures, 66% of all lacerations, and 53% of all haematomas were facial, and that 26% of victims sustained at least one fracture, with nasal fractures being the most common. Seventeen per cent required hospital admission; those who were kicked were most likely to need hospital treatment (Shepherd et al. 1990b).

Additional trauma characteristics significantly associated with poorer post-trauma adjustment include frequency, duration, and severity of trauma exposure. Subjective interpretation of life-threat severity during trauma predicts later emotional problems (Kilpatrick and Acierno, 2003, Elklit and Brink, 2004, Kilpatrick, 1989). Subjective factors, such as fear of serious injury or fear of being killed during the assault, and actual physical injury, have been found to increase the risk of later post-traumatic disorders. Research shows that the combination of these three factors creates the greatest risk of developing post-traumatic emotional problems (Kilpatrick

and Acierno, 2003). Joy et al. (2000) found in a sample of patients with stress reactions and physical injury that 90% felt shocked and 76% felt anxiety during the event. Women have a greater vulnerability to traumatic events than men (Frans et al., 2005, Sandanger et al., 1999, Breslau et al., 1999, Zatzick et al., 2002).

## **4.2 PERITRAUMATIC DISSOCIATION**

Another psychological reaction occurring during the violent event is peritraumatic dissociation (PD). Studies have reported that, when people feel threatened, they often experience a significant narrowing of consciousness and remain focused on the central perceptual details (Christianson and Lindholm, 1998). This narrowing of consciousness may evolve into amnesia for parts of or the entire event. Another outcome of the narrowed attention and heightened psychological focusing on those critical details may be regarded as “tunnel memory” (Christianson and Lindholm, 1998). The individual may experience a state of “speechless terror” without words to express what has happened (van der Kolk and Fisler, 1995). Emotional experiences during exposure, such as PD, have been found to be connected to the incidence of PTSD (Panasetis and Bryant, 2003, Zoellner et al., 2003). PD has also been found to be an important predictor of later PTSD symptom severity (Marshall and Schell, 2002, Panasetis and Bryant, 2003, Zoellner et al., 2003). The possible role of dissociation in the chain of causality that leads to PTSD has received some discussion. PD symptoms may represent a qualitatively similar reaction to stress, as occurs with PTSD, or the symptoms may represent reactions that are uniquely associated with PTSD. Several studies have demonstrated that having dissociative experiences during the trauma is a significant long-term predictor of PTSD (van der Kolk et al., 1996b). Ozer et al. (2003), in their meta-analysis, found that peritraumatic psychological processes were the strongest predictors of PTSD. The relationship between PD and PTSD was found to be present at all time points following the traumatic incident, but highest in studies in which six to 36 months had elapsed between the potentially traumatic event and the assessment time (Ozer et al, 2003). Victims of assault violence who report high levels of PD are at greater risk for developing PTSD than others (Birmes et al., 2003, Elklit and Brink, 2004). A longitudinal study of community violence survivors showed a strong correlation between baseline assessment of PTSD symptoms and PD, but PD at baseline did not emerge as an independent predictor of subsequent PTSD symptoms at follow-up assessments (Marshall and Schell, 2002).

Acute reactions such as PD are often combined with depressive symptoms and general anxiety symptoms following trauma, and some research shows a positive correlation between these symptoms (Griffin et al., 1997, Shalev et al., 1998).

### **4.3 POST-TRAUMATIC STRESS DISORDER**

The European Study of Epidemiology of Mental Disorder (ESEMeD) in a random sample from general populations in six European countries, found a lifetime prevalence of PTSD of 1.9% (Alonso et al., 2004). Traumas such as sexual assaults, perceived life threat during assault, and severe physical injury, have been found more distressing than others and carry with them a greater risk of developing PTSD (Kilpatrick and Acierno, 2003, Resnick et al., 1992). A PTSD lifetime prevalence of 5.6%, with the strongest risks found to be associated with sexual and physical assault were reported in a Swedish study (Frans et al., 2005). Dahl (1992) in a study of raped women, found that, 76% suffered from a high level of intrusion and 55% from a high level of avoidance in the acute phase, according to the IES-15. Assault violence and rape are the traumatic forms that have been associated with PTSD in representative samples in civilian life, with the highest current and lifetime prevalence rates (Breslau, 2001a, Gore-Felton, 1999). High prevalence of ASD and PTSD in the acute and subacute phases has been reported in several studies of assault victims (Elklit and Brink, 2004, Brewin et al., 1999, Birmes et al., 2003, Gore-Felton, 1999, Jaycox et al., 2003, Dahl and Varvin, 1986).

Earlier individual history of psychiatric illness increases vulnerability to PTSD (van der Kolk et al., 1996b). The likelihood of developing PTSD also appears to vary according to gender, age, severity of injury, perceived life threat during the traumatic event, prior victimization, and previous mental illness. Research shows that being a victim of violent crime is a predictor of later PTSD (Wohlfarth et al., 2002). As mention earlier, the risk of developing post-traumatic emotional problems has been found to be highest in persons who were actually injured and/or who reported that they feared they might be seriously injured or die during the assault (Kilpatrick and Acierno, 2003, Yehuda, 2004). This demonstrates that the individual's perception and interpretation of the event is a greater contributor to the development of PTSD symptoms than the experience of violence alone (Yehuda, 2004). Determining who will and who will not develop PTSD following exposure to violence is complex and difficult. It involves identification of multiple risk factors that may have reciprocal implications (Yehuda,



2004, Ozer et al., 2003). Early distress reactions, such as peritraumatic dissociation and perceived life threat, have been reported to predict later problems (Brewin et al., 1999). Prior experiences of victimization have been found to elevate the risk of emotional problems following new victimization (Kilpatrick and Acierno, 2003). Brewin et al.'s (2000) meta-analysis found that previous trauma predicted PTSD to varying degrees, depending on the studied population and the methods used, while Ozer et al.'s (2003) meta-analysis found that previous trauma was more strongly related to PTSD when the traumatic event involved interpersonal exposure to violence in non-combat situations. Early PTSD predicts subsequent PTSD (Benight and Harper, 2002, Brewin et al., 1999, Brewin et al., 2003, Shalev et al., 1996a, Zatzick et al., 2002).

Several studies show that suffering from PTSD increases the likelihood of other psychopathology. Breslau (2001b) found major depression to be the most prevalent comorbid disorder, occurring in 43% of women with PTSD. Several studies show a connection between anxiety and depression, and negative life experiences (Yehuda, 2004, Bjelland and Dahl, 1999, Kilpatrick and Acierno, 2003). The strong relationship between anxiety and depression is not specific to PTSD, it occurs with all anxiety disorders and (Breslau, 2001b). Few studies have focused on differentiation between symptoms of PTSD and other symptoms of emotional distress such as depression and anxiety in assault victims (Kilpatrick and Acierno, 2003). Depressive symptoms and general anxiety symptoms following trauma are often combined with acute reactions, such as PD, and some research shows a positive correlation between these symptoms (Griffin et al., 1997, Shalev et al., 1998).

Adverse outcomes are considered as a function of risk factors, and higher numbers of protective factors are hypothesized to decrease the negative effects after exposure to violence in studies of risk factors and protective factors. Self-efficacy and social support may be among such factors.

#### **4.4 SELF-EFFICACY**

In the study of contributors to mental and physical health after exposure to potentially traumatizing events, the perception of having personal control is an important factor. Perceived uncontrollability is a source of distress that may be an important contributor to PTSD (Benight and Bandura, 2004), while the belief that traumatic life events are controllable



often reduces distress. Perceived controllability also increases motivation to confront difficult life challenges (Cervone, 2000). The role of self-efficacy has been examined in diverse types of stress exposures (Benight and Bandura, 2004). Several meta-analyses of self-efficacy have been conducted on findings from studies with different designs and analytic methodologies, varied modes of self-efficacy enhancement and spheres of functioning (Benight and Bandura, 2004). The converging evidence from all these studies verifies the significant contribution of efficacy beliefs as a general predictor of the quality of human function. Perceived self-efficacy plays an important role in stress reactions and the quality of coping in threatening situations, and affects the intensity and persistence of stress reactions (Bandura, 1997).

A trauma is not an isolated transient event, as victims do not suffer stress from only the negative event itself. They also suffer from the adaptational strains left in its wake (Benight and Bandura, 2004). For example, the potential loss of life and physical injury present pervasive and prolonged stressors. Perceived self-efficacy is reported to function as a focal mediator in post-traumatic recovery. This emphasizes the enabling and protective function of belief in one's ability to exercise some measure of control over traumatic adversity and concurs with social cognitive theory (Benight and Bandura, 2004).

Kushner et al. (1993) examined the extent to which severity of assault and perception of controllability predicted the development of PTSD following criminal assault. Controllability was measured in terms of the ability to bring personal influence into aversive events and to manage emotional reactions. Low perceived control contributed to enduring PTSD after the effect of assault severity was taken into account (Kushner et al., 1993). Women who had experienced physical assault and previous forced intercourse expressed a lower sense of efficacy to cope with interpersonal threats (Ozer and Bandura, 1990). They felt more vulnerable to sexual assaults and had greater difficulty distinguishing between safe and risky situations. They were also more emotionally vulnerable, were less efficacious in turning off intrusive thinking, and showed more avoidance in their everyday behaviour than those not exposed to prior assault. The study included a guided mastery intervention, which instilled a resilient sense of both coping efficacy and thought control efficacy. In the post-treatment and follow-up periods, these women no longer differed from others on cognitive, affective or behavioural coping indices (Ozer and Bandura, 1990). It is hypothesized that the level of perceived self-efficacy influences post-traumatic recovery after exposure to non-domestic violence.

Benight and Bandura (2004) reported that social support and self-efficacy may have reciprocal effects on each other: social support may enhance self-efficacy and vice versa. Self-efficacy is found, both as a mediator of social support and as an establisher of social support. The stronger the self-efficacy, the greater will be the success in establishing supportive relationships (Benight and Bandura, 2004; Holahan and Holahan, 1987).

#### **4.5 SOCIAL SUPPORT**

Despite much research finding that evidence of buffering effects are predominant and studies of social integration finding that main effects are predominant, there is still disagreement about which theoretical effects of social support are dominant (Dunkel-Schetter and Bennett, 1990). Indeed, several reviews indicate that individuals who have socially supportive relationships have some protection against psychological reactions when exposed to stressful events and are less likely to experience physical and mental health consequences afterwards (Cohen and Wills, 1985, Ozer et al., 2003, Guay et al., 2006).

Attention to the victims' social context may give an increased understanding of reactions after the event and lead to more appropriate choices of follow-up. In a review, Brewin and Holmes (2003) found social support described as an intermediate variable capable of influencing the development of PTSD (Brewin and Holmes, 2003). Victims of violence often encounter multiple psychosocial problems that result from the symptoms they experience (Kilpatrick and Acierno, 2003), and distorted perceptions and behaviour may affect their relationship with others.

Social support has been found to be an important protective factor that may reduce stress and depression in general (Benight and Bandura, 2004). The benefit of social support has been convincingly documented, particularly in sexually and physically abused female and child victims (Yap and Devilly, 2004). Social support was shown to have the strongest weighted average effect size of 14 investigated risk factors for PTSD in a meta-analysis (Brewin et al., 2000). It is a reasonable assumption that the protective effects of social support have a higher impact on the way the symptoms of PTSD change over time than in the immediate response to trauma (Andrews et al., 2003). Dissociative symptoms assessed four weeks after the assault have been found to predict poorer later social functioning (Feeny et al., 2000). Perceived

negative responses of others were associated with both the onset and the maintenance of PTSD in physically assaulted victims in one study (Dunmore et al., 1999). Nevertheless, research on the effect of social support upon PTSD, remains in its infancy. Whether social support acts as a predictor in the development or maintenance of the disorder has only been briefly discussed (Guay et al., 2006). The role of social support is explained as an environmental variable, which interacts with the symptoms of PTSD, in an aetiological model proposed by Joseph et al. (1997). In this model, the search for support in the environment is defined as a strategy of active stress management whereas the perceived support received from significant others may lower or exacerbate stress levels (Joseph et al., 1997, Guay et al., 2006). This model also includes social support regarding the victim's interpretation of the potential traumatic event after other people have given their opinion of the victim's reaction during the event. For example, if a significant other informs the victim that he or she would have acted the same way during a similar event (for instance, by "freezing"), the victim starts to view that he or she reacted more appropriately, even though he or she first was ashamed (Guay et al., 2006). Inadequate support from significant others may interrupt the process of habituating by which victims are able to gain control over their negative emotions regarding the event (Lepore and Greenberg, 2002). Consequently, interactions to seek, perceive, and receive social support may either have a helpful effect on the victim's state, or induce and maintain further distress (Guay et al., 2006).

The individual experience of trauma and victimization erodes the victim's perception of social support (Yap and Devilly, 2004, Scarpa et al., 2006). Perceived social support may act as a moderator of distress in the early stages, but turns into a mediator between the stressor and the psychological distress when the stressors become numerous or chronic (Yap and Devilly, 2004). Mediation refers to a process or mechanism through which one factor or variable causes variation in another. Moderation refers to the influence of a process or mechanism on the degree or kind of co-variation between two factors or variables (Baron and Kenny, 1986). Despite much research on the phenomenon of social support, there is still a lack of research that focuses on social support after exposure to non-domestic violence.

## 4.6 QUALITY OF LIFE

Publications on the subject of QoL in the psychiatric research are more recent than those in somatic medicine (van Nieuwenhuizen et al., 2002). Assessment of QoL in different settings gives an evaluation of the persons' subjective perception of the quality of his or her life (Mendlowicz and Stein, 2000, Rapaport et al., 2005) and would be valuable in determining information beyond the symptoms of PTSD, such as the impact of treatment (Rapaport et al., 2005, Orley et al., 1998) and the level of medical disability.

We expand on earlier research findings by examining a wide range of QoL measures and health status regarding anxiety disorders such as PTSD. Several studies examining the impact of PTSD on QoL show that PTSD has a negative influence (Zatzick et al., 1997, Jordan et al., 1992, Magruder et al., 2004, Schnurr et al., 2006, Warshaw et al., 1993, Michaels et al., 2000, Holbrook et al., 2005, Rapaport et al., 2005). However, there is an evident lack of research on the implications of PTSD for QoL, with only a few studies based on civilian populations (Hansson, 2002, Howgego et al., 2005, Mendlowicz and Stein, 2000, Rapaport et al., 2005). One study showed worse psychosocial functioning among patients diagnosed with PTSD than among other psychiatric patients with no potentially traumatic event in their history (Warshaw et al., 1993). The short form of the quality of life Enjoyment and Satisfaction Questionnaire used on patients who had a diagnosis of PTSD as well as other disorders has been shown to predict QoL impairment (Rapaport et al., 2005). A Swedish study which intended to validate the Swedish Quality of Life Inventory (QOLI), used the questionnaire in a group of crime victims who suffered from PTSD. They found significantly higher QoL in a matched non-clinical group than the PTSD group, with large differences in the life areas of self-regard, love relationships, creativity, learning, standard of living, work, health, philosophy of life, recreation, community, and friendship (Paunovic and Öst, 2004). Holbrook et al. (2005) reported that PTSD had a major impact on QoL at follow-up 6, 12, and 18 months after exposure to major trauma.

The implication of non-domestic violence for the victim's own QoL is one perspective; another is the implication for the victim's family and friends. The victim's individual reactions caused by PTSD symptoms, such as aggression and withdrawing from family and friends, reduces the QoL of significant others (Brewin and Holmes, 2003).

According to earlier findings, in studies examining the relationship between PTSD and QoL after exposure to interpersonal violence, it is relevant to hypothesize that experience of PTSD symptoms may negatively influence QoL in victims of non-domestic violence.

#### **4.6 SUMMARY**

Evaluation of prior research shows that several studies have a cross-sectional design, some include two assessments, and only a few are longitudinal. Most of the studies referred to in Table 1 deal with populations of mixed gender, some of them deal with a mixture of physical and sexual assault, and many include both domestic and non-domestic violence. Three review studies have been chosen as a part of the presentation in Table 1, mostly because of their importance for the present study (Benight and Bandura, 2004, Kilpatrick and Acierno, 2003, Yap and Devilly, 2004). Others have been found of less importance to our work. For instance, Brewin et al.'s (2000) meta-analysis included 13 of 77 studies with samples categorized as crime victims. Only two studies included mixed gender exposure to crime, and 10 were based on female victims exposed to violence, several sexually motivated. Four of the studies in the meta-analysis by Ozer et al. (2003) dealt with samples consisting of crime assault or community assault victims, or assault survivors. Two of these were also analysed by Brewin et al. (2000). None of the relevant studies in these two meta-analyses was longitudinal or dealt with predictors such as PD, self-efficacy, social support, or QoL. Nevertheless, the findings are important and may be used as guidelines for research of victims exposed to violence. Several of the studies categorized as crime violence or assault violence include only female victims, exposed to domestic or non-domestic violence in the study population.

Small sample size is an unfortunate but common finding in longitudinal studies of injured and assaulted victims (Andrews et al., 2003, Birmes et al., 2003, Brewin et al., 1999, Elklit and Brink, 2004, Marshall and Schell, 2002, Wohlfarth et al., 2001, Michaels et al., 2000). The studies referred to above show high dropout levels, with between 40% and 53% of the participants dropping out between the first and last assessment. The present study also had high a dropout rate. It is important to questions who is dropping out, in particular whether it is the most or least symptomatic participants who fail to respond to all three assessments. Such a bias would be a potentially serious methodological problem.

The theoretical framework and prior research demonstrate that research on non-domestic violence is a dynamic field with several reciprocal interactions among the variables. This thesis focuses on a complex area that could be approached in various ways with regard to research questions and analyses. Figure 1 shows one possible presentation of the myriad of connections between several variables of importance that have been accorded to non-domestic violence. The figure shows connections based on theory and prior research as guidance for the analyses in the present study.

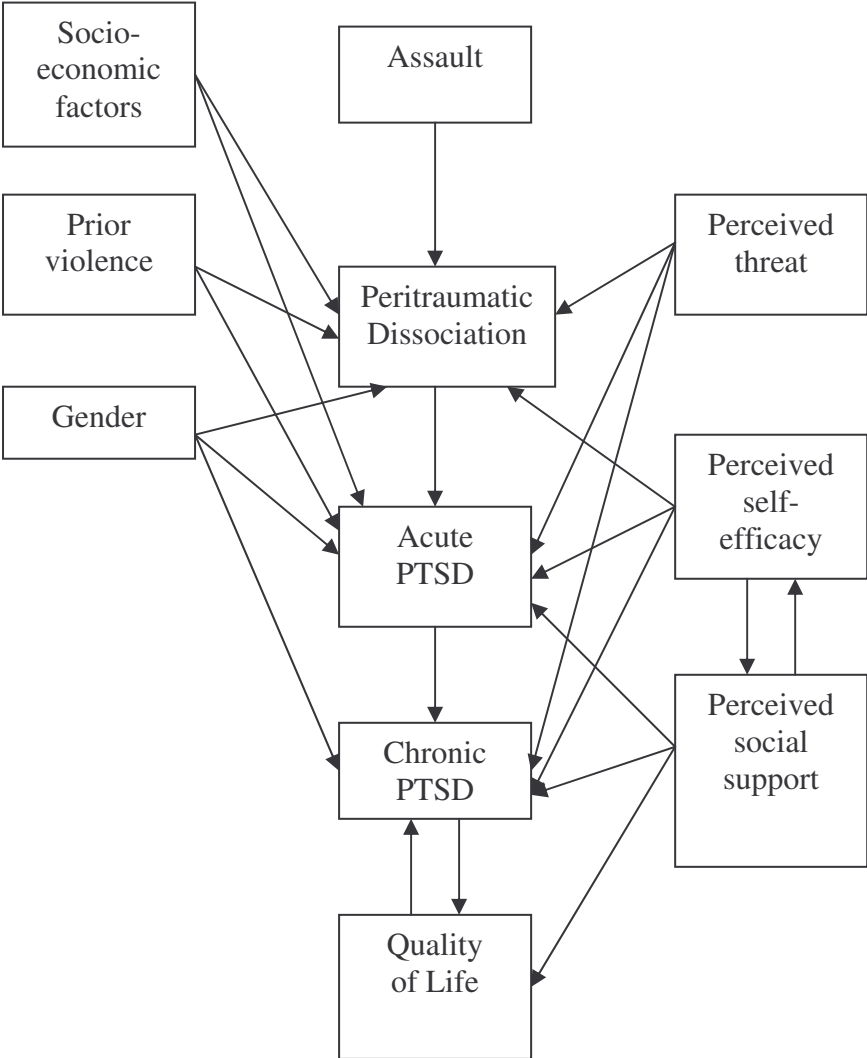


Figure 1: Model summarizing the relationships between variables associated with non-domestic violence, based on theory and prior research

## **5.0 THE STUDY**

### **5.1 DESIGN, INCLUSION CRITERIA, RECRUITMENT, AND PARTICIPANTS**

#### **Design**

A cross-sectional design, combining data collected by questionnaires and semi-structured interviews, was used in Papers I and II. Papers III and IV are based on a single group longitudinal design with three repeated measures of the same questionnaire over a period of 12 months combined with material from the semi-structured interviews. All data are based on self-reported material, except the classification of “assault” and “inflicting bodily harm” categories.

#### **Inclusion criteria**

In this study, physical violence was defined as behaviour in which one or more persons intentionally hurt another person physically. Inclusion criteria were that the victim sought out an emergency unit or reported the offence of an actual physical assault to the police in the communities of Bergen or Oslo, Norway. To qualify, victims had to speak Norwegian, be 18 years or older and assaulted by a person other than a family member or a former or present intimate partner.

#### **Recruitment**

With the assistance of local police and medical services, participants were identified and recruited. Potential participants were asked whether the researcher might contact them. If the person agreed, more information about the project was sent by post. Initially, the recruitment of victims in Bergen was designed to occur within four weeks of the exposure. The recruitment process had to be adapted somewhat during the process, and the time between the exposure to violence and data collection was expanded. The geographic area was also expanded to include the capital, Oslo. All changes in the recruitment process were evaluated in order to maintain the planned incidental sampling of participants. The recruitment process is described in detail in Appendix 2. Inclusion of participants was occasional and the sample is considered to be convenient, influenced with the incidental collection of data.

Two hundred and fourteen people were asked to participate; 40 refused (37 men and 3

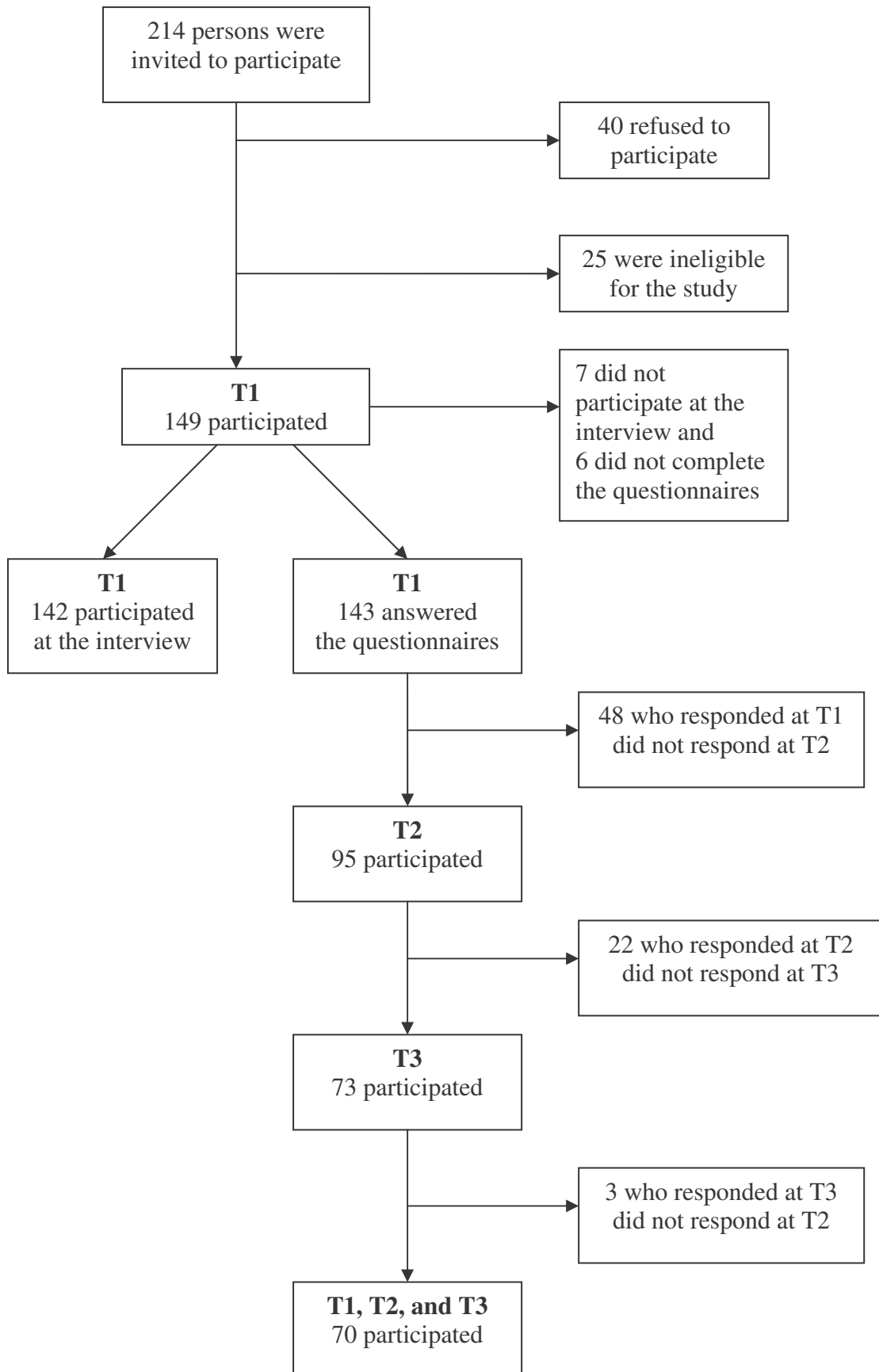
women). Of the 40 who refused, the average age was 29.6 years (range = 18–66 years). Twenty-five of those who were asked to participate were ineligible for the study because they did not satisfy the inclusion criteria (four women and two men had been assaulted by a partner, four boys and one girl were under 18 years old, eleven men did not speak Norwegian, and three men gave an incorrect phone number at the emergency unit).

### **Participants**

The final sample at T1 consisted of 149 Norwegian-speaking adults. Figure 2 shows the recruitment flow. Twenty-four per cent of those who completed the questionnaires at T1 were interviewed within two weeks, 25% between two and four weeks, 46% between four and 16 weeks, and 5% more than 16 weeks after the event. In total, the recruitment process continued from September 2002 until October 2003 while data-collection continued until December 2004.



**Fig 2: Recruitment**



The sample at the first questionnaire assessment (T1) consisted of 143 Norwegian-speaking adults, 80% male and 20% female, with an average age of 31 years ( $SD = 11$ ). The gender distribution was typical for people reporting violent crime (other than domestic assault) in Norway, but the age distribution was slightly skewed with a higher average age, which is most likely explained by our participants' minimum age of 18 years (Statistics, 2002b). The response rate was 66% ( $n = 95$ ) at T2 and 51% ( $n = 73$ ) at T3. Fourteen participants could not be reached by mail at T3 due to unknown addresses. Table 2 shows the demographic characteristics of the participants at T1 and the respondents group in all three assessments, presented according to the papers produced.

<b>Time</b>	<b>T1</b>	<b>T1 (acute)</b>	<b>T1, T2, T3</b>
Number of participants	149	138	70
Male % (n)	80 (119)	80 (110)	83 (58)
Female % (n)	20 (30)	20 (28)	17 (12)
Mean age (SD)	31 (11)	31 (11)	33 (12)
Age range	18–75	18–75	18–75
	Paper I	Paper II	Paper III + IV

Table 2. Demographic characteristics of participants

Seventy participants (49%) completed all three assessments. The average age of the respondent group in all three assessments was 33 years ( $SD = 12.3$ ) with a range from 19 to 75 years and a gender distribution of 83% (58) male and 17% (12) female participants.

An independent  $t$ -test showed a statistically significant difference in mean age between respondents and dropouts ( $t(128) = 2.57, p = 0.01$ ), with respondents an average of five years older than dropouts (see Table 1, Paper IV). Similarly, an independent  $t$ -test showed a statistically significant difference in mean education level between respondents and dropouts ( $t(135) = 2.25, p = 0.03$ ), where respondents had a higher level of education than dropouts. No statistically significant differences were found between respondents and dropouts with regard to gender, prior experience of violence, level of physical injury, cohabitation, marital status, employment status, or threat level. Further, there were no statistically significant differences between respondents and dropouts with regard to mean values on scales and subscales of the

IES-15, IES-22, PTSS-10, SPS, GSE and WHOQOL-Bref.

## 5.2 ASSESSMENTS

Table 3 shows that all measures had satisfactory internal consistency and reliability as estimated by mean inter-item correlation and Cronbach's alpha.

Table 3. Internal consistency and reliability for scales and subscales (number of items, total range, Cronbach's alpha, mean inter-item correlation)

Scale	Subscale	Items	Total Range	Cronbach's alpha	Mean inter-item corr
Peritraumatic Dissociation		7	0-35	0.82	0.42
PTSS-10		10	10-70	0.92	0.54
IES-22		22	0-110	0.95	0.44
	<i>Intrusion</i>	8	0-40	0.91	0.56
	<i>Arousal</i>	6	0-30	0.86	0.51
	<i>Avoidance</i>	8	0-40	0.83	0.38
IES-15		15	0-75	0.92	0.43
	<i>Intrusion,</i>	7	0-35	0.91	0.59
	<i>Avoidance</i>	8	0-40	0.83	0.38
HSCL-25		25	1-4	0.96	0.49
	<i>Anxiety</i>	10	1-4	0.90	0.48
	<i>Depression</i>	15	1-4	0.95	0.54
GSE		10	1-4	0.89	0.45
SPS		24	6-24	0.90	0.30
	<i>Attachment</i>	4	1-4	0.55	0.24
	<i>Social</i>	4	1-4	0.68	0.37
	<i>integration</i>	4	1-4	0.74	0.42
	<i>Guidance</i>	4	1-4	0.74	0.44
	<i>Reassurance</i>	4	1-4	0.74	0.44
	<i>of worth</i>	4	1-4	0.66	0.34
	<i>Opportunity to</i>	4	1-4	0.66	0.34
	<i>provide</i>	4	1-4	0.66	0.34
	<i>nurturance</i>	4	1-4	0.66	0.34
	<i>Reliable</i>	4	1-4	0.82	0.54
	<i>alliance</i>	4	1-4	0.82	0.54
WHOQOL					
	<i>Physical</i>	7	4-20	0.88	0.50
	<i>health</i>	7	4-20	0.88	0.50
	<i>Psychological</i>	6	4-20	0.83	0.52
	<i>Social</i>	3	4-20	0.75	0.51
	<i>relationships</i>	3	4-20	0.75	0.51
	<i>Environmental</i>	8	4-20	0.80	0.34

## **Post-traumatic stress disorder**

*The Post-Traumatic Symptoms Scale 10 (PTSS-10)* is a 10-item self-report questionnaire that assesses the presence and intensity of PTSD symptoms during the previous seven days. The questionnaire was devised for research purposes, but is widely used to complement clinical assessment. A research team from Norway devised the questionnaire after the Alexander-Kielland accident in 1980 (Eid et al., 1999, Ersland et al., 1989, Holen, 1983). It consists of 10 statements that clearly express symptoms related to PTSD criteria (sleep problems, nightmares, tension in the body, irritation, depression, startle, fluctuations in mood, feeling of guilt, fear when approaching the place where the assault took place, or situations that remind one of the incidents). The scale is a screening instrument that has been reported to have high face validity (Eid et al., 1999). It has been used internationally for monitoring groups of victims. Originally, the PTSS-10 symptoms were scored as present/not-present, but in a revised version each symptom is rated on a seven-point Likert scale from 1 (never/rare) to 7 (very often) (Weisaeth, 1989a). The total score ranges from 10 to 70. A score of 4 or more on six or more of the items indicates PTSD, and a score of 4 or more on four or five of the items indicates a level of risk. The questionnaire has been shown to have high sensitivity and specificity (Eid et al., 1999, Weisaeth, 1989b).

