

**Disaster-related bereavement:
A study of long-term mental health effects and interventions**

Pål Kristensen

Norwegian Centre for Violence and Traumatic Stress Studies

Thesis submitted for the Degree of Dr. philos.,

Faculty of Medicine,

University of Oslo,

2012

© Pål Kristensen, 2012

*Series of dissertations submitted to the
Faculty of Medicine, University of Oslo
No. 1371*

ISBN 978-82-8264-362-7

All rights reserved. No part of this publication may be reproduced or transmitted, in any form or by any means, without permission.

Cover: Inger Sandved Anfinsen.
Printed in Norway: AIT Oslo AS.

Produced in co-operation with Unipub.
The thesis is produced by Unipub merely in connection with the thesis defence. Kindly direct all inquiries regarding the thesis to the copyright holder or the unit which grants the doctorate.

CONTENTS

Acknowledgments	1
List of papers	3
Abbreviations	4
1. INTRODUCTION.....	5
1.1 Bereavement, grief, and mourning	5
1.2 Why conduct research on bereavement and disasters?	5
1.3 A personal account	7
2. BACKGROUND.....	9
2.1 A brief history of the scientific study of grief and bereavement.....	9
2.2 Disaster and bereavement research in Norway	10
2.3 Loss after sudden and violent death	11
2.4 Loss of a child	13
2.5 When grief becomes a disorder	13
2.5.1 A brief review of the concept pathological grief.....	13
2.5.2 Complicated grief (CG) or prolonged grief disorder (PGD) - proposal for a new disorder	15
2.5.3 Risk factors for PGD	18
2.5.4 Treatment of PGD	18
2.5.5 The debate and controversy of a grief disorder	19
2.5.6 Current suggestion for DSM-5	19
2.6 Research on disaster-related bereavement	22
2.6.1 Challenges and dilemmas	22
2.6.2 Mental health effects	22
2.6.3 Long-term impact	24
2.6.4 Interventions	24
2.7 The disasters	25
2.7.1 The 2004 South-east Asian tsunami.....	25
2.7.2 The 1986 Vassdalen avalanche	27
3. AIM OF THE THESIS	28
3.1 The Tsunami bereavement study.....	28
3.2 The Vassdalen avalanche study.....	28
3.3 Ethical aspects	28
4. METHODS	29
4.1 Design and procedure.....	29
4.2 Participants	30
4.3 Measures.....	31

4.4 Psychometric assessments.....	31
4.5 Statistical analyses.....	35
5. SUMMARY OF RESULTS.....	37
5.1 Main findings from paper I	37
5.2 Main findings from paper II	38
5.3 Main findings from paper III.....	39
5.4 Main findings from paper IV	40
5.5 Main findings from paper V	41
6. GENERAL DISCUSSION.....	42
6.1 Methodological considerations	42
6.2 The level of grief and mental disorders.....	43
6.3 Risk and protective factors	45
6.4 The trajectory of grief	46
6.5 Support for a grief disorder?	47
6.6 The significance of interpersonal factors in grief.....	47
6.7 Early interventions after disasters - visiting the site of death	48
6.8 Implications	49
6.8.1 Implications for clinicians	49
6.8.2 Implications for future research	51
6.9 General conclusions	51
REFERENCE LIST	53
PAPERS I-V.....	69

Acknowledgments

This study was carried out at the Norwegian Centre for Violence and Traumatic Stress Studies (NKVTS) in Oslo from 2006-2010. I thank all the staff at the centre for their encouragement and support through these years. I also would like to thank both the Ministry of Health and the Ministry of Defence for financing the study. Many persons have in different ways contributed in making this thesis possible. My sincere gratitude goes to the following:

Professor and supervisor Lars Weisæth for his confidence in me when he recruited me for this study, for his wisdom, encouragement, patience, and friendliness which have been so valuable for me through the work with this thesis.

Senior researcher and supervisor Trond Heir for contributing with his rich academic skills, ability to see solutions, his encouragement, patience, and continuous support which have been of immense help.

Other colleagues, especially Ajmal Hussain and Anne Lie Andreassen for assisting with the interviews, Siri Thoresen and Egil Nygaard for useful discussions, and Arnfinn Tønnessen, Pål H. Herlofsen, and statistician Øyvind Langsrud for their important contributions on two of the articles in the thesis.

Bærum Kommune for giving me the opportunity to engage in this study. My interest in the field of grief and bereavement really started in 2000 when I began working as a clinical psychologist at Senter for Sorg og Selvhjelp in Bærum. I had some very exciting years there with very skilled colleagues. I would like to mention Gunvor Svenberg, my mentor, who taught me almost everything I know about grief and how we can assist those who are bereaved. I would also like to mention my other colleagues at the centre Tone Conradi, Siri Swierstra Bie, and Kirsten Frøstrup Øye for excellent cooperation, interesting discussions, and valuable support.

Colleagues at my current workplace, the Child and Adolescent Psychiatric Outpatient Clinic, Telemark Hospital, especially Poul Jensen and Ingebjørg Hestetun for their support, interest in my work, and for letting me finalize the thesis.

Colleagues at the National Centre for Disaster Psychiatry, Uppsala University, Sweden, especially professor Tom Lundin and Kerstin Bergh Johannesson for valuable discussions in the preparations for this study.

My family, first of all, Torill, my beloved, who patiently has had to put up with me through years of hard work and late hours. But also my mother, brother, and my late father for their love and support.

Last, but not least, those who willingly accepted my request to participate in the research projects, and who kindly let me into their home despite having experienced the worst tragedy of their life; losing a loved one either in the tsunami disaster in 2004 or in the Vassdalen avalanche in 1986.

List of papers

Paper I:

Kristensen, P., Weisæth, L., & Heir, T. (2010). Predictors of complicated grief after a natural disaster: a population study two years after the 2004 South-east Asian Tsunami. *Death Studies, 34*, 137-150.

Paper II:

Kristensen, P., Weisæth, L., & Heir, T. (2009). Psychiatric disorders among disaster bereaved: an interview study of individuals directly and not directly exposed to the 2004 tsunami disaster. *Depression and Anxiety, 26*, 1127-1133.

Paper III:

Kristensen, P., Weisæth, L., Tønnessen, A., & Heir, T. (in press). Visiting the site of death: Experiences of the bereaved after the 2004 South-east Asian tsunami. *Death Studies*.

Paper IV:

Kristensen, P., Heir, T., Herlofsen, P. H., Langsrud, Ø., & Weisæth, L. (in press). Parental mental health after the accidental death of a son during military service: 23 year follow-up. *The Journal of Nervous and Mental Disease*.

Paper V:

Kristensen, P., Weisæth, L., & Heir, T. (in press). Bereavement and mental health after sudden and violent losses: A review. *Psychiatry: Interpersonal and Biological Processes*.