*The Impact of Event Scale 22 (IES-22) and the Impact of Event Scale 15 (IES-15)*. The IES-22 (Weiss, 2004) is a self-report scale used to assess current levels of three elements of PTSD: intrusion, avoidance, and persistent hyperarousal associated with the experience of a particular event. The IES-22 was developed from the original IES-15. The IES-15 has been demonstrated to be a useful measure of stress reactions after the experience of a traumatic event and to be valuable for detecting individuals who need treatment (Joseph, 2000, Sundin and Horowitz, 2002, Wohlfarth et al., 2003). The IES-22 maintained compatibility with the original IES-15, no changes were made to the avoidance subscale, and only minimal changes were made to the intrusion subscale, while the arousal subscale was a new construct. The items are scored on a four-point scale with scale points 0 (not at all), 1 (rarely), 3 (sometimes), and 5 (often). There is no generally accepted diagnostic cut-off point related to the IES-22 (Creamer et al., 2003). In research, the intrusion and avoidance subscales from the IES-15 are typically used. Scores range from 0 to 35 for intrusion, 0 to 40 for avoidance, and 0 to 75 for the total IES-15. On the full scale, a total score of 35 or more indicates PTSD, and a score between 20 and 34 indicates a level of risk (Dahl, 1992). A score higher than 20 on the

intrusion and avoidance subscales indicates a possible need for treatment.

Even though the IES–15 has been found to have high sensitivity and specificity when used as a screening instrument of PTSD (Wohlfarth et al., 2003), it is reasonable to question its relationship with potential risk factors of PTSD (Brewin et al., 2000). PTSD symptoms of intrusion and avoidance are often found during the first days after the stress exposure, and their function as predictors has been questioned (Shalev et al., 1996a). As the original IES–15 assesses only the clusters of intrusion and avoidance, we used the IES–22 to gather information on hyperarousal.

### **Peritraumatic dissociation**

PD was assessed using a seven-item self-report measure of dissociative experiences during the violent situation. The questionnaire was developed specifically for this study by the candidate and the supervisor Weisæth. The development of the questions was inspired by the Peritraumatic Dissociative Experiences Questionnaire—Rater Version (PDEQ) (Marmar, 1997) and the Dissociative Experiences Scale (DES) (Bernstein and Putnam, 1986). The questions are: (1) standing next to myself; (2) other people, things, and surroundings are unreal; (3) my own body doesn't belong to me; (4) confusion about whether the incident was real or just a dream; (5) see the world through a mist; (6) not able to remember much of what happened; and (7) loss of sense of time. Each question is rated on a five-point scale from “it does not concern me” to “it concerns me very much”, with a scoring range from 0 to 4.

### **Anxiety and depression**

The Hopkins Symptom Check List 25 (HSCL–25) is a self-report scale used to assess anxiety and depression (Derogatis et al., 1974a). The HSCL–25 is derived from the SCL–90 measures of anxiety and depression. SCL–90 is regarded as a useful self-report measuring instrument for general mental health (Derogatis, 1983). The HSCL–25 consists of 25 symptoms, and for each item the respondent indicates whether he or she was “not”, “a little bit”, “quite a lot”, or “very much” bothered by the symptom during the past week. The HSCL–25 is a screening instrument. The total score is the mean score across all items, which ranges from 1 to 4. A score between 1.55 and 1.74 indicates a level of risk, and a score of 1.75 or higher indicates a probable pathological condition. The instrument has been shown to have satisfactory psychometric properties (Derogatis et al., 1974b, Sandanger et al., 1998).

### **Perceived social support**

Perceived social support was assessed using the Social Provisions Scale (SPS) (Cutrona et al., 1986, Russell et al., 1984). SPS is a self-reported scale developed to assess the six relational provisions identified by Weiss (1974). The scale contains six subscales: (1) attachment (a sense of emotional closeness and security often provided by a spouse or lover); (2) social integration (a sense of belonging to a group of people who share common interests and recreational activities, often provided by friends); (3) nurturance (a sense of responsibility for the well-being another, often obtained from one's children); (4) reassurance of worth (acknowledgment of one's competence and skill, usually obtained from co-workers); (5) reliable alliance (the assurance that one can count on others for assistance under any circumstances, usually obtained from family members); and (6) guidance (advice and information, usually obtained from teachers, mentors, and parents). The SPS consists of 24 items that ask the respondent to rate the degree to which his or her relationships with others currently supply each of the provisions. Four items assess each provision; two describe the presence and two describe the absence of the provision. The items are scored on a four-point scale with scale points 1 (strongly disagree), 2 (disagree), 3 (agree), and 4 (strongly agree) where respondents indicate the extent to which the statements describe their current social relationships. The negative items are reversed and added to the positive items to form a score for each social provision. Adding the six subscales together forms a total social provision score. The questionnaire has been shown to have high sensitivity and specificity (Cutrona et al., 1986).

### **Perceived self-efficacy**

The Generalized Self-Efficacy Scale (GSE) is a self-report scale used to assess the strength of an individual's belief in his or her ability to respond to novel or difficult situations and to deal with a large variety of stressors (Schwarzer, 1993). The GSE consists of 10 items that are scored on a four-point scale from 1 (not at all true) to 4 (exactly true). The total score is the mean score across all 10 items and a higher score represents higher self-efficacy. The instrument has shown acceptable results regarding psychometric properties such as internal consistency and test-retest reliability (Leganger et al., 2000, Schwarzer, 1993).

## **Quality of life**

The WHOQOL–Bref is a self-report scale that consists of 26 items. It is a multilingual, multicultural, generic quality of life scale, developed across 15 field centres (WHOQOL, 1998, WHOQOL, 1996). The WHOQOL–Bref includes four domains related to QoL: physical health, psychological health, social relationships, and environment. In addition, two items are examined separately, namely the perception of overall quality of health and perception of overall health. The WHOQOL–Bref reflects overall satisfaction with life and generic assessment of life domains by including both an overall single item regarding satisfaction with life and measurement of the four broad life domains (Spilker, 1996). The WHOQOL–Bref has been demonstrated to have satisfactory discriminant validity, internal consistency, and test reliability (Skevington et al., 2004, WHOQOL, 1998). The Norwegian version used in the present study has also been reported to have satisfactory psychometric properties (Hanestad et al., 2004). The items are rated on a five-point Likert scale, reflecting intensity, capacity, frequency, or evaluation. The items inquire “how much”, “how completely”, “how often”, “how good”, or “how satisfied”, with possible answers ranging from very satisfied (5) to not at all satisfied (1). The range of scores in each domain is from 4 to 20, where a higher score indicates a better QoL.

## **Demographic information**

Demographic information such as age, sex, nationality, education status, cohabitation, marital status, employment status, and occupation was recorded. Occupational status was categorized according to the Norwegian Standard Classification of Occupations (ISCO–88) (Statistics, 1999). The ISCO–88 (Statistics, 1999) has a four-level hierarchical structure. It is divided into 10 major occupational groups, 31 submajor groups (e.g., health professionals), 108 minor groups (e.g., specific health professional groups), and 353 unit groups (e.g., nutritionists). The classification is based on two principles: skill level and skill specialization.

## **Crime characteristics including emotions during the event**

Crime characteristics, such as the location, duration of the attack, relationship to the perpetrator, and number of perpetrators, were examined within semi-structured interviews. Questions about other crime aspects, such as whether a weapon was used, whether other persons were present, whether the victim sought emergency treatment and/or reported the offence to the police, previous experience of being a victim of violence, provocation of the perpetrator by the victim, and their opinion about whether the perpetrator was influenced by

alcohol, were categorized as yes or no. Information on the emotions, such as loss of memory and shock, anxiety, and aggression experienced during the attack, was also collected by semi-structured interview, using the categories yes and no.

### **Alcohol consumption**

The participants were asked whether they had consumed alcohol prior to the event, using the two categories yes and no. General alcohol consumption by the participants was examined by a separate structured question. Responses were categorized as abstinence, low, moderate, or high consumption. Abstinence means not to drink alcohol at all while low consumption means drinking a couple times per month. Moderate consumption includes drinking a couple of times per week, and high consumption means more frequent use of alcohol, for example, every day.

### **Perceptions of life threat**

The participants' perceptions of life threat or potential for severe physical injury were examined by a separate structured question. Responses were categorized as: felt life was at risk, fear of severe physical injury (but not life at risk), understood danger afterwards, did not perceive the situation as dangerous, or did not remember.

### **Physical injury**

Categorization of physical injury was based on self-report and classified according to the injured part of the body, laceration, haematoma, or fracture. All injuries were also classified into the categories of "assault" and "inflicted bodily harm", based on the legal categories used by the police in their registration and investigation of violence (Statistics, 2002b). The police classified each case according to the legal practice using a combination of the level of physical injury and severity of intentions of the perpetrator, where the level of physical injury was the most important criterion. The victims of inflicted bodily harm had suffered more serious physical injuries than the common assault group. The inflicted bodily harm group was categorized into two subgroups, bodily harm and serious bodily harm. Categorization into the serious bodily harm subgroup was based on injuries such as fractures, or other comprehensive physical injuries, including near-fatal injuries. The two main categories "assault" and "inflicting bodily harm" are used in the analysis in this thesis.



### **Open-ended questions**

Participants' time perspective during the event, possible provocation of the perpetrator, possible motivation for choosing not to press legal charges, and the participants' opinions regarding how and why they became victims were recorded by open-ended questions.

## **5.3 DATA ANALYSES AND STATISTICAL METHODS**

Descriptive statistics were performed in all papers to describe the sample in terms of variables or combinations of variables. All analyses were performed using the SPSS PC statistical package and AMOS v.5 or 6. Mean inter-item correlations were computed to analyse the internal consistency of the scales and subscales used in this study: PD, PTSS–10, IES–15, IES–22, HSCL–25, GSE, SPS and WHOQOL–Bref (Table 3). Reliabilities of the scales were estimated by Cronbach's alpha.

Descriptive analyses such as frequency tabulations and cross tabulations were used to describe demography, the physical injuries, crime characteristics and emotions during the event, in Paper I. Pearson Chi-Square Significance Tests were used to test hypotheses of no association between qualitative variables. Quotations from qualitative data based on open-ended questions were used to describe and exemplify the victims' experience during the assault, in accordance to some descriptive statistical numbers. The intention was to increase the understanding of various emotions and experience through victimization.

Descriptive analyses, such as univariate frequency tabulations, cross-tabulations, Pearson's  $r$ , and ANOVA, were performed to describe acute and subacute post-traumatic reactions and evaluate the relationship between psychological reactions, level of physical injury, perceived threat, and sociodemographic variables in Paper II. Multiple regression analyses were performed to predict PTSD. Correlation analyses (Pearson's  $r$ ) and structural equations models (SEMs) were used to summarize results of analyses and to "visualize" the relationship between observed variables in a cross-sectional perspective at T1.

In Paper III, descriptive analyses such as univariate frequency tabulations, cross-tabulations, independent  $t$ -tests, Pearson's  $r$ , ANOVA, and factor analysis were performed to describe the prevalence and relationship between the variables. The relationship between perceived social support, perceived self-efficacy, and IES–22 in a longitudinal perspective was analysed

separately by Pearson's  $r$  and regression analyses. Analyses of the prevalence and severity of PTSD were based on the IES-15 and PTSS-10, and evaluations of the predictor effects were made using the IES-22, in Paper III. Central predictors based on earlier research and variables in our project that were significantly associated with high scores at IES-22 were then used in the final structural equation modelling (SEM) analysis to predict PTSD, with IES-22 as the dependent variable. SEM analyses were used to summarize the statistically significant relationships between perceived life threat, PD, perceived social support, and perceived self-efficacy and IES-22 at T1, IES-22 at T2, and IES-22 at T3.

Finally, descriptive analyses such as frequency tabulations, cross tabulations, independent sample t-tests, Pearson's  $r$ , and ANOVA were performed to describe the prevalence of QoL and PTSD in Paper IV. SEM analyses were used to summarize the statistically significant relationships between possible predictive factors, such as prior experience of violence, level of physical injury, perceived life threat, cohabitation, and IES-15 with WHOQOL-Bref (QoL) as the dependent variable at T1, T2, and T3.

#### **5.4 POWER ANALYSIS**

Power analysis, based on a 5% significance level, a presumed correlation of 0.5 between measures across time, and the present study sample of 150 participants, showed a probability of 0.80 (statistical power) to detect differences of 0.25 of a standard deviation between within-participant mean scores at two assessment times. When a significance level of 1% was used, the corresponding value was 0.30 of a standard deviation. For between-group comparisons, with 50 participants in each group, power analyses indicated that differences of 0.56 of a standard deviation could be detected with a probability of 0.80 at significance levels of 5%. With a significance level of 1%, a difference of 0.68 of a standard deviation could be detected with a probability of 0.80. According to conventional standards for interpretation of Cohen's  $d$  effects of these magnitudes are considered medium to large.

#### **5.5 ETHICAL ISSUES**

The object of ethical research principles is to provide standards for the relationship between the participants and the researcher that maintain a balance between the requirements of protection of the individual and the requirements of the research. Ethical principles for

research have four fundamental requirements in studies such as this: information, agreement, confidentiality, and utility. All four of these are considered to have been met in this project.

The participants initially received oral information by phone about the study and ethical issues, when the researcher called them to ask if they would allow written information by post. The information letter provided information about the intention of the project, the questions asked, the longitudinal design, and cooperation with the psychiatrist. The participants were guaranteed anonymity and the right to withdraw from the study at any time. Signed informed consent forms were returned to the researcher to authorize the participation.

Exposure to assault violence is often emotionally difficult and may result in post-traumatic stress reactions. There may be ethical implications involved in inviting non-domestic victims of violence to participate in interviews and to complete questionnaires about the event, post-traumatic reactions, and QoL. The researcher has to be aware of the participant's mental state after the event. Several are in a vulnerable phase close to the time of the event. The questions may function as reminders, resulting in bad memories and unpleasant experiences from participating in the project. It is very important showing to great respect and not provokes increased psychological pain through the research. The interviews have to be done by a professional who is competent, experienced in working with assault victims, and flexible to the individual's needs. The participant may also need some advice or referral to psychiatric or medical specialists. As a part of the ethical issues in the study, an experienced psychiatrist evaluated three of the victims for their possible need for intensive care. When the researcher considered need of special evaluation by the psychiatrist she "referred" the participant. In these cases, the researcher balanced the need for psychiatric evaluation with the participants' wishes.

The participants were told that they would have no receive for participating, but that increased knowledge of reactions after exposure to violence would probably be of value to future victims of non-domestic violence. The participation may also function as "therapy", where the victim has an opportunity to tell his/her story, and therefore have some kind of value for some participants.

The present study has followed the Declaration of Helsinki (Vanderpool, 1996). The study was approved by the Regional Committee for Medical Research Ethics, Health region III (REK III nr 154.01), and by the Norwegian Social Science Data Services (ref. 8750).

## **6.0 RESULTS**

### **6.1 DEMOGRAPHY, PHYSICAL INJURIES, CRIME CHARACTERISTICS, AND EMOTIONS DURING THE EVENT (PAPER I)**

The aims were to describe socio-demographic characteristics, injury, crime characteristics and emotions during the event in assault victims of non-domestic violence. and evaluate possible association between these factors.

The sample comprised 149 victims, 80% men and 20% women, with an average age of 31 years (SD =11.0). Regarding education level and work, 35% were categorized as “university-level”, and only 11% were unemployed. For further information about demographic characteristics, see Table 1, Paper I.

Facial and other head injuries were common; more than 75% of our participants were injured in the head, face, or eyes, and 22% experienced commotio cerebri or concussion (see Table 3, Paper I). About one-third of the sample had serious injuries that required specialist treatment. According to the judicial criteria, 31% were categorized as “assault” and 69% as “inflicted bodily harm”.

Most of the participants had experienced the violent event in a public place and had been assaulted by an unknown perpetrator. Thirty-nine per cent of participants felt that their life was at risk during the assault, and 22% felt they were in danger and could receive severe injuries, but did not feel that their life was at risk. Our findings showed a relationship between the use of a weapon and perceived threat ( $p < 0.05$ ). Sixty-four per cent of those who felt their life was at risk faced a weapon during the assault. Further information about the crime characteristics is presented in Table 2, Paper I. About 60% experienced a combination of

physical injury and perceived high threat, such as fear of more serious injury or fear of being killed during the assault.

Anxiety was the most frequent emotion felt during the assault, followed by aggression and shock. One-quarter of the participants reported a mixture of simultaneous feelings, such as feeling shocked and frightened at the same time, or even combined with aggression. The difference between genders in the frequency of the emotions of shock and anxiety during the attack was statistically significant. Female victims were more likely to experience shock ( $p < 0.01$ ) and anxiety ( $p < 0.01$ ) during the incident than males. When asked, “How and why did you become a victim of violence?”, more than one-third stated it was just accidentally; they had been at the wrong place at the wrong time.

## **6.2 ACUTE AND SUBACUTE POST-TRAUMATIC REACTIONS (PAPER II)**

The aims were to describe acute and subacute post-traumatic reactions in victims of physical non-domestic violence through the examination of frequency and intensity of PD, PTSD, and anxiety and depressive symptoms, and to explore the relationship between the psychological reactions, level of physical injury, perceived threat, and sociodemographic variables.

One-third of the victims scored as probable PTSD cases according to both the PTSS–10 and the IES–15 (see Table 2, Paper II). Forty-four per cent scored as cases with probable anxiety and depression, according to the HSCL–25 (see Table 3, Paper II). Perceived threat, such as feeling one’s life was at risk or a danger of more severe injuries during the assault, predicted higher scores on all measures of psychological reactions. There were no statistically significant differences between time since exposure (acute and subacute groups) and PD, PTSS–10, IES–15, IES–22, or HSCL–25, according to measured means (SD) and occurrence of probable cases and risk-level cases. The results showed no relationship between severity of physical injury (the two legal categories) and caseness. One-way ANOVA indicated that physical injury, classified by self-reported injured part of the body, laceration, haematoma, or fracture (Table 3, Paper I), was not significantly related to the mean values of PTSS–10, IES–15, or HSCL–25.

Table 5 in Paper II shows that gender (females scoring higher on distress) was correlated with

outcome measures of PD, PTSS–10, IES–22, IES–15, and HSCL–25. For instance, 64% of the female victims and 38% of the male victims were classified as “probable cases” according to the HSCL–25. Similarly, on the PD scale, women had statistically significant higher mean value than men (2.21 vs 1.84,  $p = 0.03$ , ANOVA).

The Structural Equation Modelling (SEM) analysis shown in Figure 1, Paper II, summarizes the statistically significant relationships between the distress variables (PTSS–10, HSCL–25, and IES–15), PD, perceived threat, severity of violence (physical injury), and gender. This model, with 14 degrees of freedom, fitted the data reasonably well (rmsea = 0.07, chi-square/df = 1.73). *R*-square was 0.29 for “distress” and 0.09 for “PD”. Time since exposure, age, and education were not statistically significant predictors.

### **6.3 PREVALENCE AND PREDICTORS OF PTSD IN A LONGITUDINAL PERSPECTIVE (PAPER III)**

The aims were to measure the prevalence and analyse the predictors of PTSD symptoms, in relation to PD, physical injury, perceived life threat, prior experience of violence, perceived social support, and perceived self-efficacy, in physically injured victims of non-domestic violence in a one-year longitudinal perspective.

The levels of physical injury, perceived life threat, prior experience of violence, PD, acute PTSD, perceived self-efficacy, and perceived social support were considered possible predictors. This study had a single group ( $n = 70$ ), longitudinal design, with three repeated measures over a period of 12 months. Questionnaires used were the IES–15, PTSS–10 (prevalence and severity of PTSD), IES–22 (predictor effects), PD seven-item self-report measure, Social Provisions Scale (SPS), and Generalized Self-Efficacy scale (GSE).

The results showed a high prevalence and severity of PTSD on all outcomes by the respondents who participated in all assessments. Prevalence and severity of PTSD was categorized as probable PTSD cases, risk-level PTSD cases, and no cases, as diagnosed by the IES–15 and PTSS–10. Probable PTSD cases, as scored by the IES–15, increased from 25.7% at T1 to 31.4% at T3, while risk-level cases decreased from 32.9% at T1 to 14.3% at T3. The percentage of no cases increased from 41.4% at T1 to 54.3% at T3. In accordance, the percentage of no cases, measured by the PTSS–10, increased from 58.6% at T1 to 65.7% at

T3, while the probable PTSD cases decreased from 28.6% at T1 to 27.1% at T3. Risk-level cases decreased from 12.9% at T1 to 7.1% at T3.

Regression analysis on the relationship between perceived social support, perceived self-efficacy, and the IES-22 showed that perceived self-efficacy was statistically significant on the IES-22 scores at T1 ( $\text{sta.}\beta = -0.35, p < 0.01$ ), while perceived social support was not statistically significant ( $\text{sta.}\beta = -0.22, p > 0.01$ ) (Table 5, Paper III). Findings at T2 showed both perceived self-efficacy ( $\text{sta.}\beta = -0.30, p < 0.01$ ) and perceived social support ( $\text{sta.}\beta = -0.29, p < 0.05$ ) to be statistically significant on the IES-22 scores. Likewise, at T3, both perceived self-efficacy ( $\text{sta.}\beta = -0.35, p < 0.01$ ) and perceived social support ( $\text{sta.}\beta = -0.27, p < 0.05$ ) were statistically significant on the IES-22 scores.

The SEM analysis summarizes the statistically significant relations between perceived level of threat, PD, perceived self-efficacy (PSE), perceived social support (PSS), and IES-22 at T1, IES-22 at T2, and IES-22 at T3. *R*-square was 0.38 for IES-22 at T1, 0.69 for IES-22 at T2, 0.54 for IES-22 at T3, 0.12 for PD, and 0.13 for PSE. Prior experience of violence and level of physical injury were not statistically significant predictors (Figure 2, Paper III).

Figure 2 and table 6 identifies perceived threat as an underlying predictor of PD at T1, while PD and perceived self-efficacy are predictors of PTSD. Perceived self-efficacy have an opposite direction (identified by negative regression coefficient (*b*), critical ratios (C.R.) and beta values) than PD and PTSD, as shown in Table 6. This difference shows that low perceived self-efficacy predicts high occurrence of PTSD and vice versa. In accordance, low level of perceived social support predicts high occurrence of PTSD at T3, identified by negative values of *b*, C.R. and beta (see table 6, paper III). Prior PTSD is found as predictor of maintained occurrence of PTSD at both T2 and T3. At T3 perceived self-efficacy influences both perceived social support and PTSD.

#### **6.4 THE PREDICTIVE VALUE OF PTSD SYMPTOMS FOR QUALITY OF LIFE IN A LONGITUDINAL PERSPECTIVE (PAPER IV)**

The aims were to assess QoL and possible predictive factors (prior experience of violence, level of physical injury, perceived life threat, cohabitation, and post-traumatic stress



symptoms) of QoL in victims of non-domestic violence in a one-year longitudinal perspective.

This paper also used a single-group ( $n = 70$ ) longitudinal design with three repeated measures. The questionnaires Impact of Event Scale–15 (IES–15) and WHOQOL–Bref were used.

Generally, WHOQOL-Bref values associated with probable PTSD were lower than values associated with no cases, for instance, at T1: mean level of physical health was 12.03 for those diagnosed as probable PTSD, while the corresponding value was 17.45 for those classified as no cases. One-way ANOVAs showed statistically significant main effects of the probability of PTSD for all WHOQOL-Bref subscales at all three assessments. With the exception of overall health at T2, where  $p < 0.05$ , all other  $p$  values were  $< 0.001$ .

The analysis showed that the mean levels of the WHOQOL-Bref subscales (the four domains and the two single items) were stable across time of assessment for each category of PTSD (probable cases, risk level cases and no cases): for instance, the mean scores for the domain “psychological health” at T1 was 11.89, while the corresponding means at T2 and T3 were 12.14 and 11.54, respectively.

The SEM analysis shown in Figure 2 (paper IV) summarizes the statistically significant relations among all relevant variables, including variables such as prior violence, threat level, physical injury, cohabitation, IES-15 and WHOQOL-Bref (QoL). Scores on the IES–15 predicted QoL at all three assessments. IES–15 scores at T1 predicted QoL at both T1 ( $p < 0.001$ ) and at T2 ( $p < 0.05$ ). Similarly, IES–15 scores at T2 predicted QoL at T2 ( $p < 0.001$ ) and T3 ( $p < 0.01$ ). QoL at T1 predicted QoL at T2 ( $p < 0.001$ ), and QoL at T2 predicted QoL at T3 ( $p < 0.001$ ) (Figure 2, Paper IV).  $R$ -square was 0.45 for WHOQOL-T1, 0.82 for WHOQOL-T2 and 0.75 for WHOQOL-T3. Experiences of earlier violence, perceived threat, severity of injury, or cohabitation (living alone or living together with others) were not significant predictors of QoL. Table 4 shows regression coefficients, standard errors, critical ratio,  $p$ -values, and standardized regression coefficients according to the SEM analyses presented in Papers III and IV.



Table 4: Regression coefficients (b), standard errors (S.E.), critical ratios (C.R.), *p*-values (*p*), and standardized regression coefficients (beta) from SE models fitted to longitudinal data (see Figure 2 in Paper III and Figure 2 in Paper IV).

			<b>b</b>	<b>S.E.</b>	<b>C.R.</b>	<b><i>p</i></b>	<b>beta</b>
Paper	Threat	→ PD-T1	0.222	0.077	2.890	0.004	0.347
III	PD	→ IES-T1	0.707	0.141	5.006	<0.001	0.478
	PSE	→ IES-T1	-0.880	0.217	-4.051	<0.001	-0.386
	IES-T1	→ IES-T2	0.799	0.065	12.348	<0.001	0.830
	PSE	→ PSS	0.280	0.094	2.982	0.003	0.366
	PSS	→ IES-T3	-0.547	0.270	-2.025	0.043	-0.178
	IES-T2	→ IES-T3	0.741	0.088	8.378	<0.001	0.692
	Paper	IES-T1	→ QoL-T1	-1.758	0.275	-6.389	<0.001
IV	IES-T1	→ IES-T2	0.770	0.062	12.488	<0.001	0.833
	IES-T2	→ IES-T3	0.815	0.096	8.464	<0.001	0.714
	IES-T2	→ QoL-T2	-0.971	0.282	-3.446	<0.001	-0.384
	IES-T1	→ QoL-T2	0.569	0.295	1.928	0.054	0.243
	QoL-T1	→ QoL-T2	0.739	0.092	8.057	<0.001	0.827
	IES-T3	→ QoL-T3	-0.994	0.225	-4.426	<0.001	-0.427
	IES-T2	→ QoL-T3	0.906	0.303	2.991	0.003	0.341
	QoL-T2	→ QoL-T3	0.878	0.111	7.937	<0.001	0.835

## 6.5 SUMMARY OF THE STUDY

The model in Figure 3 shows the statistically significant relations between the analysed variables in SE models fitted to the data in Papers II, III, and IV. The upper part on the left shows the result from Paper II; the relations between perceived threat (threat level), gender, PD, and PTSD. The model further illustrates the relations between these results and SEM analysis from Paper III: self-efficacy, social support, and the longitudinal measurement of

PTSD at T1, T2, and T3. The lower-right part of the model shows the relation from the SEM analysis in Paper IV and the connection between PTSD and QoL.

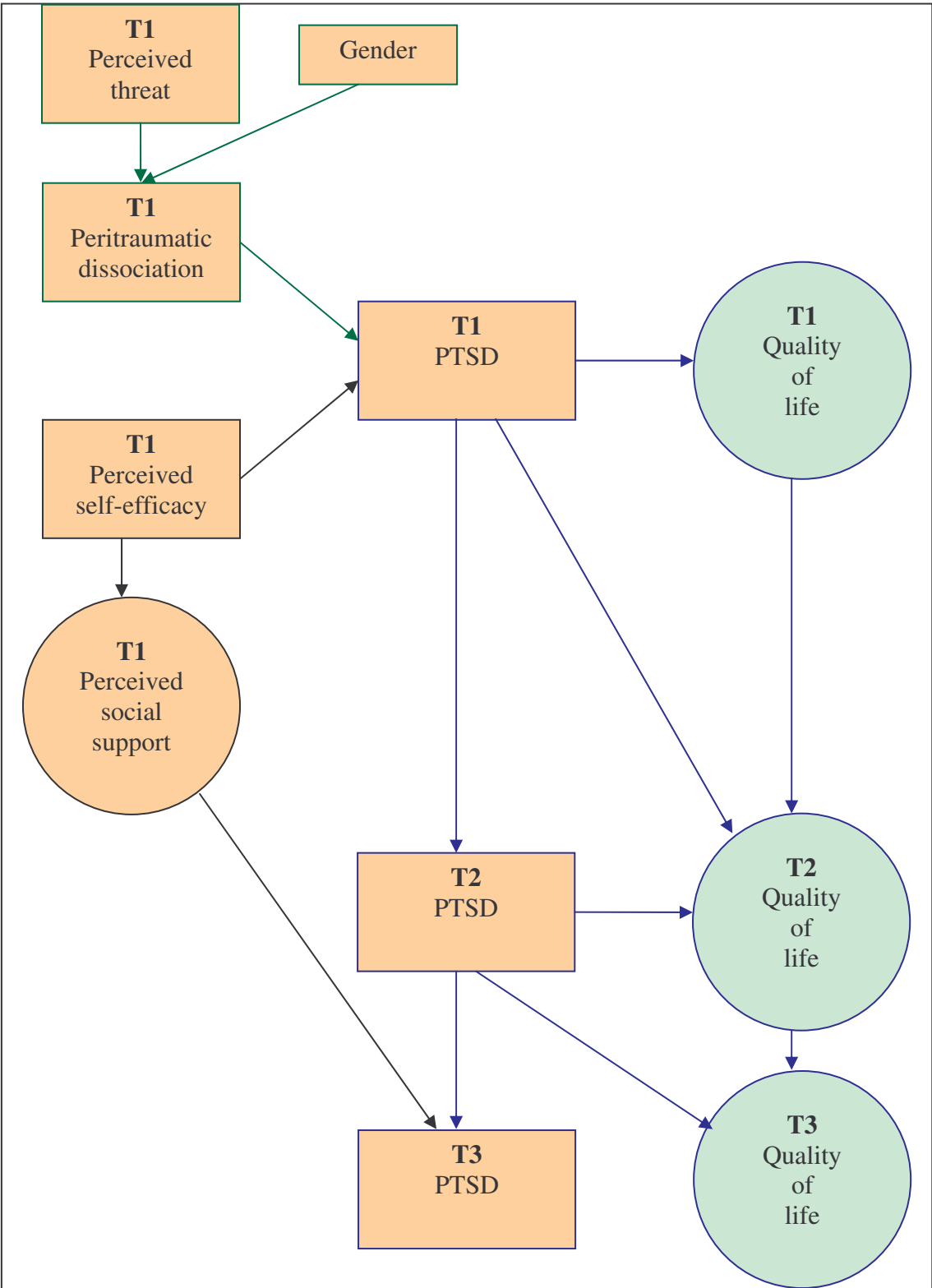


Figure 3: Model summarizing the statistically significant relations between the variables in SEM analysis in Papers II, III, and IV.

## **7.0 DISCUSSION**

### **7.1 STRENGTHS AND WEAKNESSES OF THE STUDY**

#### **Strengths**

The major strength of this study is that it is the first investigation of post-traumatic stress reactions and consequences related to quality of life in non-domestic violence victims. The study is based on a longitudinal and prospective design, which includes three measurement times and one semi-structured interview, with a combination of quantitative and qualitative methods. An expert group of supervisors collaborated to choose the relevant questionnaires used in the study. They were also engaged in the formulation and construction of the template used in the semi-structured interview. The team's creation of questionnaires and the semi-structured interview strengthens the validity of the present study. The questionnaires and the semi-structured interview template were evaluated after a pilot-project. All the data used in this study were collected by the same researcher, which strengthens the reliability and, it is hoped, the validity of the structured interviews. The researcher carried out the semi-structured interview within a group of experienced trauma researchers who worked with victims of violence, in order to test the content of the interview, and as a training exercise, before the interviews were done. Another strength of the study is that the researcher performing all the interviews is a trained nurse, experienced in both intensive care and psychiatry.

The gender distribution in our sample was typical for people reporting violent crime (other than domestic assault) in Norway, but the age distribution was somewhat skewed with a higher average age (Statistics, 2002b). This is most likely explained by our minimum age criterion of 18 years.

#### **Weaknesses**

##### **Representative sample**

The sampling did not occur as first planned, and the randomized inclusion of participants must be considered. It is important to discuss the representativeness and possibilities for generalizing the results according to the recruitment process. The detailed recruitment process is described in Appendix 2. Initially, the recruitment process planned incidental sampling of participants. The police and the emergency units were informed about the inclusion criteria.

The potential participants were to be asked whether the researcher might contact them. If the victim agreed, more information about the project was sent by post. Those who accepted signed an approval form, filled out a questionnaire, and should have been interviewed within four weeks after exposure to the assault.

The recruitment process was too slow and we were not able to include victims within four weeks after exposure. Changes during the process were made to retain the incidental sampling of participants. The researcher's presence at the emergency units was mostly during evenings and nights at weekends, because most victims of non-domestic violence seek medical treatment near the event. The specific weekends were not systematically chosen. The recruitment process also included victims who sought medical treatment at other times and were recruited by the researcher or the staff. The researcher's presence at the emergency units did not influence the attendance of victims but did affect the number of victims asked to participate. Incorporation of participants was occasional and the sample is considered to be convenient, with the incidental collection of data. The main rule of generality, based on research, is that a single study is not enough to draw scientific conclusions and change clinical practice. Keeping that in mind, it is hoped that our research, as an early study of non-domestic violence, will prompt new reflections and questions to guide future research and clinical practice.

### **Sample size and gender distribution**

Another limitation of the present study is the small sample size of longitudinal respondents; only 49% completed all assessments over the 12 months. The relatively high response rate at T1 is probably explained by the methodological combination of questionnaires and semi-structured interviews. However, recruitment and retention seem to be regular problems in studies that examine the psychopathological long-term responding of trauma victims (Dougall et al., 2001). Attrition introduces questions about who is dropping out and whether the most or least symptomatic participants are not responding to all three assessments. Such a bias would be a potentially serious methodological problem. However, in the present sample, respondents were comparable to dropouts in most ways except that they tended to be older, with a higher level of education. For instance, two young males and one female did not participate at T3 because they feared reminders. Another young male did not participate at T2 because he did not want to continue participation. He felt in good shape, but after the police dropped his case he experienced symptoms again, and subsequently participated in T3.

Other longitudinal studies in the field have also had low sample sizes (see Table 1). Future trauma research should consider whether the healthiest members of the sample usually respond to follow-ups in longitudinal studies (Weisaeth, 1989c). Another limitation of the sample size of the present study is that only 20% (30) at T1 and 17% (12) of the longitudinal respondents sample were female. Our results are in accordance with the fact that female victims are less exposed to non-domestic violence (Kilpatrick and Acierno, 2003). Other studies of this population also include low numbers of female participants (Table 1). Despite the typical gender distribution of people reporting non-domestic violence, additional research is needed to determine the degree to which our results would generalize to female victims of non-domestic violent assault.

### **Time variations**

The time from assault to interview varied from one to more than 16 weeks at T1, because of recruitment problems. Most of the respondents (97%) were recruited within 16 weeks, while 3% were recruited more than 16 weeks after the event. To handle this problem, the participants were categorized according to the time elapsed between assault and interview. The acute group included 49% (n = 70) of the participants who were interviewed within four weeks after the assault. Forty-eight per cent (n = 68) were interviewed between four and 16 weeks after the assault and were categorized as subacute (for detailed information of the time elapsed between assault and interview, see 5.1 participants). The second assessment (T2) took place 3 months later than T1, and the third assessment was 12 months later than T1. The time variations at T1 therefore occurred at T2 and T3 as well. The analyses showed no significant differences between time elapsed after exposure (acute and subacute groups) and the outcomes on PD, PTSS-10, IES-15, IES-22, or HSCL-25, and no statistically significant differences in the occurrence of probable cases and risk-level cases (Tables 2, 3, and 5, Paper I). We were therefore able to draw conclusions independent of time elapsed, based on the total sample in other analyses.

### **Use of only self-report questionnaires to screen for probable PTSD**

The interview data in our study did not include a clinical diagnostic interview such as the Clinician Administered Post-traumatic Stress Scale (CAPS). Using only self-report questionnaires to diagnose probable PTSD is another limitation. In an attempt to reduce this limitation, we used two scales to assess the occurrence of PTSD, the Post-Traumatic

Symptom Scale-10 (PTSS-10) and Impact of Event Scale 15 (IES-15). IES-22 was transformed to IES-15, making use of the cut-off points (Table 2) for evaluating probable PTSD cases. We found a similar occurrence of probable PTSD cases by IES-15 and PTSS-10, but some differences concerning risk-level cases. The IES-15 was examined in a study of crime victims by Wohlfarth et al. (2003) and found to be highly accurate in identifying PTSD cases, whether using DSM-IV or ICD-10 criteria. The questionnaire screens for PTSD cases with high sensitivity (ranging between 0.93 and 1.00) and specificity (ranging between 0.78 and 0.84) (Wohlfarth et al., 2003).

### **WHOQOL-Bref and IES-15**

The constructs of PTSD, psychological, physical health and QoL are believed to be distinct but probably closely related but, such as the construct of depression related to these other concepts (Diehr et al., 2006). Research has shown that subjective QoL is particularly poor in depressed populations (Orley et al., 1998, Aigner et al., 2006). Concerns have been raised that subjective QoL measures may be contaminated by psychopathological symptoms, especially depression symptoms. For instance, such comments were made in a study that evaluated depressive symptoms and QoL outcomes using the WHOQOL-Bref (Aigner et al., 2006). In our study, because of high correlations between the values obtained from the WHOQOL-Bref (four domains) and those from the IES-15, it may be reasonable to assume that assessing QoL in individuals with PTSD symptoms may be tautological measures. However, comparison of the questionnaires showed that only one item, sleep quality, focused on a similar area. Therefore, the high correlation may not be due to an overlap of the measurement tools. To further address this issue, we evaluated the relationship between the overall QoL item and IES-15 scores. These results also showed high correlations and explained variance, and supported the conclusion of probable PTSD as a powerful predictor of poor QoL.

QoL and psychopathology are basically independent constructs, but their relationship has to be discussed (Priebe et al., 1999). The influence of symptoms may sometimes be considered as a confounding variable, or as a factor that has to be omitted when analysing findings of QoL. After controlling for psychopathology, it is possible to look upon associations of other variables in accordance to QoL. On the other hand, the domain of mental health is an important part of the QoL concept, especially in the field of psychiatry (Priebe et al., 1999). It may be more valuable to look at psychiatric symptoms as an influence on mental health and include them as a more thorough way of understanding QoL. Priebe et al. (1998), in a study of

subjective evaluation criteria of self-rated symptoms, found a great overlap between perceived needs, psychiatric symptoms, and perceived QoL (Priebe et al., 1998).

Another important aspect is that the individual evaluation of one's own life through the self-reported QoL questionnaire is quite different from diagnostic measurement through the IES-15. The two questionnaires represent independent aspects of people's experience and functions. Indicating areas such as social relationships, environment, and the two single items, the WHOQOL questionnaire goes beyond the traditional measures of symptom levels (Orley et al., 1998).

## **7.2 CONTEXT OF AN INTERDISCIPLINARY APPROACH**

The damaging effects of exposure to violence are considered to be a significant public health problem (Hjemmen et al., 2002, Skjørten, 1999). Providing health care for victims is an interdisciplinary challenge involving all personnel groups in the public health sector. Other sectors, such as police and legal systems, are also involved in supporting mental health, through respectful handling of victims after exposure to violence.

As a nurse, I made some reflections upon the highlighted focus of diagnosis in the study. First, nurses may be involved with victims of violence in many different job situations. For instance, it is highly probable, in somatic and psychiatric fields, that a nurse will meet victims of non-domestic violence when working in hospitals, emergency units, nursing homes, or in community care. Another aspect is that victims of violence are persons of different ages, ranging from small babies to the elderly. As a nurse in a profession meeting people of all ages in a range of circumstances, it is important to be aware of the signs and symptoms that indicate that a person has been exposed to violence. Nurses also have tremendous opportunities to participate in the care and treatment of individuals suffering from post-traumatic stress disorders.

This thesis includes a focus on several diagnoses, such as PD, PTSD, and anxiety and depression that may develop after exposure to violence. This theme may be regarded as unusual in scientific work done by a nurse. I discussed and reflected on the use of PTSD as a "growing" diagnosis, and my "involvement" in diagnoses after exposure to violence in the scientific essay and one paper based on that essay (Johansen and Martinsen, 2004).

Psychiatric diagnosis may function as stigmatic labels, with several negative effects for the patient. Another aspect is the discussion on PTSD as “a medicalized” new diagnosis. On the other hand, many people experience diagnosis as a relief, because they gain access to social security and feel accepted as individuals with “normal reactions” after exposure to a highly traumatic event. My conclusion was that we need to know more about the occurrences of post-traumatic psychopathology, together with other material, after exposure to non-domestic violence. Such knowledge will show some important aspects of the burden these kinds of victims’ experience.

Examination of psychological reactions after exposure to non-domestic violence is in its early stages, and it is necessary and important to include diagnosis in descriptive research. Without numbers to describe the prevalence and predictions of different disorders, our research would probably not be of great importance to the interdisciplinary field. For instance, examination of the prevalence and severity of PTSD is one way of showing the dimensions of suffering after exposure and provides some opportunity for comparison with other studies. It has been important to draw attention to non-domestic victims in a general manner, including descriptions of who is exposed, the nature of the injuries, psychological reactions such as PD, PTSD, and anxiety and depression, self-efficacy, social support and the effects on quality of life.

## **8.0 GENERAL DISCUSSION**

### **8.1 THE PREVALENCE OF PTSD SYMPTOMS**

The present study shows a remarkably high prevalence of probable PTSD and PTSD symptoms at all three measurements times (Table 2, Paper II and Table 3, Paper III). We expected a high frequency of PTSD at T1, though not as high as the level we found (probable PTSD: 33–34%) in the “acute sample” participating at T1. The rate at T1 by the longitudinal respondents was lower (probable PTSD: 25.7% and 28.6%). The rates continued to be as high at T2 and T3, or even higher when scored on the IES–15 one year later (T3). In most cases PTSD develops shortly after the assault (Shalev, 2001), and usually those who express symptoms of PTSD shortly after a trauma recover. It is established that 10–25% of those who



initially meet the diagnostic criteria for acute PTSD continue to experience chronic PTSD (Shalev, 2001). The number of individuals who express PTSD symptoms declines over time.

Our expectations of lower prevalences were based on the fact that most of our sample consisted of young men who were at the peak of their physical and psychological health. Our findings oppose those of Breslau et al. (1999), who found the conditional risk of PTSD associated with assault violence was 6% in males (vs 36% in females). Kilpatrick and Acierno (2003) concluded in their review that men rarely develop PTSD in response to physical assault, but also stated that some forms of trauma, such as sexual assaults, perceived life threat during assault, and severe physical injury regardless of gender, are undoubtedly more distressing than others and carry with them a greater risk of developing PTSD. A study by Holbrook et al. (2001) confirmed the association of intentional injury, specifically through assault violence, with later development of PTSD. These findings are supported by other studies that found a high prevalence of PTSD in assault victims (Brewin et al., 1999, Elklit and Brink, 2004, Ozer et al., 2003). The high occurrence of probable PTSD in our study may be explained by the high occurrence of perceived threat, combined with severe physical injury.

The prevalence of probable anxiety and depression at T1 was also remarkably high in our study. The concurrency of PTSD and anxiety and depression is in accordance with reports of findings in many other studies (Shalev, 2001, O'Donnell et al., 2004a, Kilpatrick and Acierno, 2003).

### **Prevalence and gender differences**

Our findings of sex differences are in accordance with those of other studies, who found female victims exposed to assault violence to have a greater risk of developing PTSD (Kilpatrick and Acierno, 2003, Breslau et al., 1999). However, Ozer et al. (2003), in their review, found gender to be a weaker predictor than other variables. The prevalence values in our study (measured by IES-15) indicated that at T1, 54% of female victims and 29% of male victims had probable PTSD, which we consider to be high. Our results at T1 showed that 86% of the female victims had probable or partial PTSD (measured by IES-15), while the corresponding rate for men was 52% (see Table 2, Paper II). Our analyses showed no statistically significant differences between gender and perceived level of threat, and nearly 70% of assaults were categorized as “inflicted bodily harm” (see Table 3, Paper I). Our results

are in accordance with Holbrook et al.'s (2001) finding of high prevalence of PTSD after major trauma. They also found PTSD to be more frequent in female victims (39%) than in men (29%) (Holbrook et al., 2001). The limitation of only 12 women who responded to all three measures in our sample makes it difficult to analyse and publish gender differences according to the longitudinal design, but it is interesting to note that the prevalence of probable or partial PTSD at T3 (measured by IES-15) was 58% for female and 43% for male victims. Men are assaulted more often than women, but men are much less likely to develop PTSD. The severity of a traumatic exposure is often defined by subjective emotional responses, and perception varies between individuals. Different factors contribute to the intensity of the individual reactions to trauma exposure and influence potential development of PTSD. In a Norwegian study, 30% of raped female victims developed PTSD and 28% had developed moderate symptoms after one year (Dahl, 1992). Reactions after exposure to rape are independent of gender. Roughly the same proportion of raped men develop PTSD as raped women (Breslau et al., 1999, Yehuda, 2004). Offensive and insulting experiences may have an impact on later reactions. The possibilities of controllability, predictability, and perceived threat intensify the fear and helplessness responses during the event (Yehuda, 2004). That female victims exposed to assault violence have a greater risk of developing PTSD is not in dispute, but it is relevant to question whether the explanation is due to personal characteristics or to different sex experiences through the event (Yehuda, 2004). The situations may be very different. For example, when a man assaults another man they are often quite similar in weight and height, but when a man assaults a woman, he is often much bigger and stronger than she is. A review of the literature from epidemiological studies of trauma concluded that females may not be more vulnerable than men, but the traumatic events they experience are more devastating in type and severity (Solomon and Davidson, 1997, Breslau et al., 1999). Individuals who experience traumas associated with fear, helplessness, humiliation, guilt, and the inability to minimize the injury develop PTSD independent of gender (Yehuda, 2004).

### **Prevalence according to time elapsed**

One goal of this study was to investigate the acute and subacute reactions related to the amount of time after the traumatic event (Table 2, Paper II). Our result of no significant differences between the time since exposure (acute and subacute groups) and PD, PTSD, anxiety and depression, demographic variables, and perception of life threat, were unexpected. More than 90% of trauma survivors initially experience some kind of acute PTSD symptoms, and as time passes after a traumatic event, the strength of the reaction is

often reduced in most individuals (Shalev, 2001, Yehuda, 2004). Accordingly, our expectation was that we would find a higher prevalence rate in the acute group than in the subacute in this study. Even one year after exposure, our analyses showed a high occurrence of probable PTSD, measured by both the IES–15 and the PTSS–10 (Table 3, Paper III). Probable PTSD, measured by the IES–15, had increased from 26% to 31% across all three measurements of the 70 participants. Minimal differences in the number of probable cases as time elapsed may be explained by the high prevalence of PTSD caused by exposure to extreme distress throughout the event for many of our participants. The number of risk cases decreased over the year, indicating that the number of non-cases increased.

## **8.2 PREDICTORS OF PTSD SYMPTOMS**

### **Emotional experiences during exposure**

One conclusion of our study is that threat level is a predictor of later psychopathology through the main (direct) effect of PD. About 60% of the participants in our study perceived life at risk or fear of more severe physical injury. At T1, the variable threat level was significantly correlated with all outcome measures, as shown in Table 5 in Paper II, and it was found to be a predictor of PD at T1. Our finding of perceived threat as an indirect predictor of PTSD in the longitudinal design differs from the expectation of direct effect based on results of prior research, modelled in Figure 1. Subjective factors, such as fear of serious injury or fear of being killed during the assault, have been found to increase the risk of later post-traumatic disorders as mentioned earlier (Kilpatrick and Acierno, 2003, Holbrook et al., 2001), while the perceived successes of attempts to reduce or mitigate the injury decreases the risk of developing PTSD (Yehuda, 2004, Schnurr et al., 2004, Ozer et al., 2003). We found threat level to be a predictor of PD in the longitudinal analysis, but no significant correlation with other outcomes. This difference is probably explained by the different sample sizes at T1 and respondents at all three assessments.

Our results support the conclusion that emotional experiences during exposure are connected to the incidence of PTSD (Panasetis and Bryant, 2003, Zoellner et al., 2003). Our study showed a main (direct) association between PD and PTSD (Papers II and III) at T1, but not at later stages of PTSD (Paper III). Results showing PD to be a predictor of PTSD are in accordance with several other studies, which have reported that having dissociative symptoms during the trauma is a significant long-term predictor of PTSD (van der Kolk et al., 1996b).

These results also are in accordance with a longitudinal study of community violence survivors that showed a strong correlation between baseline assessment of PTSD symptoms and PD, although PD at baseline did not emerge as an independent predictor of subsequent PTSD symptoms at follow-up assessments (Marshall and Schell, 2002). It is important to ascertain whether strong individual dissociation may contribute to ongoing psychological problems. Individuals who have learned to cope by dissociation are often likely to continue to do so later on when exposed to minor stressors. The capacity to fully attend to life's ongoing challenges will be reduced if dissociation is used as the key to coping (van der Kolk and Fisler, 1995).

### **Physical injury**

No significant relationship was found between the level of physical injury (the two legal categories) and scores on the IES–22, PTSS–10 or HSCL–25 either at T1 or in the longitudinal design. However, when the three outcomes of PTSS, HSCL, and IES were combined as a single indicator of the common outcome of distress in the SEM analysis, the result became statistically significant. Physical injury was statistically significant as a predictor of distress (Figure 1, Paper II). This may be explained by the increased reliability caused by merging the specific outcomes of IES–22, PTSS–10 and HSCL–25 into one variable. Prior research findings of physical injury as a risk factor of PTSD have been nonconclusive. Some studies have found physical injury to be an important predictor of later PTSD (Kilpatrick and Acierno, 2003, O'Donnell et al., 2004b), although others have not found this (Joy et al., 2000, Schnyder et al., 2001, Holbrook et al., 2001). The conclusion is that physical injury does not need to be severe to precipitate adverse psychological reactions, such as PD, PTSD, and anxiety and depression. Taken together, the extent of the physical injury with regard to PTSD remains unclear.

All the participants in the present study, except two, were physically injured. One relevant issue is when one is first physically injured, whether the severity of physical injury might be less important. Alternatively, the legal categories of physical injury may not be sufficiently sensitive to differentiate between levels of physical injuries. This study also used self-report to report physical injured parts of the body and different types of injuries (Table 3, Paper I), which may not be sufficient in this kind of research. A better differentiation of physical injuries, based on categories prescribed by relevant instruments, would be preferable.

### **Prior experience of being a victim of violence**

Our findings that prior exposure to violence did not predict PTSD is in contrast with those of other studies, where prior experiences of victimization have been found to elevate the risk of emotional problems following new victimization (Kilpatrick and Acierno, 2003). Ozer et al. (2003 found that previous trauma was more strongly related to PTSD ) in their meta-analysis, when the traumatic event involved interpersonal exposure to violence in non-combat situations. While Brewin et al. (2000) showed that previous trauma predicted PTSD to varying degrees, according to the studied population and the methods used in their meta-analysis. In contrast, other studies report prior trauma exposure as beneficial: it fortifies the victim for future traumatic events (Dougall et al., 2000). It would be interesting to examine whether experience of some control, through the prior event, may have fortified the victim for this exposure, and if so, what kind of control.

In the present study, we used a dichotomous item (yes or no) to indicate whether participants had prior experience of violence. We did not quantify the type of violence or the type of reactions the victims experienced in relation to prior experience. One relevant aspect is whether previous complex traumatization may have influenced the psychopathological reactions for some of our participants. A limitation is that we do not know enough about earlier victimization, such as childhood traumas or other kinds of domestic violence. Some of our participants were exposed to gang violence and had also experienced several prior episodes of violence. Others had no prior experience of violence, living as protected and safe citizens. It would have been interesting to look at differences between these groups.

### **Perceived self-efficacy**

Low perceived self-efficacy was a predictor of PTSD at T1 in the present study (Figure 2, Paper III). Our findings are in accordance with Benight and Bandura's (2004) study, which reported perceived self-efficacy as a predictor of behavioural function and change in recovery from diverse types of trauma. Their consistent finding led them to conclude that self-efficacy is a focal mediator of post-traumatic recovery because higher self-efficacy performs an enabling and protective function, to manage the impact of traumatic and calamitous events (Benight and Bandura, 2004). In studies of self-efficacy and perceived control, individuals who believe they are able to exercise some control over adverse events display lower arousal and less performance impairment than those who believe they lack personal control (Benight and Bandura, 2004). According to Bandura (1997), beliefs of personal efficacy influence how

much people strive to control the events that affect their lives, and the level of stress and depression they experience in coping with all kinds of difficulties (Bandura, 1997). Self-efficacy influences their resilience to adversity. People who believe they can surmount their traumatization have a high level of perceived self-efficacy. They do not want to have their lives dictated by adverse circumstances and, if possible, take an active role in putting their lives back together (Benight and Bandura, 2004).

Our results showed a connection between perceived self-efficacy and perceived social support. Perceived self-efficacy influenced perceived social support at T1 in our study. Further on, perceived self-efficacy was found to be a predictor of perceived social support, with a main effect between perceived social support and PTSD. The connection between perceived self-efficacy and social support presumed in Figure 1 was in accordance with our findings of the influence of self-efficacy on social support, but not vice versa. Cutrona and Troutman (1986) showed a connection between perceived self-efficacy and perceived social support, for instance, in a relationship in which social support produces beneficial outcomes only to the extent that it raises perceived self-efficacy to manage environmental demands. Social support provides incentives for engagement in environmental and beneficial activities and, by demonstrating that difficulties are surmountable, it raises self-efficacy (Benight and Bandura, 2004). A low level of self-efficacy after exposure to assault may influence social support as well. In a study of self-efficacy, women who had experienced physical assault were less efficacious in turning off intrusive thoughts and more avoidant in everyday behaviour than others (Ozer and Bandura, 1990). Intrusive negative thoughts and very difficult environmental conditions may reduce perceived self-efficacy as well as social support, resulting in increased PTSD symptoms.

### **Perceived social support**

Our results showed a lack of perceived social support to be a predictor of PTSD symptoms at T3. Results from the present study are in accordance with findings by Scarpa et al (2006) showing that victimization and low perceived social support from family and friends predicted increased PTSD scores. Our findings are also in accordance with Brewin et al. (2000) in their analysis of risk factors for PTSD in trauma-exposed adults, which found social support to be the strongest predictor (weighted  $r = 0.40$ ). Different strengths of relationship between social support and PTSD were found by Ozer et al. (2003), according to the length of time that had elapsed since the trauma.

PTSD symptoms present one year after the traumatic event are considered chronic PTSD (American Psychiatric Association, 1994). It would be interesting to explore whether PTSD is a disorder with pre-existing risk factors. Such a conclusion would highlight the importance of identifying those who are at increased risk for PTSD for early treatment (Yehuda, 2004). Brewin et al. (2000), in their meta-analysis, found both pretrauma and post-trauma risk factors to be important. Factors defined as post-trauma risk factors, such as the severity of the trauma, additional life stress, and lack of social support, had a greater effect than factors that occurred before the traumatic event (Brewin et al., 2000).

Some argue that perception of available support influences general health and mental health more than supportive transactions, and that perceived and available support has a greater effect on health. The main effects of support on health may operate through a psychological or cognitive pathway (Dunkel-Schetter and Bennett, 1990). Severity of stress seems to be an important moderator of the discrepancy between perception of available support and received support. In conditions of high stress, where one's prior assumptions of available support are challenged, the distinction between available and received support thus seems especially pertinent to the buffering effect (Dunkel-Schetter and Bennett, 1990). The effect of social support is undoubtedly important, but further research is required to identify which aspects are most dominant.

### **Chronic PTSD**

Early PTSD predicts subsequent PTSD in our study. Our findings are in accordance with several other studies. Generally, persons who develop symptoms of PTSD recover within one year after the event, but those who still have symptoms after one year rarely recover completely (Kessler et al., 1995). Early intrusive, avoidance, or hyperarousal symptoms are expressed by the majority of trauma survivors and are therefore found to be poor predictors for the development of PTSD (Shalev, 2001). Enduring distress, including ASD or PTSD symptoms near the event, is found as a powerful and consistent predictor of later distress (Benight and Harper, 2002, Brewin et al., 1999, Brewin et al., 2003).

A significant minority of individuals develops prolonged, chronic PTSD that may persist for many years or indeed for life (Shalev, 2001). Unfortunately, little is currently known about why some individuals develop chronic disease while most of those exposed to trauma recover



from the acute response. Lately, several studies have examined the biological variables of genes and blood cortisol levels (Shalev, 2001, Yehuda, 2001). One important question is whether early treatment would decrease the number of individuals who develop chronic PTSD. Those who recover from prolonged PTSD often have some residual symptoms and vulnerability to subsequent stress (Shalev, 2001). They may develop the full PTSD syndrome again if exposed to significant trauma again. Persons suffering from PTSD are substantially more likely to develop anxiety, mood, and substance disorders than others. Risk of suicide attempts is particularly high among those suffering from PTSD, especially in individuals exposed to extreme distress or complex traumatization (Kessler, 2000).

Persons who suffer from the effect of chronic interpersonal violence are more likely to have chronic PTSD than others. They often have a more complex symptom profile that is likely to involve more severe forms of dissociation than those found in typical PTSD cases (Kessler, 2000). This profile is so distinct that some researchers have argued for the creation of a new diagnosis, “complex PTSD” or disorders of extreme stress, to characterize the specific response. This subtype of PTSD is particularly common among individuals exposed at an early age to chronic violence, and it is more chronic and disabling than ordinary suffering from PTSD (Kessler, 2000). As mentioned earlier, it is a limitation that we do not know if any of our participants suffer from complex traumatization.

Our results indicate that PTSD is a complex phenomenon that includes exposure to trauma and many other factors. Determining who is at risk and who is not at risk is difficult and involves identification of multiple risk factors. Figure 1 emphasizes the complexity of several interactions between the variables, according to prior research and theory. This construction functioned well, even though some of the findings of the present study did not support the findings of prior studies.

### **8.3 PTSD SYMPTOMS AND QUALITY OF LIFE**

Results from the present study showed lower mean values on the four domains (physical health, psychological health, social relationships, environment) and the two items (overall QoL and overall health) of the WHOQOL–Bref in those suffering from probable PTSD compared to those diagnosed as no cases at all times of assessment. Our findings are in accordance with most psychiatric studies that have investigated the relationship between



perceived QoL and psychopathology in terms of psychiatric symptoms (Priebe et al., 1999). The presence of depression and anxiety in this relationship has been particularly highlighted (Priebe et al., 1999). From that point of view, our findings are expected, as PTSD is categorized as an anxiety disorder in the DSM-IV, and with high comorbidity with anxiety and depression.

The concept of QoL, its measurement, and how to use the results have been discussed in the field of mental health (Aigner et al., 2006). QoL data are used to estimate the impact of different diseases on function and well-being, or to compare outcomes between different interventions, such as medication or surgery (Mendlowicz and Stein, 2000). Although there is no universal definition, most experts agree that the scope of QoL research should be focused on the subjective perception of the quality of one's own life (Mendlowicz and Stein, 2000, Rapaport et al., 2005). The symptoms and diagnosis of the vast majority of individuals with PTSD do not adequately describe the full extent of their suffering. Using the concept of QoL helps us to move from a narrower, symptom-centred view towards a more holistic view that acknowledges the individual's well-being (Priebe et al., 1999). QoL refers to very complex aspects of life that cannot be expressed by using only quantitative indicators. The concept includes phenomena that cannot be explored just by this kind of research. It is beneficial to combine several perspectives. Quantitative data about QoL may still be very important, because such information also explores patients' subjective opinions of aspects of their lives.