Abbreviations

APA	American Psychiatric Association
CG	Complicated Grief
CBT	Cognitive-behavioral therapy
CGT	Complicated Grief Treatment
CSS	Crisis Support Scale
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5 th Revision, 2013. The American Psychiatric Association.
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th edition, 1994. The American Psychiatric Association.
ETIG	Extended Texas Inventory of Grief
GHQ-12/20	General Health Questionnaire-12/20
ICC	Intraclass correlation coefficient
ICD-11	International Classification of Diseases, 11 th Revision, 2015. World Health Organization.
ICD-10	International Classification of Diseases, 10 th edition, 1992. World Health Organization.
ICG	Inventory of Complicated Grief
IES-R	Impact of Event Scale-Revised
MDD	Major Depressive Disorder
M.I.N.I	MINI International Neuropsychiatric Interview
NKVTS	Norwegian Centre for Violence and Traumatic Stress Studies
OR	Odds ratio
PFA	Psychological First Aid
PGD	Prolonged Grief Disorder
PG-13	Prolonged Grief-13
PTSD	Posttraumatic Stress Disorder
PTSS-10	Posttraumatic Stress Scale-10
TIG	Texas Inventory of Grief
WSAS	Work and Social Adjustment Scale

1. INTRODUCTION

1.1 Bereavement, grief, and mourning

Bereavement is an inevitable fact of life and will become part of nearly everyone's experience sooner or later. The terms bereavement, grief and mourning have traditionally been used somewhat inconsistently. It is now generally agreed that bereavement refers to the objective situation of having lost someone significant to death, and that grief describes the wide variety of emotional, cognitive, and behavioural responses that normally follow the death of a loved one (Stroebe, Schut, & Stroebe, 2007). Mourning refers to the public display of grief, the social expressions or acts expressive of grief that are shaped by the (often religious) beliefs and practices of a given society or cultural group (Stroebe, Hansson, Schut, & Stroebe, 2008).

In the literature grief has variously been described as a natural human reaction to loss, as a psychiatric disorder and as a disease process (Archer, 1999). Freud (1917/1957) viewed grief as a normal, yet painful life experience followed by a necessary, but time-limited process of mourning which he termed grief work. Bowlby (1980) emphasised that grief is a universal feeling of loss, and in his famous trilogy on attachment and loss he focused on the major emotional consequences of loss including sadness, depression, grief and bereavement. Lindemann's (1944) pioneering study after the Coconut Grove fire in Boston where 492 people died was carried out in a psychiatric framework when he examined those who had suffered bereavement under the traumatic circumstances or who sought help to overcome problems associated with their grief. In his classic paper from 1961 Engel posed the question; "Is grief a disease?", and argued that grief shares many of the characteristics of physical diseases. After reviewing the typical responses of grief he concluded that "*the experience of uncomplicated grief represents a gross departure from the state considered representative of health and well being*" (p. 20).

1.2 Why conduct research on bereavement and disasters?

Although loss of a loved one is considered one of life's most painful experiences, most bereaved persons cope well with their loss and do not need professional help (Bonanno, 2004). However, Stroebe's review of health outcomes of bereavement published in 2007 in *The Lancet* revealed that bereavement can adversely affect both physical and mental health.

The review showed that bereavement can be associated with physical symptoms such as headaches, dizziness, indigestion, and chest pain, high rates of disability and illness, greater use of medical services and medication use and even increase the risk of death. Mental health problems such as depression, anxiety, and posttraumatic stress are documented in a significant minority of the bereaved. For some the grieving process may be distorted, now termed complicated grief (CG) or prolonged grief disorder (PGD), which is a form of chronic grief with intense separation distress related to the loss (Prigerson, Vanderwerker, & Maciejewski, 2008). Subsequently, studies of the mental health effects of grief and bereavement are deemed essential both for preventive care and for clinical practice.

Loss of lives is an unfortunate, but common consequence of disasters (Norris & Wind, 2009). Disasters, defined as potentially traumatic events that have acute onset and are collectively experienced, are commonly divided into natural or human-caused disasters (McFarlane & Norris, 2006). Human-caused disasters can be further subdivided into technological accidents and mass violence. While natural disasters are perceived as unavoidable and usually develop more slowly, technological accidents are caused by neglect, carelessness, or failures of technology. Mass violence, such as terrorist attacks is caused by intent or malevolence (Norris, Friedman, & Watson, 2002). Overall, human-caused disasters are assumed to have a more profound effect on victims than natural disasters (Norris et al., 2002).

For the next-of-kin, deaths from disasters or large scale accidents are often associated with extraordinary stressors compared to “everyday losses”, stressors that may complicate the bereavement course (Raphael, 1986). Still, some have argued that “everyday losses” may be even harder to cope with because people may question why the particularly event or loss occurred only to them, and that these kinds of experiences can be more isolating (Dynes & Quarantelli, 1976). Early sociological researchers considered disaster-related bereavement to be a relatively minor trauma since disasters often occur in an atmosphere of increased social cohesion (Lacey, 1972).

Among the approximately 40.000 deaths that happen each year in Norway, around 5% are caused by sudden and violent deaths, such as accidents, suicide and homicide (Norwegian Knowledge Centre for the Health Services, 2006). Around 5% of these deaths involve the loss of five lives or more. Norway has through the years experienced several disasters and large-scale accidents involving multiple deaths. Some have been the result of natural disasters such as the avalanche in Vassdalen in northern Norway in 1986 where 16 soldiers died. Others are the result of technological disasters such as the train accident at Åsta in Østerdalen in 2000

where 19 persons died, and the Sleipner boating accident in the North Sea in 1999 where 16 persons died. Also, as a consequence of Norwegian citizens are becoming more global and travel more often to distant parts of the world both for business and pleasure, more Norwegians are at risk of being exposed to disasters that happen abroad. For example, in the 2004 South-east Asian tsunami disaster over 220.000 people died, mainly natives from Indonesia, India, Sri Lanka and Thailand. The disaster also affected many tourists, and among those who perished were 84 Norwegian citizens. On July 22 2011 Norway suffered the worst terror attack since World War II with one terrorist killing 77 people in Oslo and on Utøya.

While disasters and large-scale accidents involving loss of lives are not uncommon phenomena in Norway, few attempts have been made to explore the mental health effects of disaster-related bereavement. There is also a lack of knowledge on the trajectory of grief, and few studies have explored what is experienced as helpful for bereaved families in the aftermath of a disaster. Another area of research that has been largely neglected is the study of grief and bereavement after military accidents or war. Although loss and bereavement are an integral part of the military experience there is a surprising lack of studies, particularly of parental grief after the loss of a young adult son. One reason for the dearth of research may perhaps be that bereavement is considered a deeply private experience and that bereaved families should not be intruded upon (Shear & Shair, 2005).