The negative impact of PTSD on QoL seems evident. A study of the psychometric properties of the WHOQOL-Bref questionnaire in the Norwegian general population (Hanestad et al., 2004) showed higher levels of QoL in all four domains and the two single items than the respondents in the present study who were categorized as probable cases or risk cases. Often, researchers have a tendency to regard the influence of psychiatric symptoms as a confounding variable and control their results for psychopathology. In the psychiatric field in particular, the domain of mental or psychological health would be judged as a vital part of the QoL construct. Subjectively perceived psychopathology has been associated with subjective QoL in our study, in accordance with other studies of psychiatry, and it may be relevant to consider psychopathology more thoroughly, in terms of QoL (Priebe et al., 1999). Priebe et al. (1999) also point out that psychopathology and QoL are basically independent constructs, but high association between their relationships deserves further research and attention. They suggest

that longitudinal research with a repeated-measures design will throw more light on causality and reciprocal interaction over time than most earlier cross-sectional design studies.

Our results showed probable PTSD to be a predictor of reduced QoL at all three measurement times. Probable PTSD at T1 was found to be a predictor of lower QoL at both T1 and T2. Similarly, probable PTSD at T2 was found to be a predictor of lower QoL at both T2 and T3. The present study showed high correlations, high explained variance, and statistically significant results, which all support the conclusion of probable PTSD as an important predictor of reduced QoL. The present results are in accordance with those of Holbrook et al. (2001), who reported PTSD to be strongly associated with a significant reduction in both short- and long-term QoL. Only a few studies have attempted to compare the impact of different anxiety disorders on QoL (Hansson, 2002, Mendlowicz and Stein, 2000).

According to Tatarkiewicz (1976), three core dimensions of happiness are life, time, and suffering. An evaluation of life as a whole, related to the past, the now, and the future, is an important aspect of happiness. Prior life is not only what we remember of positive or negative events, but also a basis for expectations of life here and now, and future life. Because now is passing fast, the past has more influence on the “future-picture” of one’s life. After all, the experience here and now may influence both the memories and the expectations for future life. For instance, psychological pain may create memories of earlier bad experience and anxiety for the future. Suffering obstructs happiness, and mental suffering may increase anxiety, despair, or other emotions, leading to restlessness and feelings of being unsafe. How to imagine the future is important as it influences the level of suffering. Individuals exposed to violence often mentally re-experience the trauma and they fear the same kind of event occurring again. This kind of experience and behaviour are evident, for instance, through clusters intrusion and avoidance, as seen in PTSD. Fear of possible future threats originating from something that does not yet exist, such as the thought of death, injury, or other frightening event, is one source of suffering. Another is when the expectation of a better future may become distressing, such as when the changes are protracted and one experiences the waiting as painful and forever. Uncertainty about the future is a third source of suffering, and increases during wars and traumatic periods of life. The need to make important preparations for an unpredictable future is mental torment for many. Despair is the last form of suffering, brought about by things that are still in the future. It chiefly attacks those who have lost their most precious and valuable things, or those who have been stripped of hope

and patience (Tatarkiewicz, 1976). Despair is the main cause of reduced happiness (Tatarkiewicz, 1976).

Suffering not only depends on the circumstances, but also on the individual's temperament. As with pleasure, the causes of suffering are not cumulative. It is not only the disease itself which influences the QoL, but knowing how to react and how to interact with others. According to Tatarkiewicz (1976), the feeling of hopelessness is not usually permanent, as some hope will gradually appear again and life will regain its attractions. These kinds of individual reactions and reflections regarding QoL may interact with the maintenance or reduction of PTSD symptoms. The re-establishment of hope and a more positive view of daily life may influence recovery or the reduction of PTSD symptoms.

One important requirement for QoL for most people is safety from crime and violence. Psychopathological symptoms that occur after exposure to violence often have a negative influence on perceived QoL (Priebe et al., 1999). Widespread consequences affect the victims' family members, who may also experience reduced QoL. The greatest consequences are the reduced freedom and mobility of those afraid of being exposed to violence or terror attacks.

Having found QoL to be associated with PTSD after exposure to non-domestic violence, it may be useful to look at the differences between the acute and long-term impact. It seems appropriate to examine those aspects of QoL that are immediately affected by the traumatic event and symptoms. Some QoL issues, such as physical pain and the ability to maintain daily activities, including work, may have a short-term impact on perceived QoL and should be considered for early intervention. The treatment plan should incorporate more than just a reduction of physical pain; it should help the victim to return to work as soon as possible. Attention to issues that impact on QoL would mean that treatment would go beyond the mere reduction of symptoms.

With regard to long-term conditions, Figure 3 shows the path of social support as an essential predictor of PTSD. It is reasonable to suggest further connections between social support and QoL. Individuals who suffer from PTSD may become socially isolated through avoidance reactions and low self-esteem. In cases of long-term impact on QoL, treatment should include information on the usual reactions after exposure to violence and the importance of taking

care of social relationships and supportive family and friends. The expectation that the health care system should be responsible for QoL may be considered paternalistic and is not a desirable solution. Generally, people are capable of choosing how to live, but some assistance with focusing on their QoL, with respect for their wishes, may be of great help for many victims.

#### **8.4 THE ROLE OF SOCIO-ECONOMIC INEQUALITIES**

Socio-economic factors such as education level and work-related variables were measured in the present study. Based on a descriptive interpretation the educational level of our participants seems higher than the general Norwegian and Hordaland's population and nearly at the same level as the population in Oslo (Statistics 2003). Both the educational level and status as employee by our participants seems high compared with the findings of other national and international studies (Kilpatrick and Acierno, 2003, Pape and Stefansen, 2004, van Wilsem et al., 2003, WHO, 2002). In comparison with a study conducted in Bergen by Steen and Hunskaar (1997) our sample had a higher number of employees (67% versus 40%) and a lower number of unemployed (11% versus 21%). One study that estimated PTSD in the community found a low level of education, such as not completing high school, to be a risk factor (Breslau et al., 2004). However, our finding supports Wohlfarth et al. (2001), who also unexpectedly found that those with a higher level of education had a higher risk of being victimized (Wohlfarth et al., 2001). The present study used emergency units and police-initiated recruitment of participants. It may be that those with a high level of education are more often exposed to non-domestic violence or may be more likely to seek medical assistance or report physical assaults to the police than those with lower education levels. However, the available literature suggests that only a minority of adult assault victims seek treatment or report the event to police.

In Norway, there has been discussion of whether exposure to violence is accidental or not, and some researchers have claimed that victims of non-domestic violence belong to a specific "subgroup" of low educated and unemployed young men (Pape and Stefansen, 2004, Steen and Hunskaar, 2004a). Our study shows that it is important to avoid extremes and consider other variables. We need to moderate and be aware of several nuances. The truth may look different from different perspectives. One-third of our sample group considered their exposure to violence to be a coincidence; they attributed it to being "... in the wrong place at the wrong

time”. Nearly 60% of our sample felt they had not provoked the perpetrator. We found that victims of violence may experience a mixture of feelings, with anxiety being the most frequent emotion during the event. We find it relevant to reduce the stereotype that victims of non-domestic violence are poorly educated, unemployed young men with high levels of alcohol consumption. Certainly, alcohol use is usually associated with both the victim and the perpetrator of violence (Kilpatrick and Acierno, 2003, Kvaal and Kvaal, 2000, Pape and Stefansen, 2004). However, it is important to attend to some nuances, and to consider the 40% of victims in our study who had not consumed alcohol before the event. Some of our participants did not want to come forward as victims because of the stigma and negative attitudes regarding non-domestic violence. Despite our recruitment through emergency units and police, 25% of our participants did not press legal charges and 19% did not seek medical treatment. Other studies also demonstrate that a large proportion of assault victims do not seek medical treatment or press legal charges (Brink, 2000, Steen and Hunskaar, 2000, Stene, 2004). Changes to less stereotypical attitudes may result in an increased willingness to seek medical treatment, which in turn may reduce psychopathology. It may also increase the willingness to press legal charges and therefore influence both crime statistics and health care recordings. The occurrence of assault violence as a public health problem would become even more visible.

Another relevant aspect to consider is the attitude towards men, particularly young men, as victims. My impression throughout this research was that working with male victims is not considered to be as “politically correct” as working with female victims. Several stereotyped attitudes are present in mental health care and the society: it is not desirable to offer interventions and treatment to a group of egocentric people who spend their weekends drunk and aggressive. Another view is that men are impossible to treat; either do they not want follow-ups or they are not able to benefit from treatment because of their lack of ability to express their feelings verbally. These kinds of negative stereotype attitudes are not representative of reality. Young men, like other humans, are important, and many are vulnerable.

## 8.5 CONCLUSION

Some striking findings have emerged.

Psychological reactions among victims of non-domestic violence are a significant problem with the occurrence of both PTSD and anxiety and depression in the acute phase. Both in short- and long-term perspective, our results showed high prevalence of probable PTSD cases. Analysis of acute or subacute reactions showed no significant differences between elapsed time since exposure to violence and PD, PTSD, anxiety and depression, or threat level.

Our results support the conclusion that emotional experiences during exposure are related to the incidence of PTSD. Findings showed PD to be a main predictor of PTSD in the short-term perspective. In addition, threat level predicted PD in the longitudinal design and, indirectly, PTSD.

Our study showed perceived social support to be an important predictor of PTSD in long-term persistence. The connection between self-efficacy and social support may be of great importance to the individual's ability to handle problems after exposure.

Our findings support the understanding of PTSD as a complex phenomenon. Figure 3, constructed to illustrate probable causal paths, shows that PTSD is not a dichotomous variable. From a dynamic view, it is logical that a causal connection between several variables cannot be detected in a conventional longitudinal design.

Both acute and prolonged PTSD, according to our findings, may negatively influence the perception of QoL. One main aim of interdisciplinary work is to focus on optimal QoL, despite exposure to non-domestic violence. Focusing on QoL, together with psychopathology, may bring victims to the fore and increase interest in their opinions. Focusing on QoL may also identify problems or difficulties of great importance for long-term perspectives.

## 8.6 CLINICAL IMPLICATIONS

One main goal of treating PTSD is to help individuals to live in the present, without feelings or behaviours that belong to the past (van der Kolk, 1994). In general, individuals who suffer from PTSD after exposure to violence tend not to seek psychiatric treatment. The available literature suggests that only a minority of adult victims seek treatment (Hembree and Foa, 2003, Stene, 2004). Those seeking treatment for physical injury or somatization problems caused by PTSD symptoms may be treated for their medical problems, but not the cause, which may prove both ineffective in alleviating their psychopathology and costly (van der Kolk and Fislser, 1995).

Experience of non-domestic violence may cause serious, chronic emotional problems. Identification of vulnerable persons is important, as it will give increased opportunities to establish preventive interventions. Because some degree of distress after exposure to traumas such as violence is normative and resolves in most victims, pharmacotherapy and directed psychotherapeutic interventions should not be considered indiscriminately for all persons who experience some post-traumatic distress after exposure to violence. Early identification of important risk factors, included in an optimal treatment strategy, would perhaps protect against the development of PTSD. Being aware of symptoms such as perceived life threat and PD during the event, and PTSD symptoms in the acute phase, would help to identify some of those in need of special follow-ups. The simple act of asking victims who seek medical assistance about how they felt during the event may introduce a discussion that leads to identification of vulnerability. It is hoped that identification of early markers for PTSD, such as those mentioned above, will identify individuals at high risk of developing PTSD. To consider the complexity of adapting to potential traumatic events such as violence, a more extensive treatment approach to psychiatric reactions should be developed.

According to the present study, individuals “diagnosed” with full or partial symptoms of PTSD have a poor QoL compared with those not diagnosed, or norm populations. These QoL results demonstrate chronic, highly negative influences on the individual’s perceived reality of their own situation. Early identification of probable PTSD and impact on QoL is very important because those who remain ill one year after the event rarely recover completely (Freedman et al., 1999, Kessler et al., 1995). The present findings have clear practical implications. Clinical implications must first prioritize interventions to prevent the



development of PTSD and then follow up those with PTSD. In addition, to evaluate medical disability for financial compensation of victims of non-domestic violence, an assessment of QoL may be very useful.

The findings in the present study show that PTSD has a high impact on QoL. The presence of PTSD in both the acute and the later stages is a predictor of poor QoL in all domains. How to effectively implement preventive and early intervention strategies in this group of victims may be guided from such knowledge. Early recognition and treatment of psychological morbidity will have important implications for the development of advanced trauma care systems and improved long-term QoL. A focus on the individual's perception of his or her circumstances and consideration of QoL in addition to the illness may influence both the patient's and the therapist's priorities, and the efforts made in treatment. The diagnosis and symptoms may not be the most central concern of the patient, and focusing upon QoL puts the individual at the centre of inquiry. To advance the treatment outcome, therapeutic strategies with PTSD patients should include a comprehensive approach by focusing on perceived QoL, as well as symptom reduction.

One attitude concerning non-domestic victims, verbalized in clinical practice, is that individuals exposed to only one traumatic event will often recover spontaneously, and that individuals exposed to complex trauma should be prioritized in clinical treatment. This study shows that individuals exposed to non-domestic violence may have great psychopathological problems afterwards, independent of number of events. Some of them are without doubts, in need of treatment.

Research shows that some kinds of exposure and some predictors are more important than others in the future development of PTSD. It may seem that some groups of victims are considered to be "more important" in clinical contexts than others. Currently, complex traumatization is considered to be an important risk factor in developing PTSD, and exposure to one traumatic event is considered to be relatively "harmless" and no longer of interest for inclusion or prioritization in intervention programs. Such black and white understanding of victimization with absence of nuances is wrong attending to the possible opportunity to take care of those in need of follow-ups, despite kind of trauma type or one or several events. We know that exposure to a single traumatic event or to repeated or ongoing trauma can lead to PTSD (Shalev, 2001). It is imperative that mental health professionals and the general



medical community have throughout knowledge of risk factors, presentation, diagnostic tools, and treatment strategies to fight against PTSD. PTSD may be the harbinger of a lifetime of suffering and disability, with serious consequences. The disabling comorbidities, such as anxiety and depression, substance and alcohol use, and reduced quality of life, make action against PTSD an interdisciplinary responsibility. Clinicians have to be aware of individual experience and symptoms when offering follow-ups and psychological treatment. To design prevention strategies, a better understanding of factors that affect vulnerability or resilience in those who have experienced violence is imperative.

Interdisciplinary research will allow experts such as police and teachers to be more cognizant of traumatic events. For instance, essential implications for the police and the juridical system may be the importance of the victims experienced threat level. Awareness of reactions to the exposure and supportive behaviours by those who deal with victims of violence daily may increase the QoL of victims. Such supportive conduct by those outside the health profession demands increased education about psychological reactions after exposure to violence and health-promoting behaviours.

The variables assessed in the present study may provide useful information for identifying individuals who will need psychological interventions after exposure to non-domestic violence. Our findings contribute new information to the ongoing effort to identify factors associated with PTSD and quality of life. In conclusion, our findings are important and provocative.

## **8.7 IMPLICATIONS FOR FURTHER RESEARCH**

Further research on individuals exposed to non-domestic violence is required in several areas. Theoretical and clinical knowledge concerning short- and long-term psychological consequences, as well as the impact on quality of life, is needed to get a better understanding of factors that affect the vulnerability or resilience of those who have experienced violence. Increased knowledge is imperative if preventive strategies are to be designed. According to the International Consensus Group on Depression and Anxiety (2004), awareness of PTSD in the medical and lay communities is growing, but ongoing work is needed to improve the recognition and treatment of PTSD (Ballenger et al., 2004).

Most research into reactions after exposure to violence uses a quantitative design, and some studies include clinical interviews such as CAPS to diagnose PTSD cases. There is an obvious lack of studies using qualitative designs. The qualitative approach tends to give insight into the field that ordinary questionnaires do not give. Combinations of qualitative and quantitative methodology will increase the total insight and form a better basis for understanding the victims' perspective. This kind of knowledge will be of importance in treatment priorities and efforts. Most study perspectives, such as descriptive and longitudinal studies, would be improved by the use of both quantitative and qualitative approaches.

Further descriptive studies need to be done to gain further information about those who are exposed and about the relationship between variables such as demography, gender, physical injury and crime characteristics, and psychological reactions. More descriptive and epidemiological studies are needed to determine the prevalence of PTSD and comorbid diseases in both female and male victims of non-domestic violence. Studies that develop and validate methodology for obtaining trauma histories in clinical settings are also needed to establish reliable findings and to generate greater interest in non-domestic victims in the field.

Because most prior studies are based on cross-sectional designs, it is necessary to prioritize longitudinal studies in order to examine predictors of psychological psychopathology. Focusing both on risk factors and on protective factors after exposure will increase the possibilities of creating effective treatment and follow-up guidelines. Such studies would facilitate the recognition of early markers for PTSD. Prospective studies over several years would allow increased insight into long-term reactions after exposure to non-domestic violence. Some victims may experience delayed onset of PTSD, which only longitudinal studies would be able to register. Two of our participants experienced delayed onset, one after one year. This kind of focus is recommended as a part of prospective studies. Cohort studies that compare analyses according to normal populations or other relevant groups would be of great benefit in teaching us about psychological reactions after exposure to violence.

Factors or conditions that protect against the development of PTSD are of great interest. The environment after exposure to violence has been shown to be the most important predictor of chronic PTSD and other negative aspects. The conclusion based on our results shows that an adverse environment without social support may increase the risk of PTSD and that positive experiences of social support may protect against PTSD. If we could match supportive

components to stress, we could construct better support-based interventions and be aware of the kind of support appropriate for the specific event and individual.

Clearly, the research and clinical response to violence must be understood in the context of both vulnerability and resilience. Further research of severity, the individual response to violence, and the impact of perceived self-efficacy and perceived social support on subsequent development of PTSD, is necessary. Such studies would identify factors that increase vulnerability or increase resilience to PTSD. Such studies would also identify factors that are associated with vulnerability to subsequent traumatic events. Another priority would be the connection between perceived self-efficacy and social support.

Other aspects, such as early treatment intervention studies and specific treatment projects, are important to generate further knowledge. Studies that evaluate the effect of early preventive treatment in high-risk victims are needed. Such studies would help us to identify those who will benefit from early follow-ups after exposure to non-domestic violence. Studies of how to identify treatment candidates among those in high-risk of chronic PTSD” would also be important. The findings of the present study may give some understanding of the identification of high-risk victims.

It is also recommended that complex traumatization and prior violence in victims of non-domestic violence be researched further. Several studies show that complex traumatization causes a high risk of complex PTSD and high rates of suicide (van der Hart et al., 2005, Zucker et al., 2006, van der Kolk et al., 2005). As mentioned in the discussion, it is important to learn more about the prior experience of violence and to differentiate between risk factors and protective factors.

Studies of neurobiological changes that may occur after exposure to violence are also important. A broad perspective in future research will give us increased opportunities to fight against and lower the negative attitudes toward victims of non-domestic violence, from both an individual and a public health aspect.

Refinement and development of reliable, valid, and sensitive QoL measures for use in psychiatric populations must be considered as an important area of research and will ensure that the measures used to examine PTSD represent a valid reflection of the phenomenon.

Further studies on the relationship between QoL and PTSD are suggested. Studies investigating the link between PTSD and QoL will result in a broader understanding of victims' perspective after exposure to violence. One of the main aims of nursing is to support victims of violence to get an optimal QoL. The present study and prior research show that suffering from PTSD negatively influences QoL. Future research should investigate variations over time according to different issues of QoL. Such knowledge will make it possible to create broader treatment plans, including nursing interventions such as education and counselling models. Such intervention studies will increase our knowledge of how to enhance coping skills and improve QoL in victims of violence, in both acute and long-term perspectives. It may also improve our knowledge of the connection between perceived threat , PD, PTSD, perceived social support, perceived self-efficacy and QoL.

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# APPENDIX 1

## Table 1

## Appendix 1

Table 1: Prior research of assault violence and crime victims

Authors Title	Aims	Design/method	Sample	Questionnaires/ interview	Findings
Andrews, B. Brewin, C. R. & Rose, S. (2003)  Gender, social support, and PTSD in victims of violent crime	Investigate gender differences in level and interactions of social support, and PTSD in victims of violent crime.	Research paper  Interview + questionnaires within 1 month  Questionnaires 6 month post-crime	A mixed-sex group of crime victims; same sample as Brewin et al. 1999 (57% responded at T2)	Crisis Support Scale  Post-traumatic Stress Disorder Scale-Self Report (PSS-SR)  Perceived social-support	Women reported more negative support from family and friends and higher PTSD, similar at 1 and 6 months.  Poor social support linked to development of PTSD.
Benight, C. C. & Bandura, A. (2004)  Social cognitive theory of posttraumatic recovery: the role of perceived self-efficacy	Examine the role of perceived coping self-efficacy in recovery from diverse traumatic experiences within the framework of social cognitive theory.	Review and theoretical framework	Traumatic experiences including natural disasters, technological catastrophes, terrorist attacks, military combat, sexual and criminal assaults	Study that applies multiple controls for diverse sets of potential contributors to post-traumatic recovery.	Consistent support for perceived self-efficacy as a mediator of post-traumatic recovery.
Birmes, P., Brunet, A., Carreras, D., Ducasse, J. L., Charlet, J. P., Lauque, D., Sztulman, H. & Schmitt, L. (2003)  The predictive power of peritraumatic dissociation and acute stress symptoms for posttraumatic stress symptoms: a three-month prospective study	Examine the power of peritraumatic dissociation and acute stress as predictors of PTSD.	Longitudinal Brief report  Assessment within 24 hours after the assault + 2 weeks + 3 months after the trauma	Assault victims  T1: n = 87 T3: n = 35 (40% responded at T2, 15 male, 20 female)	Peritraumatic Dissociative Experience Questionnaire at T1  Stanford Acute Reaction Questionnaires at T2  Clinician Administrated PTSD Scale + Impact of Event Scale at T3	PD and ASD as robust predictors of PTSD  PD and ASD accounted for 33% of the variance in PTSD symptoms.
Brewin, C. R., Andrews, B., Rose, S. & Kirk, M. (1999)  Acute stress disorder and posttraumatic stress disorder in victims of violent crime	Examine the power of acute stress disorder and its component symptoms as predictors of PTSD 6 months after a traumatic event.	Research paper  Interview + questionnaires within 1 month  Phone interview + questionnaires 6 month post-crime	A mixed-sex group of assault victims; 2161 invitations were sent, to which 243 responded. T1: n = 157 interviews were achieved (118 male 39 female)	Post-traumatic Stress Disorder Scale-Self Report (PSS-SR)  Structured Clinical Interview for DSM-III-R (SCID)  Impact of Event Scale-15	Rates: ASD = 19%, subsequent PTSD = 20%, ASD predicted PTSD (83%)  ASD and high levels of re-experiencing or arousal symptoms predicted PTSD.

			T2: n = 138 (57% resp at T2)		
Brewin, C. R., Andrews, B. & Rose, S. (2003)  Diagnostic overlap between acute stress disorder and PTSD in victims of violent crime	Investigate diagnostic overlap between acute stress disorder and PTSD and their ability to predict PTSD at 6 months.	Brief report Interview + questionnaires within 1 month Phone interview + questionnaires 6 month post-crime	Same sample as Brewin et al. 1999 A mixed-sex group of assault victims.	Post-traumatic Stress Disorder Scale–Self Report (PSS–SR) Structured Clinical Interview for DSM–III-R (SCID)	ASD and PTSD at T1 were predictors of PTSD at T2
Dahl, S., Varvin, S. (1986)  Violence and victims of violence in Oslo	Investigate psychological reactions after exposure to violence.	Pilot project	11 victims	Examination of the victims as soon as possible after their exposure.	Nine of 11 developed psychological problems.
Dunmore, E., Clark, D. M. & Ehlers, A. (1999)  Cognitive factors involved in the onset and maintenance of posttraumatic stress disorder (PTSD) after physical or sexual assault	Investigate cognitive factors involved in the onset and maintenance of PTSD after physical or sexual assault.	Cross-sectional  Compared victims who did not and who did suffer PTSD	Physical or sexual assault victims, (exposure as adult at least 3 months prior) 92 victims (67 physical assault), 44 female and 48 male victims	PTSD symptom scale (PSS–SR)  Beck Depression Inventory (BDI)  Several questions about the assault, life threat, thoughts during the assault, emotions during the assault, appraisal of actions, appraisal of initial post-trauma, others' reactions, cognitive/behavioural strategies.	Cognitive factors associated with both onset and maintenance of PTSD were: mental defeat, mental confusion, negative appraisal of emotions, negative appraisal of symptoms, perceived negative responses of others, permanent change, avoidance / safety behaviours, global beliefs before and after assault and change in beliefs.
Elklit, A. & Brink, O. (2004)  Acute stress disorder as a predictor of post-traumatic stress disorder in physical assault victims	To examine acute stress disorder and other trauma-related factors as predictors of PTSD.	Research paper  Questionnaire 1–2 weeks + 6 months after the assault	Physical assault victims  T1: n = 214 T2: n = 128 (60% resp at T2) (98 men, 30 women)	Harvard Trauma Questionnaire  Trauma symptom checklist  Crisis support Scale	Prevalence: Full PTSD = 22%, partial PTSD = 22%, ASD predicts PTSD (79%)  Previous lifetime shock, threats during event, and dissociation explained 56% of variance, inability to express feelings, hypervigilance, impairment, and hopelessness explains another 15%.
Holbrook, T. L., Hoyt, D. B., Stein, M. B. & Sieber, W. J. (2001)  Perceived threat to life predicts posttraumatic stress disorder after major trauma: risk factors and functional outcome	To examine risk factors for PTSD and to assess the impact on QoL.	Longitudinal Research paper 1-, 6-, 12-, and 18-month follow-ups.	1048 patients in the Trauma Recovery Project population, different kinds of trauma including assault baseline T1: n = 824 T2: n = 806 T3: n = 780	At T1: Injury event questions including Perceived threat (dichotomous) Acute Stress Reaction (SARS), Impact of Event Scale (IES), Structured PTSD interview (DSM–4), Quality of Well-being (QWB)	32% diagnosed with PTSD after 6 months, perceived threat to life predicted PTSD onset. PTSD was more frequent in women (39% versus 29%) and in younger low-income patients. Assaults and penetrating trauma were major risk factors. PTSD had major impact on QoL at 6-, 12- and 18-month follow-ups.

Jaycox, L. H., Marshall, G. N. & Orlando, M. (2003)  Predictors of acute distress among young adults injured by community violence	Examine predictors of acute distress among young adults injured by community violence.	Cross-sectional Research paper Structured interview within 3 weeks of admission to hospital	Severely injured male victims via community violence 18–35 years old N = 267	Peritraumatic Dissociative Experiences Questionnaire (modified)  PTSD Checklist  Brief Symptoms Inventory (anxiety and depression scale)  Neuroticism  Social support (Medical Outcomes Study Social Support Scale)	Injury severity and neuroticism as predictors of PD, and PD, severity of injury, neuroticism as predictors of acute PTSD.
Joy, D., Probert, R., Bisson, J. I. & Shepherd, J. P. (2000)  Posttraumatic stress reactions after injury	Describe the background characteristics of a sample of individuals who experienced distress shortly after physical injury.	Cross-sectional Research paper  Prospective, Questionnaires Between 1 and 3 weeks after the event	Accident and emergency patients with physical injury and acute stress reactions, n = 152 (of 510 sent questionnaires) (455 men, 84 women)	Post-traumatic Stress Disorder Scale,  Impact of Event Scale,  Hospital Anxiety Depression Scale and a general information scale	During event: Feeling shocked = 90%, feeling anxiety = 76%, Prevalence: PTSD = 93%, unemployment and previous trauma were associated with increased PTSD.
Kilpatrick, D. G. & Acierno, R. (2003)  Mental health needs of crime victims: epidemiology and outcomes	Review epidemiological estimates of criminal victimization derived largely from nationally based studies in the USA.	Review from nationally based studies in USA	Victims of violent crimes (criminal homicide, alcohol related, vehicular homicide, sexual assault, aggravated assault, robbery) Female and male victims	Different questionnaires Risk for assault, PTSD, and comorbid factors such as depression, anxiety, substance abuse, and panic	Men assaulted more often, rates of PTSD range from 23–39%, women develop PTSD in response to sexual assault and physical assault at same rate, greater rates for women than men, earlier victimization predicts PTSD, completed rape, life threatening and physical injury increase risk of PTSD.  Persons who experience violence that causes physical injury combined with fear of being seriously injured or fear of dying during the assault have high prevalence of PTSD.
Kilpatrick, D. G., Saunders, B. E., Amick-McMullan, A., Best, C. L., Veronen, L. J., Resnick, H. S. (1989)  Victim and crime factors associated with the development of crime-related posttraumatic stress disorder	To examine the relationship between the development of crime-related PTSD and crime characteristics.	Cross-sectional Research paper  One group crime victims and another non-victim group	391 adult female, of whom 294 were crime victims	Incident Report Interview  Diagnostic Interview Schedule (modified)	Crime-related PTSD is associated with selected victims and crime characteristics such as physical injury, perceived threat of serious harm or death during the event, and completed rape.