1.3 A personal account

When the tsunami disaster happened on December 26 2004 I was working as a clinical psychologist at a community grief centre in the municipality of Bærum, a suburb to the capital Oslo. Together with the emergency crisis team and the child and adolescent mental health centre we had the task of offering help and support to those who were bereaved by the disaster, a follow-up that lasted for almost two years. In 2005 professor Lars Weisæth (LW) and I met at the 7th International Conference on Grief and Bereavement in Contemporary Society in London. He had counselled Norwegian authorities in the planning of the psychosocial follow-up after the tsunami disaster. One of the questions that we discussed was what do we really know about the long-term mental health effects of disaster-related bereavement. Another question was; what role should the public health care system have in the follow-up of the bereaved, what kinds of support do the bereaved need, and what is considered helpful in the aftermath of disasters? Briefly put, this discussion laid the ground

for planning a research project which was to be funded by the Norwegian Directorate of Health. Later the project became part of the Tsunami research program at the Norwegian Centre for Violence and Traumatic Stress Studies (NKVTS) in Oslo. Together with Weisæth and senior researcher Trond Heir (TH) we also decided to finish a study of parents who had lost young adult sons in an avalanche in Vassdalen in 1986 with a 23 year follow-up. The study had been initiated by Weisæth soon after the disaster, but had never been completed.

2. BACKGROUND

2.1 A brief history of the scientific study of grief and bereavement

The scientific study of grief and bereavement is a comparatively young field of research (Stroebe et al., 2008). The field has gradually evolved from the early notions of bereavement which were based on observations of clinical populations to more sound scientific studies. The first systematic analysis of grief and bereavement was noted in Freud's classic paper *Mourning and Melancholia* (1917/1957). Freud's major contributions were the necessity of doing grief work in order to come to terms with the loss and the differentiation between grief (mourning) and melancholia. Eric Lindemann's article, 'Symptomatology and management of acute grief' (1944) constituted the first empirical study of grief and its consequences when he examined 101 patients who sought help at a psychiatric clinic that he set up after the fire in the Coconut Grove night club in 1942.

While early studies of bereavement were plagued with methodological shortcomings, more sophisticated research designs, methods and statistical techniques have led to an accumulation of research evidence and contributed to new understandings of grief (Stroebe et al., 2008). Parkes (1971) conducted one of the first longitudinal studies of grief when he followed widows through their first year of bereavement. Wortman & Silvers (1989) seminal article 'The myths of coping with loss' challenged many of the common assumptions regarding grief and bereavement such as the inevitability of depression and distress after a loss, that failure to experience distress is indicative of pathology, and the necessity of "working through" the loss. Grief is no longer considered a time-limited process, and research has emphasised the significance of retaining a continuing bond to the deceased (Klass, Silverman, & Nickman, 1996), not detachment as Freud claimed. Grief work is not considered necessary for everyone to cope with their loss, and distraction and/or avoidance may be important for the bereaved in order to take "time-out" from the most intense grieving periods. The phase or stage models, developed by Bowlby & Parkes (1970) and Kubler-Ross (1969) and commonly used in grief counselling, have received criticism due to its lack of empirical evidence (Bonanno, 2009). More recent models such as the Task model (Worden, 1991), the Dual Process Model of Coping with Bereavement (Stroebe & Schut, 1999) and the Two-track model of bereavement (Rubin, 1999), emphasising both loss and restoration-oriented coping have gained much recognition.

Bereavement research has through the years gradually become more theory driven (Stroebe et al., 2008). Bowlby's attachment theory (1980), which conceptualizes grief as a form of separation anxiety resulting from the disruption of the attachment bond brought about by someone's death, has made a significant contribution to our current understanding of how we adapt to bereavement (Parkes, 2006; Shear & Shair, 2005). Other theories such as the cognitive- stress perspective, the social-functional perspective and the trauma perspective have all influenced the bereavement field in the 20th century (Bonnano & Kaltman, 1999).

The huge variation in distress commonly observed among the bereaved lead early to an interest in studies of so called risk factors for (mal)adjustment. This generated important knowledge of why some people cope well with their loss and others suffer from lasting psychiatric and other problems. More recently a gradual shift has occurred from a main focus on the vulnerability of bereaved persons to one that also emphasises bereaved persons resilience and strength in dealing with loss (Stroebe, 2009). Although research on resilience after bereavement has existed for some years (e.g., Costa & McRae, 1988), the American psychologist George Bonanno and his collaborators have systematically shown that people may be more resilient after loss and disasters than what was earlier assumed (Bonanno, Wortman, & Nesse 2004). Bonanno (2004) defines resilience as; *“the ability of adults in otherwise normal circumstances who are exposed to an isolated and potentially disruptive event, such as the death of a close relation, or a violent or life-threatening situation, to maintain relatively stable, healthy levels of psychological and physical functioning”* (p. 20). He distinguishes this pattern from reactions of maladjustment and recovery that are more frequently assumed to follow loss of a loved one. Other recent significant contributions to the bereavement field include the potential to thrive from loss, also termed posttraumatic growth (Schaefer & Moos, 2001).

2.2 Disaster and bereavement research in Norway

In Norway, studies of the effect of disasters have a tradition that goes back to WW II with Leo Eitinger and Axel Strøm's work on concentration camp survivors (Eitinger, 1964; Eitinger & Strøm, 1973) and Askevold's descriptions of sailors who had crossed the Atlantic Sea in convoys under constant threat of being torpedoed by German submarines, also termed the war-sailor syndrome (Askevold, 1976/1977). These researchers were among the first to show that persons who were exposed to extreme physical and psychological distress could develop

chronic posttraumatic problems even though they had good pre-trauma adjustment (Malt & Weisæth, 1989).

Through the years several studies of traumatic stress have been conducted in Norway (Holen, 1990; Malt, 1987; Weisæth, 1984). In the aftermath of one of the largest disasters in modern times, the capsizing of the Alexander Kielland oil rig in the North Sea in 1980 where 123 people died, a follow-up study was conducted (Holen, 1991). One recent doctoral thesis documented the very long-term effect of being directly exposed to the disaster (Holgelsen, 2011). At the University of Bergen researchers have conducted a long-term follow-up study of survivors and bereaved relatives after a bus accident in Måbødalen in 1988 where 12 Swedish children and 4 parents were killed (Winje, 1997).

Modum Bad Sanatorium and the psychiatrist Hans Jørgen Holm was one of the first to introduce grief and bereavement as a potential research field in Norway. He emphasised the universality of grief and bereavement, but also that grief could take an unnatural course and stated that it should be the object of interest from the medical professions (Holm & Martinsen, 1982). The Centre for Crisis Psychology in Bergen has since 1988 conducted clinical practice and research on the mental health effects of sudden, unexpected or violent losses, especially after loss of a child (Dyregrov, 1988, 2003). The centre has been proponents for establishing routines and practices for psychosocial follow-up after bereavement, and has conducted collective family gatherings after several disasters and large-scale accidents with the aim of helping bereaved families cope with their loss (Dyregrov, Straume, & Sari, 2009). Other Norwegian researchers such as Ringdal (2001a, b) have studied grief reactions in the next-of-kin after death of a family member from terminal illness. Also, both Swedish and Danish researchers have made extensive contributions to the bereavement and disaster field (e.g., Elklit, 2007; Elklit & O'Connor, 2005; Lundin, 1984 a, b).

2.3 Loss after sudden and violent death

Sudden and violent deaths typically involve deaths from accidents, disasters, homicide or suicide (Faberow, Gallagher-Thompson, Gilewski, & Thompson, 1992), but will also include deaths after military accidents or war. The term “sudden” refers to the fact that the death was unexpected with no or little forewarning. Lack of preparedness for the death has been associated with more severe bereavement reactions (Barry, Kasl, & Prigerson, 2002). Sudden deaths can also occur as a result of natural causes (e.g., death from sudden illness such as

cardiac failure), and are not automatically violent. The term “violent” refer to an unnatural mode of dying where the death is forceful, painful and frequently causing mutilating injuries. After natural disasters violent deaths may be related to the forces of nature. Violent deaths can involve a transgression of the rights of the deceased and the bereaved, and may be volitional in the sense that the death is either a result of an intentional or negligent human act (Rynearson, 2001). Empirical studies have showed that the sheer violence of the loss, and not the suddenness, may have more deleterious impact on bereaved persons mental health (Currier, Holland, & Neimeyer, 2006; Kaltman & Bonanno, 2003).

Historically, there has been few links both in clinical practice and research between the fields of trauma and bereavement (Green, 2000). The trauma perspective has, however, increasingly become an important part of understanding the way people react after sudden and violent losses. The trauma perspective places crucial emphasis on the meaning of the traumatic event (Bonanno & Kaltman, 1999), and states that violent losses may challenge and even shatter individuals’ core assumptions about themselves, the world around them, and other people (Janoff-Bulman, 1992).

Different opinions have existed regarding how the mental health consequences of sudden and violent losses best can be understood and classified. While some have suggested that loss by violent means should be considered a traumatic stressor and that subsequent chronic conditions should be classified as PTSD (Green et al., 2001), others have argued that using the trauma framework to classify loss is too restrictive and that PTSD does not fully capture the unique experiences that can follow after the sudden and violent loss of a loved one (Neria & Litz, 2004).

Raphael (1997) describes bereavement and stress responses as two sets of phenomena that differ in important ways. While loss of a loved one or bereavement is associated with grief reactions, a traumatic event involving either personal life-threat and/or witnessing other peoples gruesome death, can be followed by posttraumatic stress reactions. When death happens under traumatic or violent circumstances, also termed traumatic bereavement, a combination of grief and stress reactions or PTSD may occur. These reactions can either be intertwined or fluctuating with one condition dominating over the other (Raphael, Martinek, & Wooding, 2004). The distinction between these two phenomena has received some empirical support for example by Pynoos, Nader, Frederick, Gonda, & Stuber (1987) who showed that the degree of exposure to own life threat was more correlated with PTSD symptoms and that closeness to the deceased was more correlated with the intensity of grief

reactions among school-aged children exposed to a sniper attack. Few have examined the combined occurrence of these two phenomena in adult disaster-populations.

DSM-IV broadened the stressor criterion for PTSD to include '*learning about the unexpected or violent death of a family member*' which meant that bereaved persons could be diagnosed with bereavement-related PTSD without directly witnessing the death (American Psychiatric Association, 1994). Several studies have provided evidence for the association between violent losses and trauma symptoms or PTSD (Kaltman & Bonanno, 2003; Murphy et al., 1999; Zisook, Chentsova-Dutton, & Shuchter, 1998).

2.4 Loss of a child

The loss of a child is a devastating experience for parents, and is often followed by a more intense and prolonged grief than that after other losses (Cleiren, Diekstra, Kerkhof, & van der Wal, 1994; Middleton et al., 1998). Parental grief following the death of a child is regularly characterized by intense emotional, behavioural, cognitive, and physiological reactions and may adversely affect the mental health of bereaved parents in long-term (Rogers, Floyd, Seltzer, Greenberg, & Hong, 2008), especially when the loss occurs by violent means (Dyregrov, Nordanger, & Dyregrov, 2003). Li et al. (2003, 2005) have shown in a large Danish register study that loss of child can increase the risk for first time hospitalization due to mental illness and of mortality in bereaved parents. Mothers generally report more intense grief reactions than fathers (Murphy et al., 1999; Schwab, 1996). Few have examined the interpersonal aspects of parental grief, for example whether grief reactions may be interrelated within couples.

2.5 When grief becomes a disorder

2.5.1 A brief review of the concept pathological grief

History has for long acknowledged depression or melancholy as a common and serious consequence of bereavement (Archer, 1999). But researchers and clinicians have also noted that the suffering associated with bereavement can go beyond mere depression, also termed pathological grief (Jacobs, 1993). Variants such as absent grief, where typical responses to loss are absent or minimal (Deutch, 1937), delayed grief, where an inhibited response is followed by a typical or prolonged reaction (Parkes, 1965) or where painful emotions are

avoided (Lindemann, 1944) were among the early descriptions. Other variants such as chronic grief, defined as a prolonged grief with exaggerated separation distress (Bowlby, 1963; Parkes, 1965) were also noted. Bowlby (1980) hypothesized that individuals with certain attachment disturbances would be at risk of “disordered mourning”. Parkes & Weiss (1983) were among the first to show that a dependent marital relationship lead to more severe and prolonged or chronic grief among bereaved spouses. This finding has later been replicated (Prigerson et al., 1997). A more recent term, traumatic grief, has been used to denote a condition when PTSD symptoms impinge on grieving, for example when thoughts or reminders of the circumstances of death and the way the person died hinders positive reminiscing of the deceased (Cohen, Mannarino, Greenberg, Padlo, & Shipley, 2002).

The diversity of descriptions has raised the question of whether pathological grief consists of one or several subcategories of disorders. And while clinicians seem to agree on the existence of chronic and delayed grief (Enright & Marwit, 2002; Middleton, Mouland, Raphael, Burnett, & Martinck, 1993), research has not been able to document neither delayed nor absent grief in bereaved populations (Bonanno & Kaltman, 2001).

Since early conceptualizations were based mainly on clinical observations no definitive criteria for pathological grief has been developed. Consequently, no grief diagnosis has been established, neither in ICD or DSM. Current practice is that patients who struggle with their grief may receive a variety of diagnosis such as adjustment disorders, depressive disorders, PTSD, or other anxiety disorders or personality disorders even though they may not adequately describe the difficulties experienced by the bereaved (Enright & Marwit, 2002; Maercker & Znoj, 2010). DSM-IV classifies bereavement as a V code (*“Other conditions that may be a focus of clinical attention”*), and focuses primarily on the distinction between normal grief and major depressive disorder (MDD). Due to the similarities of symptoms, MDD can only be diagnosed when the symptoms have lasted for more than two months after death unless certain symptoms not characteristic of a normal grief reaction is present (e.g., guilt, marked psychomotor retardation, suicidal thoughts, morbid preoccupation with worthlessness) (American Psychiatric Association, 1994). This exclusion criterion has been the subject of recent debate, and is suggested removed in the forthcoming DSM-5 (Shear, Simon et al., 2011).