Kushner, M.G., Riggs, D. S., Foa, E. B. & Miller, S. M. (1993)  Perceived controllability and the development of posttraumatic stress disorder (PTSD) in crime victims	Examine the extent to which severity of assault and perception of controllability predicted development of PTSD following criminal violence.	Cross-sectional Research paper	Crime victims 140 female	Controllability was measured in terms of capability to bring personal influence into adverse events and to manage emotional reactions.	Low perceived control contributed to enduring PTSD after the effect of assault severity was taken into account. Negative perceived controllability was partially associated with assault severity.
Marshall, G. N. & Schell, T. L. (2002)  Reappraising the link between peritraumatic dissociation and PTSD symptom severity: evidence from a longitudinal study of community violence survivors	To examine the relationship between symptoms of PTSD and recollections of peritraumatic dissociation experiences in a sample of survivors of community violence.	Longitudinal.  Days after exposure, 3 + 12 months after exposure, lay-interview	Young adult (18–35) victims of community violence with physical injury, 423 were eligible, T1: n = 386 T2: n = 275 T3: n = 250 (59%) 94% men	Injury Severity Scores  Peritraumatic Dissociative Experience Questionnaires (modified)  PTSD Checklist  NEO Five-Factor Inventory (Neuroticism)	PD was highly correlated with PTSD symptoms within each wave of data. Baseline recollection of PD was not a predictor of follow-up PTSD symptom severity after controlling for baseline PTSD symptom severity.
Paunovic, N. & Öst, L. (2004)  Clinical validation of the Swedish version of the Quality of Life Inventory in crime victims with posttraumatic stress disorder and a nonclinical sample	Conduct a cross-cultural validation study of the Swedish version of the Quality of Life Inventory in crime victims with post-traumatic stress disorder and a nonclinical sample.	Cross-sectional Research paper  Cross-cultural validation study of questionnaire by comparing two groups	Comparison of a crime victim sample n = 53 (22 men, 31 women) with PTSD and non-clinician group n = 100 with no lifetime and current psychiatric disorder from Stockholm	Clinician-Administered PTSD Scale  Anxiety Disorder Interview Schedule  Quality of Life Inventory	The questionnaires showed good internal validity in both groups, and turned out as useful.  PTSD group displayed lower perceived QoL in 13 of 16 domains.  QOLI was inversely correlated with interview and self-reported PTSD symptoms, depression, and anxiety.
Resnick, H. S., Kilpatrick, D. G., Best, C. L. & Kramer, T. L. (1992)  Vulnerability-stress factors in development of posttraumatic stress disorder	Examine potential interactions between the presence of different levels of crime stress in association with PTSD	Cross-sectional Research paper	Female community crime victims n = 295	Assess crime stress, (high crime stress level was defined as including either life threat, actual injury, or completed rape).  Incident Report Interview  Diagnostic Interview Schedule  Structured Clinical Interview for DSM–III-R	Prevalence of PTSD = 35% after high level of crime stress, and 13% after exposure to low level crime stress  Pre-crime diagnoses were not associated with high crime stress.  Pre-crime depression predicted PTSD in high crime stress group.
Scarpa, A., Haden, S. C. & Hurley, J. (2006)  Community violence victimization and	To test the relationship of community violence, victimization to severity of PTSD and the roles of	Cross-sectional Research paper  Volunteer psychology students who had	n = 372 (148 men, 292 women) Categorized in two groups: violent trauma n = 102,	Survey of Exposure to Community Violence-Self-Report Version  Event Scale  Scale of Perceived	High community violence exposure, high disengagement coping (i.e. avoiding styles), and low perceived social support predicted PTSD (victimization strongest).



symptoms of posttraumatic stress disorder: the moderating effects of coping and social support	copied style and perceived social support in moderating that relationship.	experienced a traumatic event in their lifetime	non-violent trauma n = 270	social support COPE Inventory Purdue Post-traumatic Stress Disorder Scale	Friend support had protective functions and seemed to break down at increasing levels of victimization.
Shalev, A. Y., Peri, T., Canetti, L. & Schreiber, S. (1996)  Predictors of PTSD in injured trauma survivors: a prospective study	Prospectively examine the relationship between immediate and short-term responses to a trauma and the subsequent development of PTSD.	Research paper  Prospective with two assessments, 1 week + 6 months after the event	Hospital patients were screened for presence of physical injury from traumatic event; 72 patients were eligible, n = 51 (31 men, 20 women) (71% completed)	Describing traumatic event + personal background Impact of Event Scale State-Trait Inventory Center for Epidemiologic Studies Depression Scale Peritraumatic Dissociation Experiences Questionnaires  At T1 + T2 PTSD module of Structural Clinical Interview for DSM-III-R  Mississippi Scale for Combat-Related PTSD (civilian version) at T2	Prevalence of PTSD = 25% at T2  Subjects with PTSD at T2 had higher PD, more severe depression, anxiety, and intrusive symptoms at T1.  PD at T1 predicted PTSD at T2 as highest factor, explained variance was 29%.  Initial Scores on IES predicted PTSD status with 92% sensitivity and 34% specificity.
Shepherd, J., Scully, C., Shapland, M., Irish, M. & Leslie, I. J. (1988)  Assault: characteristics of victims attending an inner-city hospital	Examine characteristics of victims of assault attending a district general inner-city hospital.	Cross-sectional Research paper  Screening of assault victims attending the hospital during a 6 month period	Assault victims attending a district general hospital n = 294 (249 men, 45 women)	Recording relevant data  Use of alcoholmeter  Injuries were charted and classified	15-30 age group, single men and the unemployed were most common. Facial injuries were most common. Most assault took place in city centre on Fridays and Saturdays. 29% were claimed to be unprovoked. 73% drank alcohol before the event, 54% reported to police.
Shepherd, J. P., Shapland, M., Pearce, N. X. & Scully, C. (1990)  Pattern, severity and aetiology of injuries in victims of assault	Describe pattern, severity, and aetiology of injuries in victims of assault.	Cross-sectional Research paper  Interview and examination at Accident & Emergency Department, all patients during 1986	Assault victims with physical injuries n = 439 (368 men, 71 women) mean age = 27	Interview  Classification of injuries	Facial injury was extremely common, 83% of fractures, 66% of lacerations, and 53% of haematomas were facial. Fractures = 26% were nasal fractures (the most common).  17% required hospital admission. Those who were kicked were most likely to need hospital treatment.  72% of injuries resulted from punching, 42% from kicking, 6% by knives, 11% by broken glass.

<p>Wohlfarth, T., Winkel, F. W. &amp; van den Brink, W. (2002)</p> <p>Identifying crime victims who are at high risk for post traumatic stress disorder: developing a practical referral instrument</p>	<p>To construct a practical instrument for the identification and referral of crime victims who are at high risk for post-traumatic stress disorder.</p>	<p>Longitudinal Research paper</p> <p>Questionnaire at police station (T1), 1- + 3-month follow-ups</p>	<p>Crime victims filing a complaint at police station 525 were eligible for the study T1: n = 126 (24% participated) (54 men, 72 women) T2: n = 91 T3: n = 94 T1, T2 + T3: n = 79 (62% of T1)</p>	<p>T1: Risk factors for PTSD (questionnaire) Medical Psychological Health Questionnaires (factor analyses)</p> <p>State Trait Anxiety Inventory</p> <p>NEO Five-Factor Model</p> <p>Peritraumatic Experience Questionnaire</p> <p>Alexithymia (self-constructed)</p> <p>Follow-up: PTSD symptom Scale</p>	<p>Predictors of PTSD: Is being a victim of violent crime, knowing the perpetrator, experiencing the results of the crime as worse than expected, and blaming oneself for the event.</p> <p>25% of PTSD cases received emotional support from a victim assistance organization.</p>
<p>Wohlfarth, T., Winkel, F. W., Ybema, J. F. &amp; van den Brink, W. (2001)</p> <p>The relationship between socio-economic inequality and criminal victimisation: a prospective study</p>	<p>Investigate the relationship between socio-economic inequality and criminal victimization.</p>	<p>Research paper Longitudinal 1 week, + 1- + 3-month follow-ups</p>	<p>Crime victims, N = 253 victims were questioned, T1: n = 119 (66 men, 53 women) T3: n = 119 (47%) and matched comparison group, n = 296 T1 = 90%, T3 = 71%</p>	<p>Socio-economic inequality, (education level + employment)</p> <p>Prior life stress</p> <p>Style of information processing</p> <p>Locus of control</p> <p>Distress (well-being) Social support</p>	<p>Probability of being victimized was higher among unemployed and among persons with higher education. The unemployed also showed an increased vulnerability for distress compared to all other class categories.</p>
<p>Yap, M. B. &amp; Devilly, G. J. (2004)</p> <p>The role of perceived social support in crime victimization</p>	<p>Explore the role that perceived social support plays in victims of crime.</p>	<p>Review</p>	<p>Crime victims 13 studies, 1 of mixed gender (non-domestic victims)</p>	<p>Social support as an endogenous, dynamic resource</p>	<p>Perceived social support can act as a moderator of distress in the early stages, but that as the stressors become numerous or chronic perceived social support turns into a mediator between the stressor and psychological distress.</p>
<p>Zatzick, D. F., Kang, S. M., Muller, H. G., Russo, J. E., Rivara, F. P., Katon, W., Jurkovich, G. J. &amp; Roy-Byrne, P. (2002)</p> <p>Predicting posttraumatic distress in hospitalized trauma survivors with acute injuries</p>	<p>Examine predictors of post-traumatic distress in hospitalized trauma survivors with acute injuries.</p>	<p>Longitudinal Research paper</p> <p>Interviewed at hospital + 1, 4, and 12 months after injury by phone</p>	<p>Victims with acute injuries from motor vehicle crashes or assaults, N = 156 T1, T2, T3: n = 101 (64%) (66 men, 35 women)</p>	<p>Post-traumatic stress disorder check list,</p> <p>Self-report scale</p> <p>Center for Epidemiological Studies Depression Scale</p> <p>Peritraumatic Dissociative Experience Questionnaire</p> <p>Abbreviated Injury scale</p> <p>Traumatic Event Inventory (modified)</p>	<p>73% screened positive for high levels of symptomatic distress.</p> <p>At 30–40% scored as PTSD 1, 4, and 12 months after the injury.</p> <p>Greater prior trauma, stimulant intoxication, and female gender were associated with higher levels of PTSD symptoms.</p> <p>Increasing injury severity was not associated with higher level of PTSD symptoms</p>

# APPENDIX 2

## Recruitment procedures

## **APPENDIX 2:**

### **Recruitment procedures**

#### *Recruitment*

Initially the recruitment of victims was intended to be within four weeks after the event in Bergen.

The police and the emergency units were informed about the inclusion criteria by the researcher.

*Recruitment by police:* The chief of police in Bergen informed the involved staff about the research project, but no participants were recruited. The superintendents often forgot to ask the victims if they would participate in our project, or they found it difficult to ask physically injured victims to participate in scientific research. After a few weeks, the researcher was allowed to run a focus group interview (as a part of a larger project) with the involved police staff. The effect on recruitment was remarkable. Recruitment by police then started, but it was impossible to complete the data collection within four weeks of the exposure to violence. Our first contact with the victims passed this limit because the police often wanted to examine the victims first as a part of their investigation. We expanded the elapsed time between the actual event and recruitment.

*Recruitment by the emergency unit* also was very slow. The information process occurred through a special information meeting, written information, and as a side effect through a focus group interview. The staff generally forgot to ask the victims of violence if they would participate in our project; therefore, the researcher had to be present at the emergency unit to do some of the recruitment herself.

Despite this new strategy, the recruitment process was too slow. Our experience of this delayed recruitment process taught us that we had to choose another solution, which is why we included Oslo as well.

The police in Oslo first established a special connection with “Grønland Police Station” and “Vold og sedelighetsseksjonen, politihuset på Grønland”. Grønland Police Station used our project as an opportunity to check some of their internal control systems. At the emergency unit in Oslo, the presence of the researcher taking part in recruitment was required. The

information processes used in Bergen were also used in Oslo.

The recruitment process by the police in Oslo was still slow, and the superintendents often forgot to ask the victims if they would participate in our project or they found it difficult to ask injured victims to participate in scientific research. The new strategy was to establish close cooperation with one superintendent, to facilitate recruitment by police. He asked his colleagues which potential participants the researcher was allowed to contact. After a while, the police in both Bergen and Oslo realized that our questions would not interfere with their investigations, and the first contact with victims was established more quickly after the event.

During the recruitment process, the researcher was present at the emergency units in Oslo and Bergen, mostly during evenings and nights in the weekends because most victims of non-domestic violence seek medical treatment near the event. The specific weekends were not systematically picked out. It made no difference whether it was the researcher or the staff who asked for permission to make a call. Afterwards, some of the staff at the emergency units remembered to ask the patients in Bergen and Oslo. The recruitment process improved. The recruitment process also included victims who sought medical treatment at other times, recruited by the researcher or the staff. The researcher's presence at the emergency units did not influence the "rush" of victims, only the number of victims asked to participate. In total, the recruitment process continued from September 2002 until October 2003, and data collection continued until December 2004.

# Paper I

**Assaulted victims of non-domestic violence in Norway**  
**-injury, crime characteristics and emotions during the assault**

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Declaration of interest: none

Violence is a negative and depressing part of human relationships, whereas consequences related to interpersonal violence cause a number of health problems in the world. The aim of this paper is to describe socio-demographic characteristics, injury, crime characteristics and emotions during the event in assault victims of non-domestic violence, and further evaluate possible associations between these factors. Data were collected from 149 victims by questionnaires and semi-structured interviews. Our results show that most of the victims were young men assaulted by unknown attackers in public places. The educational levels and the levels of employment in the present sample are high compared with those of other studies. Seventy six per cent of the participants suffered injuries to the head, face or eyes. About one third of the sample had serious injuries that required specialist treatment. Anxiety was the most frequent emotion felt during the assault, followed by aggression. Female victims were more likely to experience shock ( $p < 0.01$ ) and anxiety ( $p < 0.01$ ) during the incident than men. Nineteen per cent of the participants reported feeling shocked and frightened simultaneously. About 60% experienced a combination of subjective factors, such as fear of serious injury, being killed during the assault, and actual physical injury. It is reasonable to expect a high occurrence of future psychopathology among our participants.

**Keywords:** crime characteristics, demographic characteristics, gender, non-domestic violence, perceived threat, physical injury.

### **Acknowledgements**

We thank the local police and the local outpatients' department staff in Bergen and Oslo for their assistance in recruiting respondents who had been victims of violence. The authors acknowledge psychiatrist Páll Eiriksson for his support and in particular for his evaluations of the possible need for intensive care among the victims. The authors also acknowledge Superintendent Tron Sundt, Oslo police, for his classification of victims into the categories of



“assault” and “inflicted bodily harm”. We thank the Norwegian Ministry of Justice and the Police, the Norwegian Ministry of Health and Care Services and the Resource Centre for Violence, Traumatic Stress and Suicide Prevention, Western Norway (RVTS-West) for financing the transcription of the interviews. Most of all, we thank the participants.

## **Introduction**

Interpersonal violence is a frequent and serious problem that affects many individuals every year. Each year, more than a million people lose their lives, and many more suffer non-fatal injuries (1). Providing health care for the victims is an interdisciplinary challenge involving all personnel groups in the public health sector. Despite the fact that violence has always been present, we have little knowledge about what occurs during an attack and the psychological consequences after exposure to non-domestic violence. Information about violence is usually based on crime statistics and research on living conditions. Many assault victims, even when seeking medical assistance, do not report the assault to the police (2–4). The available literature also suggests that only a minority of adult assault victims seek medical treatment (5).

In the general population of the Western world, yearly incidence rates of violence of 3–7% have been reported (1, 3, 4). Fortunately, violence is still quite a rare occurrence in Norway compared with some other countries such as South Africa and the USA (1, 6). Nevertheless, incidents of violence have become more frequent in Norway as well. The damaging effects of exposure to violence are also considered a significant public health problem in Norway (6, 7).

The risk of being assaulted may vary with gender, age, socio-economic status, educational level, prior victimization history, and substance use (8). Research shows that assaults against women are often quite different in character to assaults against men. Women are more likely to be assaulted at home by their partners, while men are more often attacked on streets or in other public places by strangers (8, 9). Lately, assault violence committed against women by

strangers has increased in Norway (4). The risk of being exposed to violence is highest among those aged between 16 and 24 years of age. The risk of physical injury is highest among young men (1, 7, 8, 10). The association between violence and alcohol has been documented in several studies (3, 8, 9).

Numerous studies have documented the increased risk of health problems associated with lower social class (11), and low income is generally associated with an increased risk of being a victim of violence (8). Despite findings that show socio-economic inequality plays a central role in the occurrence of criminal victimization, socio-economic inequality has received limited attention in the trauma literature (12, 13).

Exposure to assault violence often results in a combination of physical injury and psychological stress, which cause both physical and psychological pain afterwards. A potentially traumatizing event such as violence may confront a person with such horror and threat that it may temporarily or permanently alter both their capacity to cope and concept of self. The human response to psychological trauma, including violence, is one of the most important public health problems in the world (1, 14). Violence has been found to cause psychological reactions such as post-traumatic stress disorder, anxiety, and depression during the first week after the incident (8, 15, 16). Three months after the event, people injured in assaults have much higher levels of anxiety and depression than those injured in accidents (16). The crime characteristics of assault violence may induce potentially psychopathological reactions (8). For instance, the risk of post-traumatic emotional problems is greatest in victims who report that during the assault they feared being killed or seriously injured, or actually were injured (8, 17). Because perceived threat to life, perceived threat of severe injuries, or actual injuries increase the risk of developing post-traumatic psychopathology, it is important to identify the forms of trauma associated with such experiences (8).

It is important to expand our knowledge of what characterizes the context of being victims of non-domestic assaults. Such knowledge may be useful in society's interactions and resisting violence through preventive action. On the other hand, increased knowledge will also be valuable in our interdisciplinary challenge of developing treatment, care and follow-up to those exposed to violence. To our knowledge, no other descriptive study has focused on the combination of physical injuries and emotions experienced by victims during non-domestic assaults.

The aim of this paper is to describe socio-demographic characteristics, injury, crime characteristics and emotions during the event in assault victims of non-domestic violence from two Norwegian urban communities, and to evaluate possible associations between these factors.

## **Methods**

The present study was a part of a larger study of the consequences of non-domestic violence combining semi-structured interviews and questionnaires. This study had a cross-sectional design, combining demographic information collected by questionnaires and data on crime characteristics and physical injury through semi-structured interviews.

### ***Sample and data collection***

In this study, physical violence was defined as behaviour in which one or more persons intentionally hurt another person physically. Inclusion criteria were that the victim sought out an emergency unit or reported an offence to the police in relation to an actual physical assault in Bergen or Oslo, Norway. To qualify, victims had to speak Norwegian, be over 18 years old and assaulted by a person other than a family member, or a present or former intimate partner. With the assistance of local police and medical services, participants were identified and recruited for the study.

Two hundred and fourteen people were asked to participate; 40 refused (37 men and three women). Twenty-five people were ineligible for the study because they did not satisfy the inclusion criteria (four women and two men had been assaulted by a partner, four boys and one girl were under 18 years old, 11 men did not speak Norwegian, and three men gave an incorrect phone number at the emergency unit). The final sample consisted of 149 Norwegian-speaking adults (142 were interviewed and 143 answered the questionnaires). The recruitment process continued from September 2002 until October 2003. Twenty four per cent of the participants answered the questionnaires and were interviewed within two weeks, 25% between two and four weeks, 46% between four and 16 weeks and 5% more than 16 weeks after the event.

All the authors were engaged in the process of preparing the questionnaire and the template used in the semi-structured interviews. As part of the preparation, the researcher who collected all the data conducted the semi-structured interview as part of a group of experienced trauma researchers working with violence, in order to test out the contents of the interview and as a training exercise. Most of the interviews were audiotaped, although five of the participants did not allow taping.

### ***Materials and procedure***

#### *Demographic information*

Demographic information such as age, sex, nationality, educational status, cohabitation, marital status, employment status and occupation was recorded.

Occupation status was categorized according to the Norwegian Standard Classification of Occupations (ISCO-88) (18).

### *Crime characteristics including emotions during the event*

Crime characteristics such as the location, duration of the attack, relationship to the perpetrator, and number of perpetrators were examined within semi-structured interviews. Other aspects of the crime such as whether a weapon was used, whether other persons were present, whether the victim sought emergency treatment and/or reported the offence to the police, previous experience of being a victim of violence, provocation of the perpetrator by the victim, and their opinion about whether the perpetrator was influenced by alcohol were also examined by semi-structured interviews and categorized as yes or no. Information on the emotions such as shock, anxiety and aggression experienced during the attack, and loss of memory were also collected by semi-structured interviews and categorized as yes or no.

### *Alcohol consumption*

The participants were asked whether they had consumed alcohol prior to the event, with the two categories yes or no. General alcohol consumption by the participants was examined with a separate structured question. Responses were categorized as abstinence, low, moderate or high consumption.

### *Perceptions of life threat*

The participants' perceptions of life threat or potential for severe physical injury were each examined by a separate structured question. Responses were categorized as: felt life was at risk, fear of severe physical injury (but life not at risk), understood danger afterwards, did not perceive the situation as dangerous, or did not remember.

### *Physical injury*

Categorization of physical injury was based on self-report and classified according to injured part of the body, laceration, haematoma or fractures. All injuries also were classified into the categories of "assault" and the more severe offence of "inflicted bodily harm" based on the

legal categories used by the police in their investigations of violence (19). The police classified each case according to legal practice using a combination of the level of physical injury and intentions of the perpetrator. The level of physical injury was the most important criterion. The victims of inflicted bodily harm suffered more serious physical injuries than the common assault group. The inflicted bodily harm group was categorized into two subgroups, bodily harm and serious bodily harm. Categorization into the serious bodily harm subgroup was based on injuries such as fractures or other comprehensive physical injuries, including near-fatal injuries.

### *Open-ended questions*

Data on participants' time perspective during the event, possible provocation of the perpetrator, possible motivation for choosing not to press legal charges, and the participants' opinions regarding how and why they became a victim were recorded by open-ended questions.

### *Ethical issues*

The object of the ethical principles of research is to provide standards for the relationship between the participants and the researcher in a way that attends to a good balance between the requirement of protection of the individual and the requirement of the research. Ethical principles for research prioritize four fundamental requirements in studies like this: information, confidentiality, agreement and utility. All four of these were considered.

The information letter provided information about the intention of the project, questions to be asked, the design of the project and the cooperation with a psychiatrist in case of special evaluation needs for acute psychiatric treatment. The participants were guaranteed anonymity and the right to withdraw from the study at any time. Signed informed consents were returned to the researcher in relation to the conduct of the semi-structured interview. The participants

were informed that generally they would receive no preferential treatment, but that increased knowledge about reactions through and after exposure to violence would probably be of value to future victims of non-domestic violence.

The present study followed the Declaration of Helsinki (20). The study has been approved by the Regional Committee for Medical Research Ethics, Health region III (REK III nr 154.01), and by the Norwegian Social Science Data Services (ref. 8750).

### *Analysis*

Descriptive analyses such as frequency tabulations and cross tabulations were used to describe demography, physical injuries, crime characteristics and emotions during the event. A Pearson chi-square significance test was used to test the hypothesis of no association between variables, with a 5% significance level. All analyses were performed using SPSS v.13. Based on quotations from on the open-ended questions, issues are presented in the result section in order to more fully describe and exemplify the victims' experience during the assault. The intention was to increase the understanding of various emotions and experience of victimization.

## **Results**

### *Demographic characteristics*

Table 1 show that the sample was comprised of 80% men and 20% women. The average age was 30.7 years ( $SD = 11.00$ , range 18–75 years).

Table 1 about here

Eighty-five per cent of the participants were Norwegian. Regarding educational status, 57% had completed secondary school while 35% had some kind of university education. Sixty per cent of the participants lived with others such as spouse, family or others. For instance, 62%

of the participants were employed and 23% were students. For further information about demographic characteristics see Table 1.

The analysis showed no statistically significant differences between educational level and gender, nor between employment status and gender.

### *Crime characteristics of the assault*

Table 2 shows that most of the victims experienced the violent event in public places such as streets and restaurants (88%). Men were more likely to be assaulted in public places (92%) and women in private places (28%) ( $p < 0.01$ ).

The duration of attacks varied from a few seconds to four hours, although 46% of the participants were unable to estimate the duration of the event. Victims experienced changes in their ability to perceive time during the incident. Data from the open-ended questions show that in some experiences, time felt extended while other victims were unaware of time passing and felt, for instance, that time was frozen. As many as 39% experienced a loss of memory of aspects of the event, and data from the open-ended questions show that these losses varied from one to numerous isolated periods during the incident. Thirty per cent of the victims were assaulted with a weapon. The most commonly used weapons were knives (47%). Other weapons included blunt instruments (22%), broken glass (13%), and axes and guns (7%). Analysis showed that the use of a weapon was associated with a higher occurrence of difficulties in estimating the duration of the assault ( $p < 0.05$ ).

Table 2 about here

Sixty per cent of participants had been drinking alcohol immediately prior to the assault. Sixty-four per cent of the participants reported that they did not provoke the perpetrator, while 36% said they had provoked the perpetrator to some extent. Data from the open-ended questions show that some of the victims probably initiated the fight by oral provocation, but



none of the participants physically initiated a fight. Others explained that their provocation of the perpetrator consisted of simply answering a question or making a comment. They could not understand why the perpetrator had reacted with violence, as they had not intended to provoke such behaviour.

Seventy-five per cent of the participants reported the assault to police. Of these, 23% were encouraged by others to make a report. Forty-eight per cent of participants recruited through emergency units did not report the assault to the police. Our results showed that the police pressed legal charges in 9% of the cases in our sample because of very serious physical injuries, in spite of the victim's wish not to report the incident.

Data from the open-ended questions show that the reasons for choosing not to report the incident varied. Some participants did not want to speak either to the police or anyone else. They did not want others to be aware of their experience of being subjected to violence. Others were reluctant to talk to the police because they feared prejudice due to their previous involvement in criminal acts. Some were intimidated by fear of reprisals by the perpetrator if they reported the assault. Other participants did not report the assault to police because they intended to punish the attacker themselves, usually by arranging a group beating of the perpetrator. Others felt that reporting the assault would be a waste of time. They believed that police would not pursue the matter due to limited resources or because their assault was not as serious as other cases that required police assistance.

Forty-nine per cent of participants reported feeling anxiety during the attack, 45% felt aggression and 23% felt shock. Nineteen per cent said they felt shock and anxiety at the same time, while 6% experienced a mixture of all these emotions simultaneously. Data from the open-ended questions provide a picture of different mixtures of emotions during the assault. Participants reported that they first felt angry, but when they realized how dangerous the situation was they also experienced shock and anxiety. Some stated that their anger

disappeared, while others combined the feelings of anger and shock with anxiety. In some cases the anger returned after the event.

Thirty-nine per cent of participants felt that their life was at risk during the assault, and 22% felt they were in danger and could risk severe injuries, but did not feel that their life was at stake. Analysis showed statistically significant differences between use of a weapon and perceived threat ( $p < 0.05$ ). Sixty-four per cent of those who felt their life was at risk faced a weapon during the assault. Statistically significant differences were also found between the number of perpetrators and gender, and between general alcohol consumption and gender. Female victims were more likely to experience shock ( $p < 0.01$ ) and anxiety ( $p < 0.01$ ) during the incident than men. For further information about crime characteristics see Table 2.

### ***Circumstances regarding exposure to violence***

When asked, “How and why did I become a victim of violence?” 35% stated it was just a coincidence; they had been at the wrong place at the wrong time. Seventy-six per cent of those who considered the event to be a coincidence did nothing to provoke the perpetrator. Twenty-two per cent had been involved in a conflict, usually an argument, before the assault, while 11% were involved in the course of their employment, for example, as security guards or as taxi drivers being robbed. Ten per cent were assaulted while trying to protect other people from violence, and another 10% were attacked because of some kind of jealousy. Eleven per cent did not have an opinion of why they had been assaulted.

### ***Physical injury***

Table 3 shows the profile of injuries by body part injured, type of injury and legal categories of injury.

Table 3 about here

Seventy-six per cent of the participants suffered injuries to the head, face or eyes. Twenty-eight of the participants suffered some kind of fracture while 18% suffered lost or loose teeth. The most common injury, haematoma, was experienced by 93% while 13% suffered knife wounds /gashes. Twenty-two per cent suffered concussion.

Thirty-one per cent (n = 46) of the participants were categorized as “assault” victims. Two of these had no physical injuries; the others had injuries ranging from black eyes to quite serious injuries. Several in this category also experienced serious threats of more severe physical injury. Sixty-nine per cent of the participants were classified according to the category “inflicted bodily harm”. Analysis showed no statistically significant differences between physical injuries and gender, either categorized by body part injured, type of injury or legal categories. For further information see Table 3.

## **Discussion**

The study demonstrated that most of the non-domestic assault victims were young men assaulted by unknown attackers. The gender distribution in our sample was typical for people reporting violent crime (other than domestic assault) in Norway and other countries (1, 4, 8, 9, 16, 19), but the age distribution was somewhat skewed toward higher average age (19), most likely explained by our requirement that our participants’ minimum age should be 18 years.

Socio-economic factors such as level of education and work-related variables were measured. Based on a descriptive interpretation the educational level of our participants seems higher than the general Norwegian and Hordaland’s population and nearly at the same level as the population in Oslo (21). This finding did not meet our expectations based on earlier research, which found increased victimization among lower social classes (1, 8, 9, 22). However, the finding supports Wohlfarth et al. (2001), who also unexpectedly found that persons with higher levels of education had a higher risk of being victimized (13). Their

sample of “crime victims” comprised victims of burglary as well as victims of more severe crimes like assault and sexual crimes.

The level of employment in the present sample is high compared with the findings of other national and international studies. Pape et al. (2004), in a study of 24–55 year olds from the general population of Oslo city, found a higher prevalence of violent victimization among those receiving a social welfare benefit or with economic problems than in the general population (9). Steen and Hunskaar (2004) found an equivalent result in a study conducted in Bergen (23). WHO (2002), and Kilpatrick and Acierno (2003) indicate that low income is associated with increased victimization (8). In comparison with the study by Steen and Hunskaar, our sample had a higher number of respondents who were employed (67% versus 39%) and a lower number who were unemployed (11% versus 21%) (23).

This study used emergency units and police-initiated recruitment of participants. It may be that those with a high level of education are more likely to seek medical assistance or report physical assaults to police than those with lower education levels. The high level of education and the employment status of most of the participants in this study suggest the possibility that this might be the case. This question needs more research.

The finding that physical injuries occurred with the same severity among male and female victims was unexpected, as we hypothesized that males would be more seriously injured and would receive more head and facial injuries than females. Eighty per cent of our participants were male, in accordance with other studies (1, 8). Other studies have found that men were more likely to be seriously injured than women (24, 25). Our findings may be unreliable because of the low number of female participants ( $n = 30$ ). Nonetheless, it is obvious that men are physically assaulted more frequently than women.

Facial and other head injuries were common; more than 75% of our participants were injured in the head, face, or eyes. Research indicates that facial injuries caused by violence

occur most frequently among young men assaulted by strangers (24, 26). For example, Melhus and Sørensen (1997) found in a study at the Oslo Accident and Emergency Department that two out of every three victims suffered facial injuries (27). Our study showed a high occurrence of severe injuries; one-third of participants had such serious injuries that they needed specialist treatment.

In most of the assaults the assailant was unknown to the victim, and most occurred in public places. Our results are similar to the findings of other studies of violence against men (2, 4, 9, 19, 27, 28). Sixty per cent of our participants had consumed alcohol before the event. This figure is probably not very precise as this information was provided by self-report, but others have documented the association between alcohol and violence in several studies (8, 9, 23, 26).

One-third of our sample group considered their exposure to violence as chance; they were "... in the wrong place at the wrong time ...". Nearly 60% of our sample felt they had not provoked the perpetrator. In spite of our recruitment through emergency units and police, 25% of our participants did not press legal charges and 19% did not seek medical treatment. Other studies have demonstrated that a large proportion of assault victims neither seek medical treatment nor press legal charges (3, 4, 10). Some of our participants did not want to come forward as a victim of violence because of the stigma and negative attitudes regarding victimization. Future changes in attitudes may result in an increased tendency to press legal charges and to seek medical treatment and therefore influence crime statistics and health care records. The occurrence of assault violence as a public health problem will become even more visible.

Our results showed anxiety to be the most frequent emotion felt during the assault, followed by aggression. Shock was the least frequent of the emotions measured. These results differ from those of Joy et al (2000), who found that 90% of their sample felt shocked and

76% felt frightened during the traumatic event (29). However, their criteria of inclusion for the study were significant psychological effects after an experience of injury. It is possible that the experiences of anxiety and shock during the incident are predictors of later psychological effects (29). Our study found that victims of violence may experience a mixture of feelings. It is important that further investigations consider emotions such as shock, anxiety and aggression during the event as probable predictors of psychological reactions both in acute and later phases.

The higher occurrence of shock and anxiety in females compared to males ( $p < 0.001$ ), supports the findings of other studies that women have a greater vulnerability to traumatic events than men (30, 31). One relevant question would be whether women are more likely to report such emotions than men, and whether men are in fact more vulnerable than they report? Another aspect that makes the question relevant is that our analyses showed no statistically significant differences between gender and perceived level of threat. Based on the other conclusions that female have a higher psychological vulnerability to traumatic events, and on the lower physical strength women have in comparison to men, it was expected that there would be a higher occurrence of perceived life threat and fear of severe physical injury in women.

In this study, using both qualitative and quantitative data has been found to be relevant in order to describe those who are exposed to non-domestic violence. Data from the open-ended questions used to present examples beyond the statistical numbers express some important experiences. That all data were collected by the same researcher strengthens the reliability and hopefully also the validity of the semi-structured interviews. That the sample comprised as many as 149 participants also strengthens the study. Several cross-sectional studies of exposure to non-domestic violence have a smaller or equal sample size to our study, for

instance forty six out of seventy-seven studies included in a meta-analysis by Brewin et al (2000) compared less than 150 participants (13, 29, 32).

One limitation in the present study is how we assessed alcohol consumption prior to the event. We simply asked if the respondents had consumed alcohol prior to the assault by means of a dichotomous question, and therefore we did not obtain enough nuanced information. Also, we should have been more specific about other kinds of intoxicant.

Another limitation is that only 20% (30) of the sample comprised female respondents. In spite of our recruitment reflecting the typical gender distribution of people reporting non-domestic violence, additional research to examine female reactions is needed to determine the degree to which our results can be generalized to female victims of violent assault.

Exposure to assault violence is often experienced as emotionally difficult and it may result in post-traumatic stress reactions. There may be ethical implications involved in inviting non-domestic victims of violence to participate in interviews and to complete questionnaires about the event and emotional reactions. The questions may function as reminders resulting in bad memories and unpleasant experiences attending the project. On the other hand, participation may function as “therapy” in which the victim has an opportunity to tell his/her story.

Subjective factors such as fear of serious injury or fear of being killed during the assault, and actual physical injury, have been found to increase the risk of later post-traumatic disorders (17, 33). Research shows that the combination of these factors creates the greatest risk of developing post-traumatic emotional problems (8). All except two of our participants were actually injured, 39% of our sample felt their life was at risk, and 22% felt fear of severe physical injury during the assault. It is reasonable to expect a high occurrence of future psychopathology among our participants. We believe it is important to treat those exposed to violence with respect, as it is for those assaulted by unknown assailants. Therefore, victims of violent assault warrant receiving high priority in public health care. Health care professionals,

in all their different positions working with patients in somatic, psychiatric and emergency units and in community care have a unique opportunity to prevent psychopathological reactions after exposure to violence. Their challenge is often to be aware of patients who need follow-up and care after exposure to violence. For instance, being aware of symptoms such as perceived life threat during the event and symptoms in the acute phase would help to differentiate some of those in need of special follow-up from victims who probably will recover without treatment.

Future research may more fully describe the magnitude and the impact of violence using a broader perspective. This will allow a deeper understanding of the factors that increase the risk of violent victimization and the risk of psychopathology (1). Such knowledge is necessary for a public health approach to violence prevention, dealing with the consequences, and providing the interdisciplinary challenge as support to those victims who are in need of more than just physical treatment.

### **Acknowledgements**

We thank the local police and the local outpatient's department staff in Bergen and Oslo for assisting in the recruitment of victims of violence. The authors acknowledge psychiatrist Páll Eiriksson for his support and in particular for his evaluation of the victims of their possible need for intensive care. The authors also acknowledge Superintendent Tron Sundt, Oslo police, for his classification of victims into the categories of "assault" and "inflicted bodily harm". We would also like to thank the Norwegian Ministry of Justice and the Police, the Norwegian Ministry of Health and Care Services and the Resource Centre for Violence, Traumatic Stress and Suicide Prevention, Western Norway (RVTS-West) for financing the transcription of the interviews. Most of all, we thank the participants.



**Author contribution:**

Venke A. Johansen: first author, planning the study, performing the statistics, writing the paper. Astrid K. Wahl: supervising and contribution in planning the study and writing the paper and performing the statistics. Lars Weisæth : supervising and contribution in planning the study and writing the paper. All the authors provided critical revisions of the manuscript.

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Table 1: Demographic characteristics of the sample

	<b>n=149</b>
<b>Age:</b> Mean= 30.7 (SD=11.1) range=18-75	% (n)
<hr/>	
<b>Age groups</b>	
18 –29	62 (92)
30-49	28 (42)
50 – 75	10 (15)
<hr/>	
<b>Gender</b>	
Female	20 (30)
Male	80 (119)
<hr/>	
<b>Nationality*</b>	
Norwegian	85 (123)
Norwegian minority	3 (6)
Pakistani	3 (6)
Others	9 (14)
<hr/>	
<b>Educational status</b>	
Primary school	8 (11)
Secondary school	57 (82)
University, 4 years or less	26 (38)
University, more than 4 years	9 (13)
<hr/>	
<b>Cohabitation</b>	
Living alone	40 (60)
Living together with spouse	28 (41)
Living together with family / others	32 (46)
<hr/>	
<b>Marital status</b>	
Single	71 (104)
Married / cohabitant	18 (27)
Separated / Divorced	11 (16)
<hr/>	
<b>Employment status*</b>	
Employed	62 (92)
Self-employed	5 (7)

Unemployed / grant leaved	11 (16)
Students	23 (33)
Military service	1 (2)
Pensioned / sick leaved	9 (13)
Homemaker	1 (1)

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**Major Occupational Groups\***

1	Legislators, senior officials and managers	4 (7)
2	Professionals	6 (9)
3	Technicians and associate professionals	12 (18)
4	Clerks	1 (2)
5	Service workers and shop and market sales workers	23 (35)
	5.1640 Security officers 7% of total (n=11)	
6	Skilled agricultural and fishery workers	1 (1)
7	Craft and related trades workers	11 (17)
8	Plant and machine operators and assemblers	5 (7)
	8.3210 Taxi drivers 3% of total (n= 5)	
9	Elementary occupations	3 (4)
0.0	Armed forces and unspecified	
	Unspecified	13 (20)
	0.1 Armed forces	1 (2)
	0.2 Students	23 (33)
	0.3 Pensioners	1 (1)
	0.4 Disablement benefit	4 (6)

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\* Nationality: Norwegian: born in Norway, Pakistani: born in Pakistan, living in Norway, but without Norwegian citizenship. Norwegian Minority: participants born in other countries with Norwegian citizenship.

Other: participants born in other countries than Norway or Pakistan, such as Iraq, Iran, Somalia, Sri Lanka, Sudan, and Thailand, without Norwegian citizenship

\* The total is more than 100% as some participants were both employed and studying or both employed and pensioned.



Table 2: Crime characteristics registered by categorical frequency

	Total sample <b>n=149</b> % (n)	Men n=119 % (n)	Women n=30 % (n)	Pearson chi- square by gender
<b>Location</b>				
Public place	88 (124)	92 (103)	72 (21)	p<0.01
Private	12 (17)	8 (9)	28 (8)	
<b>Whether a weapon was used</b>				
Yes	30 (44)	32 (38)	20 (6)	p=0.32
No	69 (103)	66 (79)	80 (24)	
Don't know	1 (2)	2 (2)		
<b>Relationship of perpetrator</b>				
Unknown	93 (129)	97 (107)	79 (22)	p<0.01
Acquaintance or friend	7 (9)	3 (3)	21 (6)	
<b>Number of perpetrators</b>				
1	60 (81)	55 (59)	85 (22)	P=0.04
2-3	24 (32)	27 (29)	12 (3)	
4-10	13 (17)	14 (16)	4 (1)	
>10	3 (4)	4 (4)		
<b>Other persons present</b>				
Yes	80 (110)	83 (91)	68 (19)	p=0.13
No	19 (26)	16 (17)	32 (9)	
Don't know	1 (1)	1 (1)		
<b>Reported to the police</b>				
Yes	75 (106)	72 (82)	86 (24)	p=0.13
No	25 (36)	28 (32)	14 (4)	
<b>Sought emergency ward</b>				
Yes	81 (114)	83 (92)	76 (22)	p=0.39
No	19 (26)	17 (19)	24 (7)	
<b>Duration of the attack</b>				
<1min	10 (14)	10 (11)	11 (3)	p=0.52

1-10 min	31 (42)	31 (34)	30 (8)	
>10-60 min	12 (17)	12 (12)	18 (5)	
Don't know	46 (63)	47 (52)	41 (11)	
<b>Loss of memory</b>				
Yes	39 (54)	37 (41)	46 (13)	p=0.36
No	61 (84)	63 (69)	54 (15)	
<b>Prior experience of exposure to violence</b>				
Yes	49 (67)	51 (56)	39 (11)	p=0.27
No	51 (71)	49 (54)	61 (17)	
<b>Provocation of perpetrator by victim</b>				
Yes	36 (49)	37 (40)	32 (9)	p=0.65
No	64 (88)	63 (69)	68 (19)	
<b>Alcohol consumption prior to the event</b>				
Yes	60 (85)	62 (69)	55 (16)	p=0.53
No	40 (56)	38 (43)	45 (13)	
<b>Alcohol consumption in general</b>				
Abstinence	4 (5)	4 (4)	4 (1)	p=0.02
Low	45 (59)	38 (39)	71 (20)	
Moderate	40 (52)	45 (46)	21 (6)	
High	11 (14)	13 (13)	4 (1)	
<b>Emotions experienced during the attack *</b>				
<i>Shock</i>				
Yes	23 (32)	17 (18)	50 (14)	p<0.01
No	77 (105)	83 (91)	50 (14)	
<i>Anxiety</i>				
Yes	49 (67)	42 (45)	79 (22)	p<0.01
No	51 (69)	58 (63)	21 (6)	
<i>Aggression</i>				
Yes	45 (61)	45 (49)	46 (12)	p=0.91
No	55 (74)	55 (60)	54 (14)	

\* The total is more than 100% as some persons felt more than one emotion at once

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<b>Perception of life threat or potential for severe physical injury</b>				
Felt life at risk	39 (50)	37 (37)	48 (13)	p=0.24
Fear of severe physical injury	22 (28)	22 (22)	22 (6)	
Understood danger afterwards	13 (16)	11 (11)	19 (5)	
Did not perceive dangerous	23 (30)	28 (28)	7 (2)	
Did not remember	3 (4)	3 (3)	4 (1)	

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Table 3: Physical injury

<b>Categorised by injured part of the body, laceration, haematoma or fractures</b>			
	Total sample	Men	Women
	<b>n=149</b>	n=119	n=30
	% (n)	% (n)	% (n)
Head, face, eyes	76 (113)	80 (92)	70 (21)
Fracture cranium	3 (4)	4 (4)	0
Fracture jaw, nose	16 (24)	19 (22)	7 (2)
Fracture others	9 (14)	10 (11)	10 (3)
Knocked out or loose teeth	18 (27)	18 (21)	20 (6)
Choking marks, injured neck	5 (8)	4 (5)	10 (3)
Bite mark	2 (3)	2 (2)	3 (1)
Concussion	22 (32)	24 (27)	17 (5)
Internal organs	2 (3)	3 (3)	0
Knife wound, gash	13 (19)	16 (18)	3 (1)
Open wound, cut	81 (120)	86 (99)	70 (21)
Haematoma	93 (139)	97 (112)	90 (27)

\* The total is more than 100% as some subjects were injured several places at the body.

<b>Legal category</b>			
Assault	31 (46)	29 (34)	40 (12)
Inflicting bodily harm	69 (103)	71 (85)	60 (18)

<b>Categories inflicting bodily harm</b>	
	% (n)
Bodily harm	72 (73)
Serious bodily harm	28 (30)

# Paper II

# Acute psychological reactions in assault victims of non-domestic violence: Peritraumatic dissociation, post-traumatic stress disorder, anxiety and depression

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BERIT R. HANESTAD, LARS WEISAETH

Johansen VA, Wahl AK, Eilertsen DE, Hanestad BR, Weisaeth L. Acute psychological reactions in assault victims of non-domestic violence: Peritraumatic dissociation, post-traumatic stress disorder, anxiety and depression. *Nord J Psychiatry* 2006;60:452–462. Oslo. ISSN 0803-9488.

The aims of this study were to investigate acute and subacute post-traumatic reactions in victims of physical non-domestic violence. A Norwegian sample of 138 physically assaulted victims was interviewed and a questionnaire was completed. The following areas were examined: the frequency and intensity of acute and subacute psychological reactions such as peritraumatic dissociation (PD), post-traumatic stress disorder (PTSD) and anxiety and depression; the relationship between several psychological reactions; the relationship between psychological reactions and level of physical injury, perceived life threat, and potential of severe physical injury, and the relationship between psychological reactions and socio-demographic variables. The following distress reactions were measured retrospectively: PD, PTSD, and anxiety and depression. Thirty-three per cent of the victims scored as probable PTSD cases according to the Post Traumatic Symptoms Scale 10 (PTSS-10); the corresponding Impact of Event Scale-15 (IES-15) score identified prevalence of 34% respectively. Forty-four per cent scored as cases with probable anxiety and depression, according to the Hopkins Symptom Check List 25 (HSCL-25). Severity of perceived threat predicted higher scores on all measures of psychological reactions. There were no statistically significant differences between acute and subacute groups on PD, PTSS-10, IES-15, IES-22 and HSCL-25 according to measured means (and standard deviations) and occurrence of probable cases and risk level cases. The results showed no connection between severity of physical injury and caseness. The acute psychological impairment that results from assault violence may have a deleterious effect on the mental health of victims.

• *Anxiety and depression, Assault injured victims, Non-domestic violence, Peritraumatic dissociation, Post-traumatic stress disorder.*

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Research on the psychopathological consequences of violence has focused primarily on post-traumatic stress disorder (PTSD) and the development of long-term psychological reactions. Less research has focused on peritraumatic and acute psychological reactions such as peritraumatic dissociation (PD), acute PTSD, anxiety and depression during the first period after the incident (1–3).

The 10th revision of the *International Classification of Diseases* (ICD-10) (4) and the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-4) (5)

agree that the stress exposure is a necessary but not a sufficient aetiological element regarding PTSD (4). Intrusive re-experiencing of the traumatic event, persistent emotional numbing or avoidance of stimuli associated with the trauma and exaggerated arousal symptoms are the characteristic hallmarks of PTSD (6, 7). Potentially traumatizing events with a severely distressing impact such as sexual and physical assault are associated with a high risk of PTSD (7). In a review, Kilpatrick & Acierno (8) found that the prevalence of PTSD in response to physical assault ranges from 23% to 39%.

PD, dissociation during or immediately following the violent event (9), may impede access to and resolution of associated affect and traumatic memories, and has been found to be an important factor to later post-traumatic pathology (9, 10). Five dissociative symptoms are frequently reported: a subjective sense of numbing or detachment, reduced awareness of one's surroundings, derealization, depersonalisation and dissociative amnesia (10). Few studies have examined PD and emotions experienced during the exposure of non-domestic violence resulting in assault-related injury soon after the incident, when self-reports would be most reliable (11).

Furthermore, few studies have focused on differentiation between symptoms of PTSD and other symptoms of emotional distress such as depression and anxiety in assault victims (8). Acute reactions, such as PD, are often combined with depressive symptoms and general anxiety symptoms following trauma, and some research shows a positive correlation between these symptoms (11, 12). Victims reporting high level of PD are at greater risk of developing PTSD than others (2, 11). Yet, comparatively few studies have examined the effect of non-domestic violence with physical injury and the link between PD and PTSD (13).

Potentially traumatic events differ in their likelihood of producing PTSD and/or other mental disorders. It has been reported that women have a greater vulnerability to PTSD (7) and to anxiety and depression (14, 15). The European Study of Epidemiology of Mental Disorders (ESEMeD) project reported lifetime prevalence rates of any anxiety disorder and major depression as the most common mental disorders (anxiety—overall: 13.6%, women: 17.5%, men: 9.5; major depression—overall: 12.8%, women: 16.5 and men: 8.9) in a random sample from general populations in six European countries (16). Lifetime prevalence of PTSD rates was overall: 1.9%, 2.9% for women and 0.9% for men, and lower than those found in previous studies (16). Although men are more likely to be exposed to potentially traumatizing events than women, women appear to be twice as often suffering from PTSD (17). In a study by Resnick et al. (18) they diagnosed 38.5% as lifetime PTSD and 17.8% as current PTSD among women with physical assaulted history.

Knowledge about people's experience of acute reactions during and following exposure to violence are needed to improve the understanding of these complex psychopsychological processes, and might provide guidance about how to implement preventive and early intervention strategies effectively in this group of victims (3).

The aims of this study were to investigate acute and subacute post-traumatic reactions in victims of

physical non-domestic violence. The following areas were examined:

- 1) The frequency and intensity of acute and subacute psychological reactions such as PD, PTSD, and anxiety and depression;
- 2) The relationship between psychological reactions;
- 3) The relationship between psychological reactions and level of physical injury, perceived life threat and potential of severe physical injury;
- 4) The relationship between psychological reactions and socio-demographic variables.

### Symptoms and diagnosis criteria of PTSD

The diagnoses concerning traumatic symptoms are relatively new, both in the ICD-10 (4) and the DSM-4 (5). Three clusters of symptoms, namely re-experiencing, avoidance and hyperarousal define PTSD. An overwhelming sense of reliving the traumatic event, with feelings of fear and panic combined with corresponding physiological reactions such as tachycardia are hallmarks of re-experiencing symptoms. Avoidance symptoms arise because of attempts to block out unpleasant feelings and memories. In addition to avoidance of situations and places associated with the traumatic event, one even may generalize to free-floating anxiety. The manifestation of hyperarousal symptoms may be insomnia, anger, difficulty in concentration, hypervigilance and exaggerated startle responses. PTSD is classified as an anxiety disorder, and mostly PTSD develops shortly after the traumatic event. Those who express PTSD symptoms shortly after the traumatic event often recover (6). Earlier individual history of psychiatric illness increases vulnerability to PTSD (19).

There are some differences related to the diagnoses PTSD and acute stress disorder (ASD) in the two diagnostic classification systems, but both agree that the persistent, intrusive re-experiencing of the traumatic event is the characteristic hallmark of PTSD that differentiates it from other psychiatric pathologies (6). ICD-10 makes no stipulations regarding duration of symptoms for a formal diagnosis of PTSD to be made. The disorder is termed as acute PTSD when symptoms persist less than 3 months, and as chronic when symptoms last beyond 3 months. When the symptoms develop 6 months or more after the traumatic event a "delayed-onset" PTSD is diagnosed (20). The DSM-4 criteria state that the symptoms of PTSD must be present for at least 1 month. Traumatic reactions suffered between 2 days after the stress exposure and within 1 month are diagnosed as ASD, a disorder that is dominated by dissociative symptoms. Dissociation is defined as a "disruption in the usually integrated functions of consciousness, memory, identity, or perception of the

environment" (5), and PD is dissociation during or immediately following the violent event (10). The stressor criterion is identical in PTSD and ASD, but the symptoms criteria of ASD require that the patient exhibit at least three of five dissociative symptoms (a subjective sense of numbing or detachment, reduced awareness of one's surroundings, derealization, depersonalization and dissociative amnesia) (10).

## Method

### Design

The study had a cross-sectional design, in which respondents were assessed by questionnaires and semi-structural interviews after the exposure to physical violence. Fifty-one per cent ( $n=70$ ) of the participants were assessed in the acute phase after the event (within 4 weeks after exposure) and 49% ( $n=68$ ) in the subacute phase after the event (between 4 and 16 weeks after exposure). Four per cent of participants were assessed within 1 week after exposure, 20% between 1 and 2 weeks after exposure, 27% between 2 and 4 weeks after exposure, 27% between 4 and 8 weeks after exposure, and 22% between 8 and 16 weeks after exposure.

### Sample and data collection

The criterion for inclusion was that the victim was seeking an emergency unit or reporting to police about actual physical assault in the communities of Bergen and Oslo, Norway. To qualify, victims had to be over 18 years old and assaulted by a person other than a family member or a former intimate partner. With the assistance of local police and medical services, participants were identified and recruited.

Two hundred and fourteen people were asked to participate. Forty refused, their average age was 29.6 (range 18–66) years and gender distribution was 37 men and three women. Thirty people were ineligible for the study because they did not satisfy criteria for study entry (four women and two men had been assaulted by a partner; four boys and one girl were under 18 years old; 11 men did not speak Norwegian; three gave an incorrect phone number at the emergency unit; and five had been assaulted more than 4 months previously). Six participated in a semi-structured interview but did not reply to the questionnaires. The final sample consisted of 138 Norwegian-speaking adults, 80% men and 20% women, and the average age ( $\pm$  standard deviation) was  $31 \pm 11$  years (range 18–75 years). Sixty-six per cent were under 30 years old, 24% were between 30 and 49 years old and 10% were between 50 and 75 years old. These gender and age distributions are in agreement with those reported elsewhere regarding victims assaulted by non-household perpetrators (21, 22). Most of the participants were single (70%), and 40%

reported that they lived alone. With regard to educational level: 8% had completed primary school, 57% had completed secondary school and 35% per cent had completed higher education including university level.

Twenty-nine per cent ( $n=43$ ) of the participants were recruited in Bergen and 71% ( $n=106$ ) were recruited in Oslo. These numbers are proportional to the incidence of violence in these towns (21). Recruitment by police resulted in some delay before the researcher was allowed to contact the victim, because the police wanted to examine the victims beforehand, as a part of their investigation. The sample, which was subdivided into two groups, is based on the time elapsed since the occurrence of the assault; 51% ( $n=70$ ) of the respondents answered the questionnaires within a period of 4 weeks, 49% ( $n=68$ ) responded within a 4–16-week post-assault period. The decisive factors adopted in defining the composition of the sub-groups are in accordance with the ICD-10 criteria of acute PTSD, symptoms within 4 weeks after the exposure to assault, and the cases within the 4–16-week period are categorized as subacute.

The participants were recruited according to the two main categories used by the police in their investigations of violence: "assault" and "inflicting bodily harm" (21). Each case was classified, based upon a judgement made using a combination of the level of physical injury and severity of intentions of the perpetrator to harm, where physical injury is the most important criterion. Thirty-two per cent ( $n=44$ ) of the participants were categorised as assault, two of these had no physical injuries; the others had injuries ranging from a black eye to quite serious injuries. Several of those in the assault group had also experienced serious threats of more severe physical injury. Sixty-eight per cent ( $n=94$ ) of the victims were categorised as inflicting bodily harm. These victims experienced more serious physical injuries from near fatal to different kind of fractures, or other comprehensive bodily injuries.

Classification of victims into the categories of "assault" and "inflicting bodily harm", used by the police in their investigations of violence (21), was done in cooperation with the police.

Following ethics committee approval, potential participants were asked whether the researcher might contact them. If the victim agreed, more information about the project was sent by post. Those who accepted filled in a questionnaire.

### Assessment

#### PTSD

The Post Traumatic Symptoms Scale 10 (PTSS-10) is a 10-item self-report questionnaire assessing the presence and intensity of PTSD symptoms during the previous 7 days. The questionnaire was devised for research



purposes, but is widely used as a complement to clinical assessment. A research team from Norway devised the questionnaire after the Alexander Kielland accident in 1980 (23–25). It consists of 10 statements, directly wording symptoms related to PTSD criteria (sleep problems, nightmares, tension in the body, irritation, depression, startle, fluctuations in mood, feeling of guilt, fear when approaching the place where the assault took place or situations that remind one of the incidents). The scale is a screening instrument reported with high face validity (23). It has been used internationally for monitoring groups of victims. Originally, the PTSS-10 symptoms were scored as present/not-present, but in a revised version, each symptom is rated on a 7-point Likert scale from 1 (never/rare) to 7 (very often) (26). The total score ranges from 10 to 70. A score of 4 or more on six or more of the items indicates PTSD, and a score of 4 or more on four or five of the items indicates a level of risk. The questionnaire has been shown to have high sensitivity and specificity (23, 27).

#### THE IMPACT OF EVENT SCALE 22 (IES-22) AND THE IMPACT OF EVENT SCALE 15 (IES-15)

IES-22 (28) is a self-report scale used to assess current levels of three elements of PTSD: intrusion, avoidance and persistent hyperarousal associated with the experience of a particular event. The IES-22 was developed from the original IES-15. The IES-15 has been demonstrated to be a useful measure of stress reactions after the experience of a traumatic event, and to be valuable for detecting individuals who need treatment (29–31). The IES-22 maintained compatibility with the original IES-15, and only minimal changes were made to the intrusion and avoidance subscales, whereas the arousal subscale was a new construction. The items are scored on a 4-point scale with scale points 0 (not at all), 1 (rarely), 3 (sometimes) and 5 (often). There is no generally accepted diagnostic cut-off point related to IES-22 (32). In research, the intrusion and avoidance subscales from the IES-15 are typically used. Scores range from 0 to 35 for intrusion, 0 to 40 for avoidance and 0 to 75 for the total IES-15. On the full scale, a total score of 35 or more indicates PTSD, and a score between 20 and 34 indicates a level of risk (33). A score higher than 20 on the intrusion and avoidance subscales indicates possible need for treatment.

#### PD

PD was assessed using a 7-item self-report measure of dissociative experiences during the violent situation. The questionnaire was developed specifically for this study by two of the authors (VAJ and LW). The development of the questions was inspired by the following scales: Peritraumatic Dissociative Experiences Questionnaire—Rater Version (PDEQ) (34)

and the Dissociative Experiences Scale (DES) (35). The questions are: 1) standing next to myself, 2) other people, things and surroundings are unreal, 3) my own body doesn't belong to me, 4) confusion about whether the incident was real or just a dream, 5) see the world through a mist, 6) not able to remember much of what happened, and 7) loss of sense of time. Each question is rated on a 5-point scale from "it does not concern me" to "it concerns me very much", with a scoring range from 0 to 4.

#### ANXIETY AND DEPRESSION

The Hopkins Symptom Check List 25 (HSCL-25)/Symptom Check List 25 (SCL-25) is a self-report scale used to assess anxiety and depression (36). The HSCL-25 is derived from the SCL-90 measures of anxiety and depression, which is regarded as a useful self-report measuring instrument for mental health (37). The HSCL-25 consists of 25 symptoms, and for each item the respondent indicates whether he or she was "not", "a little bit", "quite much" or "very much" bothered by the symptom during the past week. The HSCL-25 is a screening instrument. The total score is the mean score across all items, which range from 1 to 4. A score between 1.55 and 1.74 indicates a level of risk, and a score of 1.75 or higher indicates a probable pathological condition. The instrument has shown satisfactory results regarding psychometric properties (38, 39).

All measures used had satisfactory internal consistency and reliability as estimated by mean inter-item correlation and Cronbach's alpha (Table 1). Descriptive statistics for the questionnaires and subscales are presented in Table 1.

#### PERCEPTIONS OF LIFE THREAT

The victims' perceptions of life threat and potential for increased severe physical injury were examined within the semi-structured interview as separately structured items, categorized as: felt life at risk, fear of being severely harmed (but not life at risk), understood danger afterwards, did not feel the situation as dangerous and did not remember.

Socio-demographic information such as age, gender, educational status, cohabitation, marital status and work were recorded.

#### *Statistical analysis*

Data were analysed using univariate frequency tabulations, cross-tabulations, Pearson's *r*, multiple regression analyses and analysis of variance (ANOVA). Reliabilities of additive indexes were estimated using Cronbach's alpha. Results of the analyses were summarized by fitting a structural equations model (SEM) to data. All analyses were performed using SPSS v.11 and AMOS v.5.

Table 1. Descriptive information and internal consistency for scales and subscales.

Scale:	Mean	<i>s</i>	Items	Observed range	CAIp	Miic
PD	13.4	5.7	7	7–35	0.82	0.41
PTSS-10	29.3	14.6	10	10–66	0.91	0.54
IES-22	38.7	26.8	22	0–100	0.94	0.44
Subscale intrusion, IES-22	15.1	11.1	8	0–38	0.91	0.56
Subscale intrusion, IES-15	13.9	9.9	7	0–33	0.91	0.59
Subscale avoidance, IES-15 = IES-22	12.5	9.8	8	0–38	0.83	0.38
Subscale arousal, IES-22	11.1	8.2	6	0–30	0.86	0.52
IES-15-total, intrusion + avoidance	26.4	18.3	15	0–71	0.92	0.43
HSCL-25	1.76	0.68	25	1–3.6	0.96	0.49
Subscale anxiety, HSCL-25	1.73	0.67	10	1–3.5	0.90	0.48
Subscale depression, HSCL-25	1.77	0.73	15	1–3.9	0.94	0.54

*s*, standard deviation; CAIp, Cronbach's alpha; Miic, mean inter-item correlation; PD, peritraumatic dissociation; PTSS-10, Post Traumatic Symptoms Scale 10; IES-22, Impact of Event Scale 22; IES-15, Impact of Event Scale 15; HSCL-25, Hopkins Symptom Check List 25.

## Results

### *The frequency and intensity of acute and subacute psychological reactions*

Table 1 shows means and standard deviations for PD, PTSD (PTSS-10, IES-15, IES-22), anxiety and depression (HSCL-25). Scores for relevant subscales are also presented. Mean scores for the total sample indicate a high prevalence of PTSD, with a mean score of 29.3 on PTSS-10 and mean score of 26.4 on IES. Table 1 also shows a high prevalence of anxiety and depression, with a mean score of 1.76 on HSCL-25.

Table 2 shows probable PTSD cases, risk level PTSD cases and not PTSD cases, based on conventional cut-off points described below the table. The table shows the prevalence of PTSD cases as diagnosed with PTSS-10 and IES-15 by time since exposure and gender. Prevalences for the total sample are included in the table. For probable PTSD, PTSS-10 and IES-15 showed corresponding prevalences (33% vs. 34%), but for risk

level diagnosis, the picture was not that clear. PTSS-10 indicated a lower percentage of risk level cases than IES-15 (13% vs. 25%). PTSS-10 and IES-15 scores were highly correlated ( $r=0.86$ ).

In general, we used cut-off as described below (Table 2) in our project, but when using 19 as cut-off (31), 59% of the participants in our project scored as probable PTSD-cases ("ICD-10 cases").

Results for the total HSCL-25 scale and the two subscales measuring anxiety and depression are presented in Table 3. Using a score of 1.75 as cut-off for classification of probable anxiety and depression cases, as many as 44% of the total sample was diagnosed as having an anxiety and depression disorder. This is clearly higher than the 14.9% prevalence in the normal Norwegian population (14).

There were no statistically significant mean score differences between acute and subacute groups on PD, PTSS-10, IES-15, IES-22 or HSCL-25, and no statisti-

Table 2. Clinical outcomes: post-traumatic stress disorder (PTSD) assessed by the Post Traumatic Symptoms Scale 10 (PTSS-10) and Impact of Event Scale 15 (IES-15).

Scale	Total % (n)	Time since measurement		Gender	
		Acute % (n)	Subacute % (n)	Male % (n)	Female % (n)
PTSS-10					
Probable PTSD	33 (46)	31 (22)	35 (24)	30 (33)	46 (13)
Risk-level PTSD	13 (18)	10 (7)	16 (11)	10 (11)	25 (7)
Not cases	54 (74)	59 (41)	49 (33)	60 (66)	29 (8)
IES-15					
Probable PTSD	34 (47)	33 (23)	35 (24)	29 (32)	54 (15)
Risk-level PTSD	25 (34)	26 (18)	24 (16)	23 (25)	32 (9)
Not cases	41 (57)	41 (29)	41 (28)	48 (53)	14 (4)

Probable PTSD cases and cases at risk level are based on mainly cut-off values.