2.5.2 Complicated grief (CG) or prolonged grief disorder (PGD) - proposal for a new disorder

During the last 15-20 years much work has been done in the attempt to establish criteria for a unique grief disorder (Horowitz et al., 1993, 1997; Prigerson et al., 1999). While there has been much debate regarding the criteria, leading clinicians and researchers have recently proposed criteria for complicated grief (CG) or prolonged grief disorder (PGD) for inclusion in the forthcoming DSM-5 and ICD-11 (Prigerson et al., 2009; Shear, Simon et al., 2011). Prigerson et al. (2008) defines PGD as; “*a persistently elevated set of grief specific symptoms identified in bereaved individuals with significant difficulties adjusting to the loss*” (p.166). The term prolonged does not imply that duration is the only indicator of the pathological nature of grief.

Persons who struggle with symptoms of PGD are essentially stuck in a state of chronic mourning (Prigerson et al., 2008). PGD is first and foremost characterized by separation distress; an intense longing and yearning for the person who died. The disorder consists of a cluster of other grief specific symptoms such as trouble accepting the loss, anger and bitterness, feeling a lack of meaning and purpose in life without the deceased, disbelief, avoidance of reminders of the reality of the loss etc. A positive screen for PGD cannot be held until at least 6 months after the death, and must lead to impaired functioning in daily life such as occupational, social and/or other important domains (Table 1). In addition to separation distress, Shear, Simon et al. (2011) have emphasised ruminations about the circumstances of the death, suicidal thinking and behaviour, and physical and emotional activation on exposure to reminders of the loss as clinically relevant symptoms in PGD.

PGD can be distinguished from normal grief based on the severity and duration of the symptoms and not due to the presence or absence of specific symptoms (Holland, Neimeyer, Boelen, & Prigerson, 2009). The core symptoms of PGD are distinct from both depression and PTSD (Boelen & van den Bout, 2003; Golden & Dalgliesh, 2010; Prigerson, Frank et al., 1995), and while there are some overlap in symptoms there are also some important phenomenological differences between these conditions (Maercker & Znoj, 2010; Shear, Frank, Houck, & Reynolds, 2005).

Table 1. Criteria for Prolonged grief disorder (PGD) proposed for inclusion in DSM-5 and ICD-11 (Prigerson et al., 2009).

- A. Event:** The person has experienced bereavement, i.e., the loss of a significant other.
- B. Separation distress:** The bereaved person experiences separation distress; yearning for the deceased, intense pangs of grief, or emotional pain or sorrow, most days and to a disabling degree.
- C. Cognitive, Emotional, and Behavioural Symptoms:** The bereaved person must experience at least 5 or more of the following symptoms experienced most days and to a disabling degree:
1. Confusion about role in life or a diminished sense of self (i.e., feeling that a part of self has died)
 2. Difficulty accepting the loss
 3. Avoidance of reminders of the reality of the loss
 4. Inability to trust others since the loss
 5. Bitterness or anger related to the loss
 6. Difficulty moving on with life (e.g., making new friends, pursuing new interests)
 7. Emotional numbness since the loss
 8. Feeling that life is unfulfilling, empty, or meaningless since the loss
 9. Feeling stunned, shocked, or dazed by the loss
- D. Duration:** Diagnosis should not be made until at least six months have elapsed since the death.
- E. Impairment:** The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning (e.g., domestic responsibilities).
- F. Relation to other disorders:** The disturbance may co-occur with, but is not better accounted for by major depressive disorder, generalized anxiety disorder, or posttraumatic stress disorder.

An impressive amount of research supports the inclusion of a grief disorder in the forthcoming diagnostic manuals. PGD is associated with physical disorders such as cancer, high blood pressure and cardiac events and with mental health problems such as depression, suicidal ideation and sleep disturbance (Latham & Prigerson, 2004; Prigerson et al., 1997). Furthermore, PGD is related to disruption in daily activities (Monk, Houck, & Shear, 2006), increased use of tobacco and alcohol (Hardison, Neimeyer, & Lichstein, 2005) and reduced quality of life (Silverman et al., 2000). Impairment in work and social functioning has been demonstrated independent of other mental disorders (Bonanno et al., 2007). PGD is seen across different cultures (Bonanno et al., 2005; Prigerson et al., 2002; Schaal, Elbert, & Neuner, 2009) and potential biological markers have been identified (O'Connor et al., 2008). Pharmacological therapy and interpersonal therapy, which can reduce bereavement-related depression, have not proven effective for the reduction of grief symptoms (Reynolds et al., 1999).

Texas Inventory of Grief (TIG, Faschingbauer, DeVaul, & Zisook, 1977) was one of the first scales designed to measure the extent of pathological or unresolved grief. Currently the Inventory of Complicated Grief (ICG) is much applied in studies of grief psychopathology (Prigerson, Maciejewski et al., 1995). ICG is a self-report questionnaire and can be used to assess grief either dimensionally or categorically. Different variants and cut-off scores have been used and advocated. A revised version (PG-13), now translated into Norwegian, has been developed in order to meet the recent proposed diagnostic criteria (Prigerson et al., 2009).

It is commonly estimated that around 10-15% will struggle with PGD after loss of a loved one (Byrne & Raphael, 1994; Prigerson, 2004). More recent studies have found PGD to range from 1-9% in the general population (Fujisawa et al., 2010; Kersting, Braehler, Glaesmer, & Wagner, 2011; Newson, Boelen, Hek, & Hofman, 2011). Through the years different terms for the disorder have been advocated. Originally the term traumatic grief was suggested, but was later changed to complicated grief (CG) due to the association with posttraumatic stress disorder. CG was later changed to prolonged grief disorder (PGD, Prigerson et al., 2008), but there are still some proponents for keeping the term complicated grief (Shear, Simon et al., 2011). In this thesis the terms complicated grief and prolonged grief disorder are used interchangeably.

2.5.3 Risk factors for PGD

One important task in bereavement research is to identify persons who are likely to suffer from mental health difficulties after loss in order to channel professional help to those who need it and can benefit from it (Stroebe, Folkman, Hansson, & Schut, 2006). Research have found the following risk factors to be associated with PGD; female sex, a history of separation anxiety, controlling parents, parental abuse or death, close kinship relationship (e.g., loss of a child or spouse), insecure attachments styles, marital supportiveness and dependency, and lack of preparation for the death (Lobb et al., 2010). Also, the risk for PGD seems higher after sudden and violent losses compared to losses after natural deaths (Currier et al., 2006; Hardison et al., 2005). Cognitive-behavioural conceptualizations such as negative interpretations of one's own grief reactions (e.g., fear of going crazy) and anxious and depressive avoidance (e.g., avoiding the pain of loss, and inactivity/withdrawal from social, recreational or occupational activities) are considered vital for causing or maintaining PGD (Boelen, van den Bout, & van den Hout, 2006).