PTSS-10 cut-off: probable PTSD cases were diagnosed if six or more items were  $\geq 4$ . Risk-level PTSD cases were diagnosed if four or five items scored  $\geq 4$ .

IES-15 cut-off: probable PTSD cases were diagnosed if scored between 35 and 75; risk-level PTSD cases were diagnosed if scored between 20 and 34.

Table 3. Clinical outcome: anxiety and depression by the Hopkins Symptom Check List 25 (HSCL-25).

Scale	Probable cases	Risk-level cases	Probable cases, Norwegian population ( $n = 2727$ )
	% ( $n$ )	% ( $n$ )	%
HSCL-25			
Total	44 (60)	7 (9)	14.9
Acute	41 (29)	3 (2)	
Subacute	46 (31)	10 (7)	
Men	38 (42)	7 (8)	7.2
Women	64 (18)	4 (1)	19.8
Age			
18–19	50 (4)	12 (1)	
20–39	39 (42)	6 (6)	14.9
40–59	65 (13)	10 (2)	16.1
60–75	50 (1)	0	19.4

Probable anxiety and depression cases and risk level anxiety and depression cases are based primarily on cut-off scores.

HSCL-25 cut-off: probable cases of anxiety and depression, 1.75–4.00; risk-level anxiety and depression scores, 1.55–1.74. Norwegian population is by Sandanger et al. (14).

cally significant differences in occurrence of probable cases and risk level cases.

#### ***The relationship among psychological reactions***

Table 4 shows scores on the seven items measuring dissociation during the stress exposure by PTSS-10 categories (probable cases PTSD, risk level PTSD and not cases). One-way ANOVA showed statistically significant differences (all  $P$ -values  $< 0.001$ ) between PTSS-10 categories and the seven PD-items.

Correlational analyses showed statistically significant correlations ( $P < 0.001$ ) among all outcome measures. Total scale PTSS-10 correlated with the total IES-15 scale ( $r = 0.86$ ) and with the total HSCL-25 scale ( $r = 0.88$ ). The PD scale correlated with PTSS-10 ( $r = 0.50$ ), IES-15 ( $r = 0.56$ ) and HSCL-25 ( $r = 0.46$ ). Sub-scores of anxiety and depression were highly correlated ( $r = 0.85$ ).

#### ***The relationship between psychological reactions and level of physical injury, perceived life threat and fear of severe physical injury***

Results showed no statistically significant differences between people categorized as assault victims or bodily harm victims on any outcome measure, both the peritraumatic and post-traumatic reactions. With regard to the victims' perception of life threat, 40% felt that their life was at risk during the assault, and 21% felt that they were in danger and could possibly suffer bad injuries without being in mortal danger. Thirteen per cent understood after the incident that they had been in danger, whereas 23% did not feel that the situation was dangerous and 3% did not remember.

“Threat level” (perceived threat) was statistically significant correlated with all outcome measures. Higher levels of perceived threat predicted higher scores on all measures of psychological reactions. The results showed

Table 4. Peritraumatic dissociation (PD) during the exposure by the PTSS-10 categories.

Item	Probable PTSD	Risk-level	Not cases	One way ANOVA, $P$ -value
	( $n = 45$ )	( $n = 18$ )	( $n = 74$ )	
	Mean ( $s$ )	Mean ( $s$ )	Mean ( $s$ )	
1) Standing next to myself	2.3 (1.1)	1.4 (0.7)	1.5 (0.9)	$< 0.001$
2) Other people, things and surroundings are unreal	2.5 (1.3)	1.8 (1.1)	1.7 (1.1)	$< 0.001$
3) My own body doesn't belong to me	2.4 (1.3)	1.3 (0.6)	1.4 (0.8)	$< 0.001$
4) Confusion about whether the incident was real or just a dream	2.4 (1.3)	1.6 (1.1)	1.6 (0.9)	$< 0.001$
5) See the world through a mist	2.2 (1.4)	1.4 (0.8)	1.3 (0.7)	$< 0.001$
6) Not able to remember much of what happened	2.6 (1.4)	2.0 (1.3)	2.0 (1.3)	$= 0.055$
7) Loss of sense of time	3.1 (1.2)	2.3 (1.1)	1.8 (1.1)	$< 0.001$

PTSD, post-traumatic stress disorder;  $s$ , standard deviation; ANOVA, analysis of variance.

Each question mean and  $s$  by the Post Traumatic Symptoms Scale 10 (probable PTSD cases, risk-level and not cases).

Each question was rated on a 5-point scale (0–4), from “it does not concern me” to “it concerns me very much”.

a significant correlation between victims' perceived threat and PTSD [PTSS-10: ( $r=0.22$ ,  $P=0.02$ ), IES-15: ( $r=0.19$ ,  $P=0.04$ )].

**The relationship between psychological reactions and socio-demographic variables**

Table 5 shows that educational level (higher educational levels showing lower distress levels) and gender (females scoring higher on distress) were correlated with outcome measures of IES-22, IES-15 and HSCL-25.

When HSCL-25 cases were categorized, as shown in Table 3, as "not case", "at risk", and "probable case", there were statistically significant gender differences ( $\chi^2=6.03$ ,  $df=2$ ,  $P<0.05$ ). Sixty-four per cent of the female victims and 38% of the male victims were classified as "probable cases".

On the PD scale, women had statistically significant higher mean value than men (2.21 vs. 1.84,  $P=0.03$ , ANOVA).

**Summary of findings**

The structural equations model shown in Fig. 1 summarizes the statistically significant relations between variables. Arrows indicate statistically significant effects. This is not a model based on theory, but a summary of the significant relations observed. This model with 14 degrees of freedom fitted the data reasonably well (RMSEA = 0.07, chi-square/df = 1.73).  $R^2$  was 0.29 for "distress" and 0.09 for "PD". It is of interest that the relationships among the variables may be summarized by a very simple model.

**Discussion**

**Acute and subacute groups**

One goal of this study was to investigate the acute and subacute reactions related to the amount of time after the traumatic event (Table 2). This study found no significant differences between the time since exposure (acute and subacute groups) and PD, PTSD, anxiety and depression, demographic variables and perception of life threat. The expectation was to find a higher score in the acute group, based on the experience that, as time passes

after a traumatic event, the strength of reactions is often reduced. Violence and accidents have been found to cause similar levels of psychological reactions such as anxiety and depression during the first week after the incident (40). However, people injured in assaults have much higher level of anxiety and depression than those injured in accidents 3 months after the event (40). One important implication would be that crime victims often need longer-term support. In addition, the victims in our study had quite serious injuries; 68% were categorized as "inflicted bodily harmed" and 74% of these completed the questionnaires in the subacute phase. Perhaps the increased suffering in the subacute group, both in the acute and subacute phase, partly explains the lack of differences in our project.

**Frequency and intensity of psychological reactions**

**PERITRAUMATIC DISSOCIATIVE EXPERIENCE DURING EXPOSURE**

The participants provided self-report regarding dissociative symptoms during the incident. It is difficult to judge the results measured by the seven items assessing the PD symptoms. Dissociative reactions that occur during the incident are quite common, but the effect regarding later psychopathology is unclear. The dissociation may have a protective function, by reducing the awareness of the experience and enabling lower encoding of a traumatic event (19), or it may contribute to ongoing psychological problems (9). A relevant question is whether experiencing some PD protects the person who is coping with traumatic experiences. Is there an optimal degree of dissociation, above which the effect may be negative?

Our results support the conclusion that the emotional experiences during exposure are connected to the incidence of PTSD (9, 10). Our findings are based on retrospective assessments of emotions quite close to the incidents in time, and therefore probably valuable as reliable self-reports. Research examining PD has often used retrospective self-reports, asking the participants recall intrapsychic phenomena months or even years after the traumatic incident (13).

Table 5. Pearson correlations by psychological reactions and time since exposure (acute/subacute), level of physical injury, threat level and socio-demographic variables.

	Acute/ subacute	Physical injury	Threat level	Gender	Age	Educational level
PD	-0.02	0.03	0.28**	0.18*	0.11	-0.14
PTSS-10	-0.10	-0.15	0.26**	0.21**	0.06	-0.16
IES-22	-0.10	-0.14	0.27**	0.26**	0.16	-0.21**
IES-15	-0.08	-0.12	0.25**	0.25**	0.18*	-0.20*
HSCL-25	-0.13	-0.10	0.23*	0.12	0.09	-0.20*

PD, peritraumatic dissociation; PTSS-10, Post Traumatic Symptoms Scale 10; IES-22, Impact of Event Scale 22; IES-15, Impact of Event Scale 15; HSCL-25, Hopkins Symptom Check List 25.

\* $P < 0.05$ ; \*\* $P < 0.01$ .

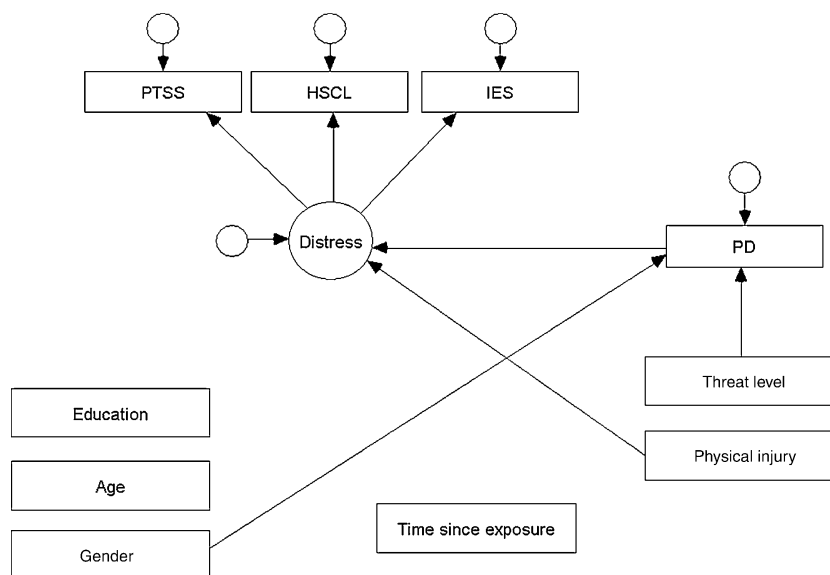


Fig. 1. Structural equations model fitted to the data.

## PTSD

Results from this study show a high prevalence and intensity of PTSD. The effect of assault on mental health has been reported in a national survey in the United States (48 states) (17). The researchers found that around 20% of those exposed to physical assault developed PTSD. No corresponding Norwegian study is available. However, studies focusing on other traumatic events have reported a high occurrence of PTSD. Lavik et al. (41) found that 47% of refugees in an outpatient population suffered from PTSD. Weisaeth (26) found 43% of those exposed to an industrial disaster suffered from acute PTSD, and that 6 of 13 members of a Norwegian ship's crew suffered from acute PTSD after torture (42). In a study of raped women, Dahl (33) found that 76% suffered from high level of intrusion and 55% from high level of avoidance according to the IES-15, in the acute phase. Assault violence and rape are the traumatic events in civilian life that have been associated with PTSD in representative samples, both as the highest current and lifetime prevalence rates (43, 44).

Wohlfarth et al. (31) found, in an evaluation of two PTSD screening instruments in a sample of crime victims, that the IES-15 may be used as a screening instrument for PTSD, with high sensitivity and specificity. They reported that using a score of 19 as cut-off on IES-15 provides good identification of ICD-10 cases, whereas DSM-4 cases are better identified if the cut-off is increased to 24 (31). Mainly we used cut-off as described in Table 2 but when using 19 as cut-off as much as 59% of the participants in our project scored as probable PTSD ("ICD-10 cases").

## ANXIETY AND DEPRESSION

Forty-four per cent of the participants in this study scored as cases with probable anxiety and depression, according to the HSCL-25. However, there is some debate regarding the differentiation of anxiety from depression, both from methodological and theoretical views. Diagnoses of anxiety and depression are highly correlated, in both normal and clinical populations (14). This is supported in the present study.

The HSCL-25 scale has been used extensively in Norway (14). Sandanger et al. (14) found a 15% prevalence rate of HSCL-25 probable cases, with a cut-off at 1.75, in a Norwegian population. In their study, in which the HSCL-25 was used as a tool to predict psychiatric morbidity in a Norwegian population, the HSCL-25 subscales did not predict single diagnoses better than the total scores (14). In another study, comorbidity of mental problems, included most depressions, panic and generalized anxiety, gave the highest HSCL-25 scores (39). However, they found that the anxiety subscale predicted somatoform disorder better than depression. Our study found high level of both anxiety and depression. An interesting question is whether the HSCL-25 is measuring psychological pain and distress, a statement claimed by Sandanger et al. (39).

### *The relationship between psychological reactions*

Our results showed significant mutual correlation among all the outcome measures. We found that a high occurrence of PD correlated with PTSD, anxiety and depression, threat level and gender.

Our results support other studies that found a high comorbidity of PTSD with anxiety and depression. Some research showed considerable overlap and co-occurrence of PTSD and other emotional symptoms such as anxiety and depression following trauma in general, or after violent crime (8, 12). Breslau (43) found that PTSD was associated with increased risk of first-onset major depression and alcohol abuse, and vice versa, that existing major depression increased the risk of developing PTSD after exposure to trauma.

Shalev et al. (12) conducted a prospective study explicitly to examine the differentiation between PTSD and depression and symptoms related to emergency room visits. Their conclusion was that PTSD and depressive symptoms are independent reactions related to trauma. However, if responses to trauma included PTSD and depression simultaneously, it worsened the prognosis (8, 12).

#### ***The relationship between psychological reactions and level of physical injury, perceived life threat and perceived fear of severe physical injury***

Our study showed no connection between cases scored as probable PTSD, anxiety and depression, and level of physical injury, even though nearly 70% of our subjects were categorized as victims of inflicting bodily harm. Nor did we find any relationship between PD and being categorized as victim of assault or of inflicting bodily harm. Such a result corresponds with some studies, although others have found a moderate ability of injury to predict later PTSD (45). One relevant question is whether the severity of physical injury might be less important when one is first physically injured. Alternatively, the legal categories may not be sufficiently sensitive to differentiate disparate levels of physical injuries.

Early distress reactions such as PD and perceived life threat have been reported to predict later problems (46). As many as 40% ( $n = 47$ ) of the participants in this study reported that they felt that their life was at risk and 21% ( $n = 24$ ) believed that there was high potential for severe physical injury. Our results showed a significant correlation between victims' "perception of life threat" or "potential for severe physical injury" and PTSD. The conclusions may be that the emotional experiences of feeling that one's life is in danger or that one is at risk of severe physical harm during the assault have the highest importance. The combination of experiencing these threats together with actual physical injury probably explains the high occurrence of PTSD in our results.

Such a conclusion corresponds with other research showing that the risk of PTSD increases in individuals that report they feared they would be seriously injured or die during the stress exposure, or if they actually were injured (8, 18, 47). Resnick et al. (18) found that 45.2%

of physical assault female victims who experienced both life threat and injury at one point in their lifetime fulfilled criteria for PTSD, and that the point prevalence rate was 19.5%. Similarly, Kilpatrick et al. (48) found that 31% of the assault victims who reported both physical injury and perceived life threat developed PTSD. Among people who reported injury only, 25% developed PTSD, compared with 21% in victims who reported life threat only (8, 48).

#### ***The relationship between psychological reactions and socio-demographic variables***

Young men are more likely to experience physical assault particularly by strangers, whereas women are often victimized by familiar persons such as husbands or ex-husbands (8). This is reflected in our sample, which contained few women compared with men. Brewin et al. (46) focused on the same kind of violence, and recruited few women in their study compared with men (39 women, 118 men).

Our results related to gender and PD showed higher significant mean value of women than men on the PD scale. Our result are in accordance with most empirical research, which reports a higher score among women (49). Our results are in contrast with Spitzer et al. (50), who found no gender differences in dissociation. They had in mind that the historically close link between conversion and hysteria has led to the widespread view that dissociative and other psychiatric disorders predominantly occur in women (50). Possible case selection biases might explain the female predominance, or alternatively there may be equal or lower score of PD in male populations of assault victims.

There is a higher rate of PTSD among female victims compared with men. Our findings is consistent with the reviews by Kilpatrick & Acierno (8) and Breslau (43), who showed a risk twice as high for women as for men to develop PTSD after exposure to any type of potentially traumatizing event. This difference was explained by the primarily greater risk of women developing PTSD after traumatic events involving assault violence, even when rape was excluded from the result (43). Breslau (43) showed that the lifetime prevalence of exposure involving assault violence was higher in men than women, and a peak of assault violent experience before reaching 20 years of age. They found the probability of assault violence declined significantly after the age of 20. The average age of our participants was 31 years.

Sixty-four per cent of the women and 38% of the men scored as cases of probable anxiety and depression in our project. The Norwegian population prevalence of cases of probably anxiety and depression were 20% in women and 9% in men (14), and the lowest percentage were found in the group aged from 20 to 39 years. In a normal population, the youngest are in the best physical

condition. Sandanger et al. (14) explanation for the highest score among the oldest participants was partly a close association between HSCL-25 symptoms of anxiety and depression and somatic illness. Such a hypothesis may also explain some of the high occurrence of anxiety and depression in our project, in spite of most participants being young. Most of them had sustained physical injury and suffered from somatic symptoms as well as psychological pain and distress answering the questionnaire.

Our data support previous research with regard to gender and non-domestic violence, PTSD, anxiety and depression, but not results concerning PD. Our project also showed that a higher percentage of women suffer from both PTSD (PTSS-10) and anxiety and depression (HSCL-25) than men. Andrews et al. (51) indicate that the reason why women have a higher risk of developing PTSD, depression and/or other psychological distress is explained by their higher exposure to negative stressors than men, or alternatively, that women have a greater vulnerability to negative effects of stress.

### Summary of findings

Some striking findings have emerged. No relationship was found between the two legal categories and pathological reactions. Psychological reactions among victims of non-domestic violence are a significant problem. Exposure to physical injury may cause PD, PTSD, and/or anxiety and depression. Physical injury needs not be severe to precipitate adverse psychological reactions as PD, PTSD and anxiety and depression. The victim's perception of life threat seems to play a large role in the development of adverse psychological sequel. The acute psychological reactions impairment that results from assault violence may have a deleterious effect on the lives of victims. These symptoms are important for the determination of appropriate treatment to match the individual needs.

*Acknowledgements*—We thank the local police and the local outpatients workers in Bergen and Oslo for assisting the recruitment of victims of violence. The authors acknowledge psychiatrist Páll Eiriksson for his support and in particular for his evaluation of the victims of their possible need for intensive care. Most of all, we thank the participants.

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# Paper III

Soc Psychiatry Psychiatr Epidemiol (2007) 42, Johansen, Venke A.; Wahl, Astrid K.; Eilertsen, Dag Erik; Weisaeth, Lars, Prevalence and predictors of post-traumatic stress disorder (PTSD) in physically injured victims of non-domestic violence: A longitudinal study, pp. 583–593. Abstract only. Full-text not available due to publisher restrictions. <http://dx.doi.org/10.1007/s00127-007-0205-0>

## Prevalence and predictors of post-traumatic stress disorder (PTSD) in physically injured victims of non-domestic violence : A longitudinal study

### Abstract

#### Background

Victims of violent assault experience diverse post-event emotional problems such as post-traumatic stress disorder (PTSD), and they may have multiple emotional problems. The aim of the present study was to evaluate the prevalence and predictors of PTSD in a longitudinal design.

#### Methods

The levels of physical injury, perceived life threat, prior experience of violence, peritraumatic dissociation (PD), acute PTSD, perceived self-efficacy and perceived social support are considered possible predictors. This study had a single group (N = 70), longitudinal design with three repeated measures over a period of 12 months. Questionnaires used were: Impact of Event Scale-15 and 22 (IES-15 and 22), Post-Traumatic Symptom Scale-10 (PTSS-10), Peritraumatic Dissociation (PD) 7-item self-report measure, Social Provisions Scale (SPS) and Generalized Self-Efficacy scale (GSE).

#### Results

Results showed a high prevalence and severity of PTSD on all outcomes, for instance 31% scored as probable PTSD-cases and 14% as risk level cases by IES-15 at T3. Either injury severity or prior experience of being a victim of violence predicted PTSD in this study. Early PTSD predicted subsequent PTSD, and perceived life threat was a predictor of PD. Furthermore, lack of perceived social support was a predictor of PTSD symptoms at T3. In addition, low perceived self-efficacy was a predictor of PTSD and influenced perceived social support at T1.

#### Conclusions

Our results showed that experience of non-domestic violence may cause serious chronic emotional problems, and therefore it is important to be aware of early symptoms indicating needs for special follow-ups.

#### Key words

non-domestic violence – post-traumatic stress disorder (PTSD) – peritraumatic dissociation (PD) – perceived self-efficacy (PSE) – perceived social support (PSS)

# Paper IV

Research

Open Access

## The predictive value of post-traumatic stress disorder symptoms for quality of life: a longitudinal study of physically injured victims of non-domestic violence

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Published: 21 May 2007

Received: 28 March 2007

*Health and Quality of Life Outcomes* 2007, **5**:26 doi:10.1186/1477-7525-5-26

Accepted: 21 May 2007

This article is available from: <http://www.hqlo.com/content/5/1/26>

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### Abstract

**Background:** Little is known about longitudinal associations between post-traumatic stress disorder (PTSD) and quality of life (QoL) after exposure to violence. The aims of the current study were to examine quality of life (QoL) and the predictive value of post-traumatic stress disorder (PTSD) for QoL in victims of non-domestic violence over a period of 12 months.

**Methods:** A single-group (n = 70) longitudinal design with three repeated measures over a period of 12 months were used. Posttraumatic psychological symptoms were assessed by using the Impact of Event Scale, a 15-item self-rating questionnaire comprising two subscales (intrusion and avoidance) as a screening instrument for PTSD. The questionnaire WHOQOL-Bref was used to assess QoL. The WHOQOL-BREF instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. Results of the analysis were summarized by fitting Structural Equation Modelling (SEM).

**Results:** For each category of PTSD (probable cases, risk level cases and no cases), the mean levels of the WHOQOL-Bref subscales (the four domains and the two single items) were stable across time of assessment. Individuals who scored as probable PTSD or as risk level cases had significantly lower scores on the QoL domains such as physical health, psychological health, social relationships and environmental than those without PTSD symptoms. In addition, the two items examining perception of overall quality of life and perception of overall health in WHOQOL showed the same results according to PTSD symptoms such as QoL domains. PTSD symptoms predicted lower QoL at all three assessments. Similarly PTSD symptoms at T1 predicted lower QoL at T2 and PTSD symptoms at T2 predicted lower QoL at T3.

**Conclusion:** The presence of PTSD symptoms predicted lower QoL, both from an acute and prolonged perspective, in victims of non-domestic violence. Focusing on the individual's perception of his/her QoL in addition to the illness may increase the treatment priorities and efforts.

## Background

The human response to interpersonal violence, is one of the most important public health problems in the world [1]. Exposure to a terrifying event such as violence may confront an individual with such horror and threat to a degree that usual psychological defenses are incapable of coping with the impact. The consequences may be temporarily or permanently altered capacity to cope, changed concept of self and reduced quality of Life (QoL). Research shows that the anxiety disorder, post-traumatic stress disorder (PTSD) is a common problem following violence, and that other emotional problems may be secondary to PTSD [2,3].

Three clusters of symptoms, namely re-experiencing, avoidance and hyperarousal define PTSD. In almost all persons, intrusive and repetitious symptoms develop after exposure to extreme stress. However, only a certain proportion develop avoidance and hyperarousal symptoms [4]. The risk of posttraumatic emotional problems has been found to be highest in persons who report that during the assault they feared they would be killed or seriously injured, or actually were injured [2,5]. Prior experiences of victimization have also been found to elevate the risk of emotional problems following new victimization [6]. In other studies, experiences of earlier violence, perceived threat and injury severity have been found to be important predictors of PTSD [2]. Individuals who develop symptoms of PTSD usually recover within one year after the event. Those who do not rarely recover completely [7].

Knowledge about people's experience of reactions following exposure to violence, including the impact on their QoL, is needed to improve the understanding of these complex psychological processes [8]. Publications on the subject of QoL in psychiatric research are of later date than those in somatic medicine [9]. Quality of Life (QoL) has been defined in a number of ways such as symptom status, functional health, general health perceptions, general life satisfaction, well-being and overall QoL. Terms such as health-related QoL, functional status, subjective health status and overall QoL are used interchangeably to express different aspects of the term QoL in the field. Numerous questionnaires have been developed for assessing the construct. Most authors agree that QoL should be approached as a complex and multidimensional construct [10,11]. The World Health Organization defines QoL as: "the individual's perception of his/her position in life in the context of the culture and value system in which he/she lives and in relation to his/her goals, expectations, standards and concerns" [12]. This definition reflects the multidimensional nature of QoL as the subjective evaluation is embedded in the individual's physical health, psychological state, level of independence, social relationships, per-

sonal beliefs and relationships to salient features of the environment [12].

The relationship between physical symptoms, health status, psychological status and satisfaction with life is complex [13,14]. Wilson and Cleary (1995) constructed a conceptual model of health-related quality of life (HRQoL) that integrates both biological and psychological aspects of health outcomes linked with both individual and environmental characteristics [15]. This model linked physiological variables, symptom status, functional health, general health perceptions and overall QoL. Health perception, subjective measures of life satisfaction and well-being are not found directly as a one-to-one relationship to severity of symptoms, disability and functional limitations in their review of research on interrelationships of patients' outcome [15]. The model integrates a continuum of increasing levels of complexity for understanding the impact on QoL. The causal pathway of the model begins with biological aspects where overall QoL is the final outcome. The model has been widely applied to examine populations with a spectre of different diseases according to QoL [16].

The European Study of Epidemiology of Mental Disorders (ESEMED) reported that mental disorders were associated with substantial levels of disability and loss of QoL [17]. Some QoL assessments reflect a new evaluation of functional and social outcomes associated with recovery from mental illness. The assessments of QoL in the psychiatric field are emerging as important, both in consideration of different diagnoses and in consideration of the impact of treatment intervention, and also in evaluation of medical disability.

Several studies of Vietnam veterans examining the impact of PTSD on QoL by a wide range of QoL measures, show that PTSD have negative influence on QoL in both females and males [18-20]. The influence on QoL is not found only among the veterans with the diagnosis of PTSD, but also among family members [21]. Still there is an obvious lack of research on the implications of PTSD for QoL [10,11,22,23]. Also QoL studies based on civilian populations have been shown to predict QoL impairment in patients diagnosed as suffering from PTSD [10,11,22,23].

How PTSD- symptoms after exposure to non-domestic violence influence QoL is less known, as well the impact of PTSD on QoL over time. As far as we know, no longitudinal studies of civilians have evaluated the relationship between QoL and PTSD after exposure to non-domestic violence. The aims of the present study are as follows.

1) To investigate QoL in victims of non-domestic violence by assessing the appearance of PTSD symptoms over a one-year period following the trauma.

2) To investigate the predictive value of prior experience of violence, level of physical injury, perceived life threat and the presence of PTSD symptoms on QoL in victims of non-domestic violence over a one-year period following the trauma.

**Methods**

**Design**

The present study is a part of a larger study of the consequences' of non-domestic violence, combining semi-structured interviews and questionnaires. This study had a single-group (n = 70) longitudinal design with three repeated measures over a period of 12 months. Most respondents (97%) answered the first questionnaire during a period that ranged from a few days to 16 weeks after the assault (T1). The second assessment was conducted 3 months later (T2) and the third assessment was 12 months later than the first assessment (T3).

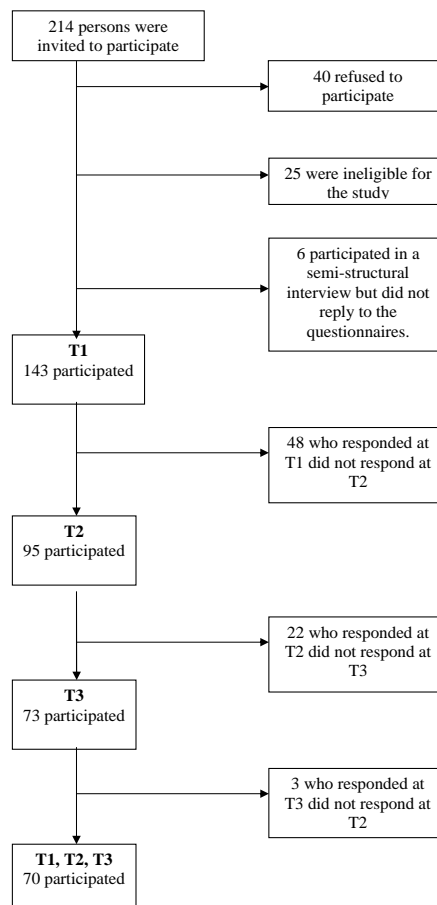
**Sample and data collection**

The criteria for inclusion were people aged 18 years or older seeking assistance from an emergency unit or making a police report of actual physical assault in the communities of Bergen and Oslo, Norway. For inclusion the person had to be assaulted by a person other than a family member or a present or former intimate partner. With the assistance of local police and medical services, participants were identified and recruited. Following ethics committee approval, potential participants were asked permission for the researcher to contact them. If the person agreed, informed consent and more information about the project were sent by post.

The flow chart in Figure 1 shows that 214 people were asked to participate. Forty refused; this group had an average age of 29.6 (range 18–66) years and gender distribution of 37 men and 3 women. Twenty-five people were ineligible for the study because they failed to satisfy the criteria for study entry. Six persons participated in a semi-structured interview but did not return the questionnaires.

The sample at first assessment (T1) therefore consisted of 143 Norwegian-speaking adults. The response rate was 66% (n = 95) at T2 and 51% (n = 73) at T3. Fourteen could not be reached by mail at T3 due to their addresses being unknown.

Seventy persons (49%) participated at all three assessments. The average age in the respondent group at all three assessments was 33 years (SD = 12.3) with a range from 18 to 75 years, and the gender distribution was 83%



**Figure 1**  
Flow chart: Recruitment.

(n = 58) male and 17% (n = 12) female participants. The 70 respondents who participated at all three assessments had all been physically injured during the assault.

Table 1 presents information on all participants at T1, persons who participated at all three assessments ("respondents") and dropouts.