There is a dearth of studies examining risk factors for PGD after disasters (Maugen, Neria, Conoscenti, & Litz, 2009). In a study after the 9/11 terrorist attacks Neria et al. (2007) found that PGD was more prevalent among parents losing an adult child, in the older age group, among individuals with lower education, and in those not gainfully employed. Also, people who were at the World Trade Centre site during the attacks were more than twice as likely to screen positive for PGD compared to those who were at other locations.

2.5.4 Treatment of PGD

Questions regarding the necessity and usefulness of professional help and interventions for the bereaved have been at the centre of debate for a long time (Stroebe et al., 2008). Early studies found psychological interventions to be efficacious (Raphael, 1977), particularly when persons were suffering from complicated grief reactions (Mawson, Marks, Ramm, & Stern, 1981, Sireling, Cohen, & Marks, 1988). While a meta-analysis found grief interventions performed as a routine to be inefficacious, interventions for griever displaying marked difficulties adapting to their loss showed more favourable outcomes (Currier, Neimeyer, & Berman, 2008). A grief-specific intervention (complicated grief treatment, CGT) has been demonstrated to be more effective than a proven efficacious treatment for depression (Shear, Frank, et al., 2005). Cognitive-behavioral therapy (CBT) for PGD has shown promising

results compared to supportive counseling (Boelen, deKeijser, van den Hout, & van den Bout, 2007), and an internet-based CBT program found significant improvement of PGD symptoms among participants relative to participants on a waiting list (Wagner & Maercker, 2007). A recent meta-analysis confirmed that treatment interventions effectively reduce symptoms of PGD (Wittouck, Van Autreve, De Jaegere, Portzky, & Van Heeringen, 2011).

2.5.5 The debate and controversy of a grief disorder

Most people are understandably wary of labelling normal grief as an illness, and the proposal of a new grief disorder has been controversial. The scepticism is mainly related to the risk of stigmatization, and over-diagnosing or pathologizing normal reactions (Horwitz & Wakefield, 2007). Some also worry that “medicalizing” grief may lead to withdrawal from the much needed support from family members and friends (Stroebe et al., 2000). However, some claim that the benefits of establishing a grief disorder override the negative consequences (Shear, Simon et al., 2011). A grief diagnosis may afford more options for research on maladaptive grief and for better assessment and treatment for clinicians. For the bereaved, a diagnosis can provide a validation of the “misery” that they are experiencing (Parkes, 2007). Furthermore, for some a diagnosis may be experienced as a relief since it confirms a recognizable problem to which effective treatments are available (Johnson et al., 2009).

2.5.6 Current suggestion for DSM-5

The American Psychiatric Association (APA) work group on trauma and stressor-related disorders has suggested PGD as a new subtype of Adjustment disorder – related to bereavement in DSM-5; *“For at least 12 months following the death of a close relative or friend, the individual experiences on more days than not intense yearning/longing for the deceased, intense sorrow and emotional pain, or preoccupation with the deceased or the circumstances of death. The person may also display difficulty accepting the death, intense anger over the loss, a diminished sense of self, a feeling that life is empty, or difficulty planning for the future or engaging in activities or relationships. Mourning shows substantial cultural variation; the bereavement reaction must be out of proportion or inconsistent with cultural or religious norms”* (American Psychiatric Association, 2011).

The work group has also a proposal for Bereavement Related Disorder which will be included in the appendix for further study (Table 2). A specification for traumatic

bereavement is suggested; *“Following the death that occurred under traumatic circumstances (e.g., homicide, suicide, disaster or accident) there are persistent, frequent distressing thoughts, images or thoughts related to the traumatic features of the death (e.g., the deceased’s degree of suffering, gruesome injury, blame of self or others for the death) including in response to reminders of the loss”.*

Table 2. Proposal for criteria for Bereavement Related Disorder in DSM-5 (APA work group).

A. The person experienced the death of a close relative or friend at least 12 months earlier.

B. Since the death at least 1 of the following symptoms is experienced on more days than not and to a clinically significant degree:

1. Persistent yearning/longing for the deceased
2. Intense sorrow and emotional pain because of the death
3. Preoccupation with the deceased
4. Preoccupation with the circumstances of the death

C. Since the death at least 6 of the following symptoms is experienced on more days than not and to a clinically significant degree:

Reactive distress to the death

1. Marked difficulty accepting the death
2. Feeling shocked, stunned or emotionally numb over the loss
3. Difficulty in positive reminiscing about the deceased
4. Bitterness or anger related to the loss
5. Maladaptive appraisal about oneself in relation to the deceased or the death (e.g., self-blame)
6. Excessive avoidance of reminders of the loss (e.g., avoiding places or people associated with the deceased)

Social/identity disruption

7. A desire not to live in order to be with the deceased
8. Difficulty trusting other people since the death
9. Feeling alone or detached from other people since the death
10. Feeling that life is meaningless or empty without the deceased, or the belief that one cannot function without the deceased
11. Confusion about one's role in life or a diminished sense of one's identity (e.g., feeling that a part of oneself died with the deceased)
12. Difficulty or reluctance to pursue interests since the loss or plan for the future (e.g., friendships, activities)

D. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

E. Mourning shows substantial cultural variation; the bereavement reaction must be out of proportion or inconsistent with cultural or religious norms

2.6 Research on disaster-related bereavement

2.6.1 Challenges and dilemmas

Disaster research is challenging to conduct due to the unpredictability of such events which makes it difficult for researchers to plan well designed projects ahead (Norris, 2006). The chaos and uncertainty that is characteristic of disasters makes it more difficult to assess the psychological consequences and limit the possibility to test the effectiveness of early interventions for example by randomised controlled trials (Bonanno, Brewin, Kaniasty, & LaGreca, 2010, Raphael, Lundin, & Weisæth, 1989; Raphael & Maguire, 2009). Also, the loss concept after disasters does not only deal with the loss of a loved one, friend or acquaintance by death. Other losses such as loss of home, community, social network and support, resources, work and so forth may also be significant, and these multiple losses may make pathological outcomes more likely (Hobfoll, Tracey, & Galea, 2006; Shear, McLaughlin et al., 2011).

Ethical dilemmas such as how soon after the loss it is advisable to contact the bereaved and how the bereaved should be approached for potential participation must always be addressed. Participating in research may be emotionally painful, but many bereaved report that participation can be a meaningful experience (Dyregrov, 2004, Beck & Konnert, 2007). While the main motive for taking part in research is altruistic; a wish that hard taught experiences may help others in the future (Dyregrov et al., 2010-2011), participation can also be beneficial for the bereaved themselves. Few bereaved report regrets about participation in research when ethical codes are applied (Dyregrov, 2004).

2.6.2 Mental health effects

Researchers have varied in their predictions of the mental health effects of disaster-related bereavement. Adler (1943) reported after the Coconut Grove fire, that loss of a loved one had no more adverse impact on mental health than those who experienced no personal loss. She concluded that bereavement rarely causes lasting psychiatric disturbance. Since then several studies such as after the Buffalo Creek dam collapse (Gleser, Green, & Winget, 1981), the Granville train disaster (Sing & Raphael, 1981), the Mount. St. Helens disaster (Shore, Tatum, & Vollmer, 1986), the Beverly Hills Supper Club disaster (Green, Grace, Lindy,

Titchener, & Lindy, 1983), the Zeebrugge disaster (Hodgkinson, Joseph, Yule, & Williams, 1995), the Linate airplane disaster (Johannesson, Stefanini, Lundin, & Anchisi, 2006), the 9/11 terrorist attacks (Neria et al., 2007; Shear et al., 2006) and the 2004 South-east Asian tsunami disaster (Souza et al., 2007) have questioned this view and generated more knowledge of the potential mental health effects of disaster-related bereavement.

Reviews of the empirical disaster literature have indicated that bereavement is a risk factor for adverse health outcomes (Norris et al., 2002). Multiple factors related to the disaster may influence the outcome of the bereavement process, for example the scope, duration, intensity, and preventability of the disaster, the type and number of losses, the type of the disaster (natural disasters vs. human-caused disasters) and whether the bereaved were directly or not directly exposed to the disaster themselves (Kohn & Levav, 1990). Factors such as lack of social support, female gender, loss of a child, and lack of confirmation of the death have shown to increase morbidity among the disaster bereaved (Kohn & Levav, 1990).

There is limited knowledge about the combined effect of traumatic bereavement and direct exposure to the disaster or life-threat (Neria & Litz, 2004). Also, few studies have included both bereaved survivors and bereaved relatives not directly exposed to the disaster. The two studies we could locate, Green et al. (1983) study after the Beverly Hills Supper Club fire and Thompson, Chung, & Rossers (1995) study after the Marchioness river boat disaster, found differences neither in grief nor in other mental health problems among these two bereaved groups. Still, the findings are questionable due to referral or sample bias. Green et al. (1983) had for example merged bereaved and rescue workers into a 'not at the fire' group and compared their reactions with an 'at the fire' group. Another shortcoming in disaster research is the lack of studies that have measured grief reactions (Bonanno et al., 2010). Most studies have focused on PTSD and depression. Finally, the reliance on convenience samples, commonly used in disaster research, may estimate greater pathology than is found in community or population-based samples. Both Neria et al. (2007) and Shear et al. (2006) found that over 40% of the bereaved suffered from PGD after the 9/11 terrorist attacks. The prevalence of PGD after natural disasters is less well known. Ghaffari-Nejad et al. (2007) reported that 76% screened positive for complicated grief after an earthquake in Iran in 2003.

2.6.3 Long-term impact

Extensive reviews of disaster research have shown that only 15% of the studies had a follow-up that covered more than one year post-disaster (Norris, 2006). The few longitudinal studies suggest that disaster-related bereavement may have long-term adverse mental health effects. A study after the Buffalo Creek Dam collapse, where 125 people died, showed that 44% of the adults reported symptoms of posttraumatic stress two years after the disaster and 28% reported similar distress 14 years later (Green et al., 1990). Those who lost close friends or family members showed higher levels of psychopathology than did persons who lost acquaintances or possessions only. In a follow-up study after the Piper Alpha platform disaster, where the majority reported that they had lost close friends, 21% met criteria for post-traumatic stress disorder 10 years after the disaster (Hull, Alexander, & Klein, 2002).

2.6.4 Interventions

While informal social support is often considered more important than organized helping services after disasters (Michel, Rosendal, Weisæth, & Heir, 2010), and mobilizing social support seems to be important in preventing a protracted grief (Gray, Maguen, & Litz, 2004), there is also often a quest for professional help. The special circumstances of disaster-related bereavement may require other forms of interventions than losses following natural deaths. But relatively little is known about what are effective interventions or experienced as helpful for the bereaved after disasters, and there is a need for evaluation of interventions that are provided (Maguen et al., 2009).

The Regular General Practitioners (RGP's) in Norway were allocated the main responsibility for primary care and assessment of the psychosocial needs of those who were directly affected by the tsunami disaster in 2004. The RPG's were instructed to use an outreach strategy by directly contacting their patients who had been in a disaster-affected country. An evaluation of the role of the RPG's showed that while only about 40% of the RGP's had contacted these persons, nearly all of those who were contacted responded positively to this strategy (Hjemdal, 2007). This finding supports the usefulness of the RGP's as participants in the follow-up of disaster survivors (Heir, Hussain, & Weisæth, 2008).

During the last two decades, a certain practice has been developed in Norway after disasters and large-scale accidents with multiple deaths. A study after the 1988 bus accident in

Måbødalen evaluated a crisis intervention program that was organized for the bereaved families and survivors (Winje & Ulvik, 1995). For the bereaved parents the program consisted of information and talks with the pathologist who had conducted the autopsy on their deceased child, viewing of the deceased, and visits to the site where the accident occurred. The authors labelled this type of intervention '*confrontational support*', meaning that the bereaved families were confronted with the brutal reality of the death in a caring and supportive manner. Winje (1997) showed that hardly any of the respondents regretted participating in the program. Information about what actually happened in the traumatic event was related to better long-term adjustment in the adults (Winje, 1998).

International studies have found that viewing of the deceased may be associated with better adjustment after disasters (Sing & Raphael, 1981, Hodgkinson, Joseph, Yule, & Williams, 1993). The need for interventions addressing both trauma and bereavement has gradually become more recognized (Raphael & Wooding, 2004). Combined grief and trauma-focused therapy has been shown to be effective in alleviating PTSD symptoms and to prevent the worsening of depression among bereaved adolescents after natural disasters (Goenjian et al., 1997).

2.7 The disasters

2.7.1 The 2004 South-east Asian tsunami

On the morning of December 26, 2004 a tsunami hit the coast along the Indian Ocean and more than 220,000 people died. The majority of casualties were from the local populations, mainly from Thailand, Indonesia and Malaysia, but a large number of tourists who were spending their Christmas holidays in South-east Asia also died. Of approximately 4000 Norwegian citizens who were in the disaster area, 84 persons died. Among them were 26 children aged 0-18 years. Other Nordic countries, such as Sweden (543 persons), Finland (176 persons) and Denmark (45 persons) also suffered huge losses in the disaster.