Independent t-test showed a statistically significant difference in mean age between respondents and dropouts (t = 2.57, p = 0.01, df = 128), with respondents an average of five years older than dropouts. Similarly, independent t-test showed statistically significant differences in mean educational level in respondents and dropouts (t = 2.25, p = 0.03, df = 135), where respondents had a higher level of educational than dropouts. No statistically significant differences were found between respondents and dropouts with regard to gender, prior experience of violence,

**Table 1: Sample characteristics.**

	Participants at T1	Respondents at T1, T2 and T3	Dropouts
Sample size	143	70	73
Age			
Mean (SD)	31 (11.0)	33 (12.3)	28 (9.3)
Range	18-75	18-75	18-57
Gender % (n)			
Male	80% (114)	83% (58)	77% (56)
Female	20% (29)	17% (12)	23% (17)
Prior experience of violence % (n)			
Yes	48% (63)	45% (29)	51% (34)
No	52% (69)	55% (36)	49% (33)
Physical injury % (n)			
Assault	31% (45)	30% (21)	33% (24)
Inflicted bodily harm	69% (98)	70% (49)	67% (49)
Cohabitation % (n)			
Living with others	60% (86)	58% (41)	61% (45)
Living alone	40% (57)	42% (29)	39% (28)
Marital status % (n)			
Single	71% (101)	69% (48)	74% (53)
Married/cohabitant	18% (25)	19% (13)	17% (12)
Separated/divorced	11% (16)	12% (9)	10% (7)
Educational level % (n)			
Primary school	8% (11)	6% (4)	10% (7)
Secondary school	56% (81)	47% (33)	67% (48)
University, less than 4 y.	27% (38)	34% (24)	19% (14)
University more than 4 y.	9% (12)	13% (9)	4% (3)
Employment % (n) *			
Employed/self-employed	66% (95)	67% (47)	65% (48)
Students/military service	24% (35)	26% (18)	23% (17)
Unemployed/grant leaved	11% (16)	7% (5)	15% (11)
Pensioned/sick leaved	9% (13)	13% (9)	5% (4)
Threat level % (n)			
Felt life at risk	41% (50)	41% (25)	41% (25)
Fear of severe physical injury	21% (25)	21% (13)	19% (12)
Understood danger afterwards	12% (15)	13% (8)	12% (7)
Did not perceive dangerous	23% (28)	23% (14)	23% (14)
Did not remember	3% (4)	2% (1)	5% (3)

\* Employment: The total is more than 100% as some participants were both employed and studying or both employed and pensioned

level of physical injury, cohabitation, marital status, employment status or threat level. Further, there were no statistically significant differences between respondents and dropouts with regard to mean values on scales and subscales of IES-15 and WHOQOL-Bref.

## Assessment

### Quality of life

The WHOQOL-Bref is a self-report scale that consists of 26 items. It is a multilingual, multicultural generic quality of life scale, developed across 15 field centres [12,24]. The WHOQOL-Bref includes four domains related to QoL: physical health, psychological health, social relationships and environment. In addition, two items are examined separately, namely the perception of overall quality of life and perception of overall health. The WHOQOL-Bref has been demonstrated to have satisfactory discriminant validity, internal consistency and test-retest reliability [12,25]. The Norwegian version used in the present study has also been reported to have satisfactory psychometric properties [26]. The items are rated on a 5-point Likert scale, reflecting intensity, capacity, frequency or evaluation. The items inquire "how much", "how completely", "how often", "how good" or "how satisfied", with possible answers ranging, from very satisfied [5] to not at all satisfied [1]. The range of scores in each domain is from 4 to 20, where a higher score indicates a better QoL. In the present study, all measurement domains show satisfactory internal consistency and reliability, as estimated by Cronbach's alpha: physical health = 0.87, psychological health = 0.84, social relationships = 0.88 and environment = 0.87.

### Post-traumatic stress disorder symptoms

The Impact of Event Scale-15 (IES-15) has been demonstrated to be a useful self-report measure of stress reactions after the experience of a traumatic event, and to be valuable for detecting individuals who need treatment [27-29]. The items are scored on a 4-point scale, scored as 0 (not at all), 1 (rarely), 3 (sometimes) and 5 (often). In research, the intrusion and avoidance subscales from the IES-15 are typically used. Scores range from 0 to 35 for intrusion, 0 to 40 for avoidance and 0 to 75 for the total IES-15. On the full scale, a total score of 35 or more has been reported to indicate PTSD, and a score between 20 and 34 indicates a level of risk [30]. In the present study, internal consistency as assessed by Cronbach's alpha was found to be: IES-15 total = 0.83, intrusion subscale = 0.96 and the avoidance subscale = 0.96.

### Perception of life threat

The victims' perception of threat to life and their fear of increased severe physical injury were categorized as: felt life at risk, fear of increased severe physical injury (but life not at risk), understood danger afterwards, did not perceive the situation as dangerous, and did not remember.

### Classification of physical injury

The participants were recruited from the two main crime categories used by the police in their registration of violence: "assault" and "inflicted bodily harm" [31]. Each

case was classified at T1 in cooperation with the police, based upon a judgement made using a combination of the level of physical injury and severity of intention of the perpetrator to cause harm, where physical injury is the most important criterion. The assault category comprises injuries ranging from a black eye to those that are quite serious, and in addition often includes serious threats of more severe physical injury. The victims of inflicted bodily harm comprise people with more serious physical injuries ranging from near fatal injuries to different kinds of fractures, or other comprehensive bodily injuries.

**Previous experience of being a victim**

Previous experience of being a victim were categorised as yes or no.

**Demographics**

Demographic information such as age, gender, educational level, cohabitation, marital status and employment status were recorded.

**Statistical analysis**

Data were analysed by frequency tabulations, cross tabulations, independent sample t-tests, Pearson's *r* and analysis of variance. Results of the analyses were summarized by fitting Structural Equation Modelling (SEM) to data of persons who participated at all three assessments. The construction of the aims and analysis including variables such as prior violence, threat level, and physical injury in figure 2 is based on earlier findings, for instance prior SEM-analyses examining predictors of PTSD in a cross sectional perspective at T1 [2] and a longitudinal perspective including all the 3 measurement [32]. The arrows in the SEM-model represent the hypothesized linkages between the dimensions already analysed and the pathways presented in Wilson and Cleary conceptual model [15]. Cohabitation is believed to influence health and perception of QoL [33,34]. All analyses were performed using SPSS v.14 and AMOS v.6.

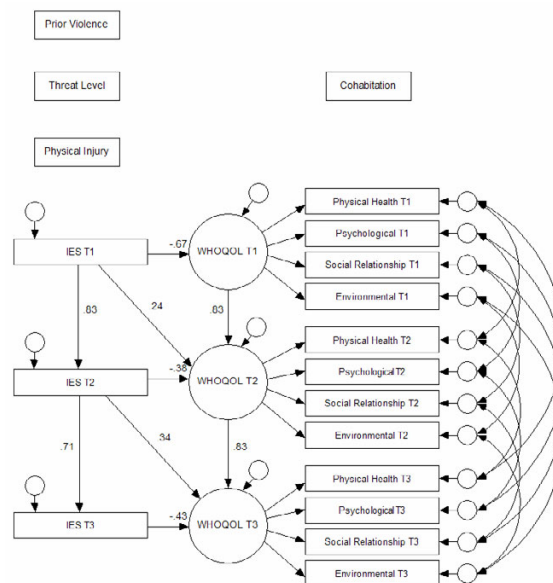
**Results**

**Sample characteristics**

Table 1 shows that the sample participating at all three assessments comprised 83% male and 17% female victims with an average age at 33 years (*SD* = 12.3, range 18–75). Thirty percent of the participants were categorized as "assault" and 70% as "inflicted bodily harm" according to physical injury. Forty-one percent felt that their life was at risk during the assault and 21% felt that they were in danger and could obtain severe injuries, but did not feel that their life was at risk. For further information about sample characteristics see table 1.

**Scale scores and the level of QoL by probability of PTSD**

Descriptive information on the scales and subscales for respondents at T1, T2 and T3 is shown in Table 2.



**Figure 2**  
 Structural equations model fitted to the data. IES T1, IES T2 and IES T3 = Impact of Event Scale-15 at T1, T2 and T3, WHOQOL T1, WHOQOL T2 and WHOQOL T3 = WHOQOL-Bref at T1, T2 and T3, Prior violence = Previous experience of being a victim of violence, Threat level = The victims' perception of threat, Physical injury = severity of physical injury categorized as "assault" or "inflicted bodily harm", cohabitation = living alone or living with others

The respondents were classified as probable PTSD cases, risk level PTSD cases and no PTSD cases, according to scores on the IES-15. Table 3 shows scores on the WHOQOL-Bref (overall QoL, overall health and the four subdomains) by probability of full or partial PTSD at T1, T2 and T3.

Generally, WHOQOL-Bref values associated with probable PTSD were lower than values associated with no cases, for instance, at T1: mean level of physical health was 12.03 for those diagnosed as probable PTSD, while the corresponding value was 17.45 for those classified as no cases. One-way ANOVAs showed statistically significant main effects of the probability of PTSD for all WHOQOL-Bref subscales at all three assessments. With the exception of overall health at T2, where *p* < 0.05, all other *p* values were < 0.001.

For each category of PTSD (probable cases, risk level cases and no cases), the mean levels of the WHOQOL-Bref subscales (the four domains and the two single items) were stable across time of assessment: for instance, the mean scores for the domain "psychological health" at T1 was



**Table 2: Descriptive information on scales and subscales for those who participated at all three assessments (n = 70).**

Scale	Subscales	T1		T2		T3	
		Mean	SD	Mean	SD	Mean	SD
IES-15	Total	26.0	18.4	23.1	17.1	22.1	19.5
	Intrusion	13.6	10.1	11.3	9.2	10.4	9.5
	Avoidance	12.3	10.5	9.4	11.8	12.0	11.8
WHOQOL- Bref	Physical health	14.9	3.6	15.4	3.2	15.1	3.4
	Psychological	13.9	3.1	14.4	3.0	14.1	3.4
	Social relationships	14.7	3.2	14.3	3.4	14.8	3.8
	Environmental	14.5	2.7	14.9	2.7	14.7	3.0
	Overall QOL	3.6	1.0	3.7	0.8	3.6	1.0
	Overall Health	3.4	1.1	3.4	1.0	3.5	1.0

11.89, while the corresponding means at T2 and T3 were 12.14 and 11.54, respectively.

**QoL predicted by prior experience of violence, level of physical injury, perceived life threat and presence of PTSD symptoms**

Table 4 shows bivariate correlations among IES-15 and WHOQOL-Bref scales and subscales at T1, T2 and T3. All correlations (ranging from 0.29 to 0.87) were statistically significant ( $p < .01$ ).

Table 5 shows bivariate correlations among IES-15, WHOQOL-Bref total scores and sample characteristics at T1, T2 and T3. IES at T1 ( $p < 0.05$ ) and QoL at T1, T2 and T3 were significantly correlated with age ( $p < 0.05$ ).

The SEM analysis shown in Figure 2 summarizes the statistically significant relations among all relevant variables, including variables such as prior violence, threat level, physical injury, cohabitation, IES-15 and WHOQOL-Bref (QoL). While the main purpose of the SEM analysis is to summarize the relations among variables in the study, the

model is obviously also based on a theoretical understanding of the relation between PTSD symptoms and quality of life [15] and prior research [10,18-21,35-37]. The four domains of physical health, psychological, social relationships and environment were modelled as indicators of a common component. Regression coefficients (b), standard errors (S.E.), critical ratios (C.R.), standardized regression values (beta), and p-values are presented in table 6. R-square was 0.69 for IES-15 at T2, 0.51 for IES-15 at T3, 0.45 for WHOQOL-T1, 0.82 for WHOQOL-T2 and 0.75 for WHOQOL-T3. The model with 138 degrees of freedom fitted the data reasonably well (RMSEA = 0.065), chi-square/df = 1.3. Arrows between variables indicate statistically significant effects. Two-way arrows show correlations between error terms for variables measured repeatedly at T1, T2 and T3.

Scores on IES-15 predicted QoL at all three assessments. IES scores at T1 predicted QoL at both T1 ( $p < 0.001$ ) and at T2 ( $p = 0.05$ ). Similarly, IES scores at T2 predicted QoL at T2 ( $p < 0.001$ ) and T3 ( $p < 0.01$ ). QoL at T1 was found to be a predictor of QoL at T2, and QoL at T2 predicted

**Table 3: Mean scores on WHOQOL-Bref by probability of PTSD for respondents at T1, T2 and T3 (n = 70).**

Time	T1			T2			T3		
	Probable PTSD	Risk level	No cases	Probable PTSD	Risk level	No cases	Probable PTSD	Risk level	No cases
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Overall QoL	2.94 (0.94)	3.52 (0.99)	4.14 (0.69)	3.14 (0.85)	3.80 (0.62)	4.03 (0.78)	2.86 (0.89)	3.50 (0.85)	4.10 (0.73)
Overall Health	2.94 (1.26)	3.00 (1.00)	4.03 (0.73)	2.95 (1.07)	3.25 (1.11)	3.72 (0.75)	2.61 (0.92)	3.60 (1.07)	3.87 (0.78)
Physical health	12.03 (3.77)	13.79 (2.86)	17.45 (1.81)	12.91 (3.27)	14.77 (2.63)	17.64 (1.67)	12.23 (3.41)	14.86 (2.56)	16.84 (2.18)
Psychological	11.89 (2.90)	12.69 (2.28)	16.14 (2.41)	12.14 (2.45)	14.40 (2.66)	16.14 (2.47)	11.54 (3.11)	13.20 (2.86)	15.89 (2.63)
Social	12.89 (3.03)	14.03 (2.75)	16.32 (2.89)	12.06 (3.17)	14.66 (3.32)	15.63 (2.85)	12.60 (3.92)	14.26 (3.97)	16.07 (3.20)
Environmental	12.72 (2.97)	13.58 (1.77)	16.41 (1.77)	13.17 (2.37)	14.21 (2.77)	16.61 (1.64)	12.67 (3.11)	14.25 (2.73)	16.05 (2.36)
Number of respondents	18 (26%)	23 (33%)	29 (41%)	21 (30%)	19 (29%)	29 (41%)	22 (31%)	10 (14%)	38 (54%)

Probable PTSD is "diagnosed" if IES-15 scores are  $\geq 35$ , risk level if scores are  $\geq 20$  and  $< 35$  and no PTSD if scores  $< 20$ .

**Table 4: Pearson's correlation among measures of PTSD (IES-15) and QoL (WHOQOL-Bref) by all three times of assessment (n = 70).**

		T1							T2							T3						
		2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
<b>T1</b>	1 IES-15																					
	2 Physical health	-.66	-.57	-.45	-.53	-.54	-.43	.83	-.61	-.54	-.44	-.51	-.42	-.37	.65	-.38	-.43	-.32	-.36	-.39	-.36	
	3 Psychological		.72	.63	.71	.74	.68	-.62	.77	.69	.59	.60	.50	.62	-.45	.59	.58	.56	.56	.57	.43	
	4 Social relationships			.72	.74	.76	.59	-.56	.64	.81	.70	.68	.60	.54	-.40	.50	.68	.65	.59	.54	.43	
	5 Environmental				.63	.66	.52	-.41	.57	.69	.76	.58	.43	.47	-.29	.45	.63	.72	.55	.54	.34	
	6 Overall QoL					.70	.62	-.52	.61	.61	.66	.81	.49	.51	-.32	.53	.58	.61	.71	.53	.44	
	7 Overall health						.66	-.47	.61	.64	.73	.65	.69	.59	-.37	.51	.59	.56	.56	.54	.49	
<b>T2</b>	1 IES-15																					
	2 Physical health							1	-.67	-.59	-.49	-.57	-.48	-.33	.71	-.51	-.53	-.34	-.44	-.44	-.32	
	3 Psychological								1	.78	.72	.72	.66	.65	-.54	.74	.71	.64	.62	.67	.61	
	4 Social relationships									1	.70	.69	.65	.54	-.45	.57	.73	.66	.57	.65	.61	
	5 Environmental										1	.73	.72	.53	-.39	.58	.70	.74	.57	.65	.49	
	6 Overall QoL											1	.65	.48	-.40	.62	.66	.61	.76	.68	.48	
	7 Overall health												1	.56	-.52	.62	.66	.53	.47	.67	.56	
<b>T3</b>	1 IES-15																					
	2 Physical health													1	-.61	-.60	-.41	-.46	-.60	-.53		
	3 Psychological														1	.87	.67	.76	.79	.75		
	4 Social relationships															1	.79	.78	.83	.66		
	5 Environmental																1	.68	.76	.52		
	6 Overall QoL																	1	.72	.56		

Correlations (r) > 0.40 are significant at 0.001 level, 0.40 > r > 0.29 are significant at 0.01 level and r < 0.29 are significant at 0.05 level.

QoL at T3 (all p < 0.001). The effects of IES-T1 on QoL-T2, and IES-T2 on QoL-T3, were expected to be negative, but turned out to be positive.

Missing arrows between variables in the path diagram indicate that these effects were not statistically significant and they were constrained to zero in the final model. Experiences of earlier violence, perceived threat, severity of injury or cohabitation (living alone or living together with others), were not significant predictors of QoL.

To further explore the relationships among IES and QoL, a modified SE model were fitted to data. The alternative

model was a more complete "cross-lagged" model, estimating the direct effects of both IES on QoL and of QoL on IES. Table 7 shows standardized regression coefficients (beta), p-values and RMSEA for the two different SEMs.

The model fits of the two models were identical (RMSEA = 0.065). In the alternative model, the effects of IES on QoL were unchanged from the first model, and the direct

**Table 6: Regression coefficients (b), standard errors (S.E.), critical ratios (C.R.), p-values (p) and standardized regression coefficients (beta) from SE model fitted to data (see figure 2).**

	b	S.E.	C.R.	P	beta
IES-T1 → QoL-T1	-1.758	0.275	-6.389	< 0.001	-0.673
IES-T1 → IES-T2	0.770	0.062	12.488	< 0.001	0.833
IES-T2 → IES-T3	0.815	0.096	8.464	< 0.001	0.714
IES-T2 → QoL-T2	-0.971	0.282	-3.446	< 0.001	-0.384
IES-T1 → QoL-T2	0.569	0.295	1.928	0.054	0.243
Indirect effect of IES-T1 on QoL-T2	-2.047				-0.877
QoL-T1 → QoL-T2	0.739	0.092	8.057	< 0.001	0.827
IES-T3 → QoL-T3	-0.994	0.225	-4.426	< 0.001	-0.427
IES-T2 → QoL-T3	0.906	0.303	2.991	0.003	0.341
QoL-T2 → QoL-T3	0.878	0.111	7.937	< 0.001	0.835
Indirect effect of IES-T2 on QoL-T3	-1.662				-0.626

**Table 5: Pearson's correlation among sample characteristics and measures of PTSD (IES-15, totalscore), QoL (WHOQOL-Bref-totalscore) by all three times of assessment (n = 70).**

	Age	Prior violence	Physical injury	Threat level	Cohabitation
IES-T1	0.26*	0.11	0.03	0.14	-0.03
IES-T2	0.16	0.04	-0.07	0.09	-0.06
IES-T3	0.33	0.08	-0.08	0.03	-0.22
QoL-T1	-0.26*	-0.41	-0.07	-0.25	-0.02
QoL-T2	-0.27*	-0.03	-0.02	-0.24	0.12
QoL-T3	-0.30*	-0.06	-0.04	-0.24	0.10

\*p < 0.05

**Table 7: Standardized regression coefficients (beta), p-values and rmsea for two SEModels**

	SEmodel 1		SEmodel 2	
	beta	p	beta	p
IES-T1 → QoL-T2	0.24	0.054	0.23	0.051
IES-T2 → QoL-T3	0.34	0.003	0.33	0.003
QoL-T1 → IES-T2	0	-	-0.16	0.102
QoL-T2 → IES-T3	0	-	-0.07	0.586
RMSEA	0.065		0.065	

effects of QoL on IES were weak and failed to reach statistical significance. The first model is a convenient way of summarising the correlation pattern among the observed variables and the in-direct effects of IES on QoL is in line with out theoretical understanding of the relationship between IES and QoL.

**Discussion**

**The level of QoL by probability of PTSD**

Our results showed lower mean values of the four domains (physical health, psychological health, social relationships, environment) and the two items (overall QoL and overall health) of the WHOQOL-Bref, in those suffering from probable PTSD compared to those diagnosed as no cases at all times of assessment.

The negative impact of PTSD on QoL is evident in our results, and in accordance with earlier findings based on a wider range of QoL measurements in both veteran and civilian populations [10,18-21,35-37]. Respondents in the present study categorized as probable cases or risk cases also had lower QoL in all four domains and the two single items, than participants in a study of the Norwegian general population [26]. Our results also showed that respondents categorized as no cases had a similar or even better QoL than participants in this Norwegian study [26]. Result of the present study are in accordance with other research findings, for instance Warshaw et al (1993) found worse QoL functioning among patients diagnosed with PTSD than among patients without the experience of potentially traumatic events [37]. Schnurr et al (2006) in their study of veterans found that PTSD symptoms were associated with reduced health related QoL [18]. They found consistent results across psychosocial and physical domains, but with stronger effect in the psychosocial domain. Our results also are similar to findings of Rapa-port et al (2005) which showed that 59% of PTSD patients and 63% of the patients with major depression had severe QoL impairment [10].

One study that examined the presence of PTSD and QoL as outcome measures in a small sample of clients in a

community mental health setting, using the WHOQOL-Bref, reported a significant reduction of QoL in all domains [23]. Another study, which intended to validate the Swedish Quality of Life Inventory (QOLI), used the questionnaire in a group of crime victims who suffered from PTSD. They reported significantly lower QoL in the PTSD group than in a matched non-clinical group, with large differences in the life areas of self-regard, love relationships, creativity, learning, standard of living, work, health, philosophy of life, recreation, community and friendship [38]. All these studies included the present study, and the pathway pointed out in the model of Wilson and Cleary [15] suggest that, independent of the QoL questionnaire used for measurements, there is an association between PTSD and reduced QoL.

Our results are in accordance of most psychiatric studies investigating the relationship between subjective QoL and psychopathology in terms of psychiatric symptoms [39]. The areas of depression and anxiety have especially been pointed out regarding this relationship [39]. In that point of view our results are expected, PTSD is categorised as anxiety disorder with high comorbidity with anxiety and depression.

Assessment of QoL after exposure to non-domestic violence will give an evaluation of the persons' subjective perception of quality of his or hers own life [10,11], and would be valuable in determining information beyond the symptoms of PTSD, such as the impact of treatment [10,40] and in order to evaluate medical disability.

**The predictive value of PTSD symptoms for QoL**

The present study showed that PTSD symptoms may predict reduced QoL at all times of measurement. Figure 2, which summarizes the results, identifies PTSD symptoms as defined by high IES-15 scores, as a predictor of reduced QoL at all three assessment times. PTSD symptoms were found to be a predictor of lowered QoL, both when measured concurrently and when measured at all prior assessments. Our study showed high correlations, high explained variance and statistically significant results, which all support the conclusion of probable PTSD as an important predictor of poor QoL.

Similar conclusions are also relevant to draw based on the results of the alternative SEM analysis fitted as a more "complete" "cross-lagged" model. Our findings of the effects of PTSD-symptoms on QoL to be unchanged from the first model and no statistical significant of the effects of QoL on PTSD-symptoms indicates that the correct pathway arrow is from to PTSD-symptoms to QoL. Our results indicate that PTSD symptoms are important and powerful factors that negatively influence the person's experience of QoL, in accordance with several other stud-

ies showing PTSD with negative influence on QoL [10,18-21,35-37].

In previous a paper presenting results from a cross-sectional analysis of acute psychological reactions of 138 non-domestic victims of violence [3], we found perceived threat to be a predictor of peritraumatic dissociation, and peritraumatic dissociation to be a predictor of PTSD at T1. Our results showed that perceived life threat or fear of severe physical injury during the event was a direct predictor of PD, but not a predictor of PTSD. A longitudinal analysis likewise identifies perceived threat as an underlying predictor of PD, and PD as a predictor of PTSD after being exposed to violence presented in another paper [32].

Preliminary evidence suggests that PTSD and panic disorder may have a stronger influence on perceived QoL than other anxiety disorders [11]. A longitudinal study investigating the relationship between PTSD and health related QoL in injured trauma victims over a period of 12 months found PTSD to be a predictor of reduced QoL [35]. Injury was intentional for 15% of their sample. Another longitudinal study examining the influence of PTSD on QoL at 6-, 12- and 18 months of follow-up after exposure to major trauma (several trauma types) also reported high impact of PTSD on QoL [36].

In the SEM-analyses the direct effects of IES-T1 on QoL-T2 and IES-T2 on QoL-T3 showed up as positive numbers. This was not an expected result because of the inverse direction of the scales. The overall effects of IES-T1 on QoL-T2 as well as of IES-T2 on QoL-T3 measured by the bivariate correlation coefficients showed as expected up as negative numbers (see table 4). This inverse result is difficult to explain, but some hypotheses may be suggested. One possible explanation may be the "Time Principle of Re-appraisal", finding that dissatisfaction caused by a significant negative event decreases over time from [41]. Another alternative may be "the Principle of What Might Have Been of Re-evaluation", understood as comparing negative events in own life with fictitious occurrence what might have been worse, with the result of decreased dissatisfaction of a life domain. To fully understand this seemingly contradictory effect, further research will be necessary.

Experiences of earlier violence, perceived threat or injury severity were not found as predictors of QoL in the present study. Research shows that living in a partnership is an important determinant of psychological and social well-being in depressed individuals [33], and that poor family support may influence more dysfunctional coping styles [42]. While cohabitation (living alone or living together

with others) was expected to be a predictor of QoL, the results showed no significant connection in our study.

#### **QoL-studies in the psychiatric field**

The constructs of PTSD, psychological, physical health and QoL are probably closely related but believed to be distinct, such as the construct of depression related to these other concepts [43]. Research has shown that subjective QoL is particularly poor in depressed populations [40,44]. Doubts have been raised that subjective QoL measures may be contaminated by psychopathological symptoms, especially considering depression symptoms.

For instance, such comments were made in a study that evaluated depressive symptoms and QoL outcomes using the WHOQOL-Bref [44]. Because of high correlations in our study between values obtained from the WHOQOL-Bref (the four domains) and those from the IES-15, it may be reasonable to assume that assessing QoL in individuals with PTSD symptoms may be tautological measures. However, comparing the questionnaires IES-15 and WHOQOL-Bref showed that only one single item, sleep quality, focused on a similar area. Therefore, the high correlation may not be due to a measurement overlap. To further address this issue, we evaluated the relationship between the overall QoL item and IES-15 scores. These results also showed both high correlations and explained variance, and supported the conclusion of probable PTSD as a powerful predictor of poor QoL.

Priebe et al (1999) points out that basically psychopathology and QoL are independent constructs, but high association between their relationships deserves further research and attention [39]. They have in mind that longitudinal research with repetitious assessment design will throw more light on causality and reciprocal interaction over time than most of studies with cross-sectional designs. Another aspect of importance is that the individual evaluation of his/her own life through self reported QoL is quite different from measurement of symptoms through IES-15. The two questionnaires represent independent aspects of people's experience and functions. Indicating areas such as social relationships, environment and the two single items, the WHOQOL questionnaire goes beyond the traditional measures of symptom levels [40].

#### **Limitations of the study**

The primary limitation of the present study was the small sample size of longitudinal respondents; only 49% completed all assessments over the 12 months. This is an unfortunate but common finding in longitudinal studies of injured and assaulted victims'. Other studies show high levels of dropouts with rates between 40% and 53% of the participants dropping out between the first and last assessment [35,45-50]. Attrition introduces questions about

who is dropping out, whether the most or least symptomatic participants are not responding to all tree assessments. Such a bias would be a potentially serious methodological problem. However, in the present sample, respondents were comparable to dropouts in most ways except they tended to be older with somewhat higher education (table 1). The gender distribution was typical of people reporting violent crime (other than domestic assault) in Norway, but the age distribution was somewhat skewed with higher average age.(31), most likely explained by our participant's minimum age of 18 years. Further, there were no statistically significant differences between respondents and dropouts with regard to mean values on scales and subscales of IES-15 and WHOQOL-Bref. Future trauma research should consider whether the healthiest members of the sample usually respond to follow-ups in longitudinal studies [51].

Another limitation of the current study is that only 17% (12) of the longitudinal sample were females. The presence of female victims at T1 was 28 (20%). Our sample including few female victims are in accordance with another study focusing on the same kind of violence [47]. Additional research is needed to determine the degree to which our results would generalize to female victims of non-domestic violent assault.

The interview data in our study did not include clinical diagnostic interview such as the Clinician Adminstrated Posttraumatic Stress Scale (CAPS). Using only self-report questionnaires, to diagnose probable PTSD is another limitation. Nevertheless, in an attempt to reduce the latter point, we used two scales to assess PTSD symptoms, the Post-Traumatic Symptom Scale-10 (PTSS-10) and IES-15 which both have mainly used cut of scores to examine the severity of PTSD symptoms [3]. Specifically, presenting the cross-sectional analysis of 138 of the participants at T1 we found a similar occurrence of probable acute PTSD cases by using PTSS-10 and IES-15 [3]. We found a similar occurrence of probable PTSD cases by IES-15 and PTSS-10, but some differences concerning risk level cases. Same similarity was found in longitudinal analyses referred to in another paper [32]. IES-15 is examined in a study among crime victims by Wolfarth et al (2003), and found to be highly accurate in identifying PTSD cases, whether using DSM-IV or ICD-10 criteria. The questionnaire is screening for PTSD cases with high sensitivity (ranging between 0.93 and 1.00) and specificity (ranging between 0.78 and 0.84) [29].

## Conclusion

According to the present study, individuals diagnosed with full or partial symptoms of PTSD have a poor QoL compared with not diagnosed or normal populations. These QoL results demonstrate chronic, highly negative

influences on the individual's perceived reality of their own situation. Early identification of probable PTSD and impact on QoL are very important because those who remain ill one year after the event rarely recover completely [7]. The present findings have clear practical implications. Firstly, clinical implications must be to prioritize interventions preventing development of PTSD, and secondly to follow up those with PTSD. In addition, in order to evaluate medical disability for financial compensation of victims of non-domestic violence, an assessment of QoL may be very useful.

PTSD has high impact on QoL in non-domestic victims of violence, as measured by the WHOQOL-Bref in all domains. The presence of PTSD in both the acute and later stages is a predictor of poor QoL. Such knowledge might provide guidance about how to effectively implement preventive and early intervention strategies in this group of victims. The individual's perception of his/her own life, in addition to the symptoms and the illness may increase both the patient's and the therapist's priority and effort as regards treatment. The diagnosis and symptoms may not be the most central concern of the patient, and use of QoL assessment puts the individual at the centre of inquiry. A more comprehensive approach by focusing on perceived QoL as well as symptom reduction as therapeutic strategies on PTSD patients, should consider advancing treatment outcome.

## Competing interests

The author(s) declare that they have no competing interests.

## Authors' contributions

VAJ conceived and designed the study, collected the data, performed statistical analysis and drafted the manuscript. AKW, LW and BRH participated in the design and revised the manuscript critically. DEE conducted the statistical analyses and revised the manuscript critically. All authors read and approved the final manuscript.

## Acknowledgements

We thank the local police and the local outpatient workers in Bergen and Oslo for assisting the recruitment of victims of violence. The authors acknowledge psychiatrist Páll Eiriksson for his support and in particular for his evaluation of the victims for their possible need for intensive care. Most of all, we thank the participants.

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