During the first hours and days after the disaster the situation was chaotic and there was a lot of confusion regarding how many were missing. At one point the Norwegian Prime minister reported that he could not rule out the possibility that as many as 1000 Norwegians could have died in the disaster. The confusion and uncertainty was especially pronounced among relatives who were staying in Norway. The destruction of the infra-structure hindered

relatives in getting in contact with their family members, and some decided quite early to travel to the disaster-affected area to search for those they were missing.

In Norway the National crises response plan was activated immediately. The Ministry of Foreign Affairs was in charge of the registration of those who were missing during the first days, but was neither staffed nor equipped to handle this job properly. Not until the central police unit took over this task it became clear that the number of missing was far below what had been estimated earlier. An official inquiry conducted after the disaster concluded that; *“There were several and substantial flaws during the initial stage during which the Ministry of Foreign Affairs had key control. Later, when the police and health authorities largely took over, the tasks in hand were on the whole, performed satisfactorily”* (Evalueringssutvalget for flodbølgekatastrofen i Sør-Asia, s. 9).

Norwegian tourists were all repatriated soon after the disaster. They had experienced a sudden, dramatic, but time-limited disastrous event, and even though the situation was chaotic and extremely difficult during the acute post-disaster period, they could return back home to an intact society. Norwegian tourists were continually registered by the Police upon arrival at Oslo Airport, Gardermoen. All the 84 deceased Norwegians were located and identified, but for some relatives it took nearly seven months before the death of their family member could be confirmed. Few relatives were given the choice or opportunity to view the deceased mainly because most bodies were unrecognizable after being exposed to extreme heat and humidity. Due to the large number of deaths, formal autopsies were not conducted, and the cause of death was reported to be drowning. Several families experienced multiple losses in the disaster.

The Norwegian Foreign Ministry announced that they would arrange commemoration journeys to the disaster-affected area for those who had suffered the loss of a family member. Two journeys, one in May 2005 and another in October 2005 were arranged. The first date was chosen in order to meet the needs of those who voiced urgent wishes to see the area while the disastrous impacts were still dominating. The second date was chosen to satisfy those who wanted the reconstruction to have made a visible difference. Approximately 400 close relatives of the 84 Norwegian tsunami fatalities participated in the commemoration journeys, and from two to 21 members of a family group attended. Although the commemoration journeys were planned and designed to be private, family based travels several support personnel also participated such as personnel from The Foreign Ministry, and the Ministry of Health, the police, a health team including NKVTS personell and members from the Seamen’s church and the National support group for the tsunami survivors. For the content of

the journey it was decided that there would be a commemoration ceremony and that one important aim of the journey was for the bereaved to get a better informed picture of what occurred when the tsunami struck. The Norwegian Police efforts on Search and Rescue operations and the extensive documentation they had made of their work was an important asset to be utilised during the visits.

2.7.2 The 1986 Vassdalen avalanche

On 5 March 1986, while taking part in the NATO exercise entitled Anchor Express, a platoon of 31 Norwegian soldiers (3 non-commissioned officers and 28 conscripted men) was hit by a snow avalanche in Vassdalen, northern Norway, and 16 soldiers, aged 19-24 years, died. During the first 24 hours there was much confusion about what had happened and who was affected by the disaster. The call centre that was set up for relatives soon broke down, with as many as 60.000 calls registered during the first 24 hours after the disaster.

Shortly after the accident the bereaved families were transported to the disaster area where they could view the deceased in a local church, attend a memorial service where King Olav V was present, and talk to military leaders and survivors of the disaster in order to get more information of what had happened. Three months later the bereaved parents were flown into the avalanche area to see for themselves where the accident had happened and to be informed whereabouts their son had been found. This was one of the first systematic efforts to use collective interventions for bereaved families as part of the crisis intervention program after a large scale accident or disasters in Norway. After the accident, an investigative committee concluded that a combination of circumstances contributed to the tragic outcome; the weather conditions of heavy snowfall and wind, and the underestimation by military leaders of the potential risk associated with conducting exercises under difficult conditions in the mountainous region (NOU, 1986).

3. AIM OF THE THESIS

The main aim of this thesis was to examine the long-term mental health effects of disaster-related bereavement and interventions in two different bereaved populations; (1) adults bereaved by the 2004 tsunami disaster (the Tsunami bereavement study, paper I-III), and (2) parents bereaved by the avalanche in Vassdalen in 1986 (the Vassdalen avalanche study, paper IV). We also aimed to review current knowledge about the mental health effects, risk and resilience factors, and interventions after sudden and violent losses in general (paper V).

3.1 The Tsunami bereavement study

The specific research questions were:

- What are the long-term grief and mental health effects of bereavement after loss of a close family member in a natural disaster happening far away from home?
- What are risk factors for prolonged grief disorder (PGD) and other mental disorders?
- What are the potential effects or benefits of visiting the site of death for bereaved families after disasters?

3.2 The Vassdalen avalanche study

The specific research questions were:

- What are the very long-term grief and mental health effects of bereavement in parents after loss of a young adult son in a military accident?
- Are there differences in grief and psychological distress between genders and/or within couples after loss of a young adult son in a military accident?

3.3 Ethical aspects

Both studies were approved by the Regional Committee for Medical and Health Research Ethics and Norwegian Social Science Data Services.

4. METHODS

4.1 Design and procedure

The Tsunami bereavement study

The Tsunami bereavement study is a cross sectional study conducted two years after the 2004 South-east Asian tsunami. The study included the entire population of bereaved Norwegians aged 18-80 years who had lost first degree family members (children, parents, siblings, or spouses/cohabitants) in the disaster. Both bereaved survivors (directly exposed to the disaster) and bereaved relatives who were far away from the disaster area (not directly exposed) were included in the study.

A list of the 84 deceased Norwegians was obtained from the Norwegian Police Directorate and the deceased's next of kin was identified through the Norwegian National Population Register. A total of 202 individuals representing all the 84 deceased were registered. The bereaved persons were first contacted 26 months after the disaster. We first sent a letter to all the bereaved through ordinary mail with information about the study and that they would be contacted by phone unless they informed us that they did not want to participate in the study. The study included both self-report questionnaires and personal interviews. The self-report questionnaire was distributed by ordinary mail. The interviews, conducted face-to-face in the participants own homes or at our office were performed by a clinical psychologist (the author/PK, n=85), a psychiatrist (n=12), and a psychiatric nurse (n=14). The interviewers were trained in structured diagnostic interviewing and the interviews were audio taped. Four of the interviews were conducted over the telephone.

The Vassdalen avalanche study

The Vassdalen avalanche study is a prospective, longitudinal study of long-term outcomes. The bereaved parents were examined at four different occasions for over two decades, in 1987 (1 year), 1988 (2 year), 1991 (5 year), and 2009 (23 year). Thirty-two parents from the 16 families of the deceased soldiers were contacted by the Brigade psychiatrist Pål Herlofsen (PH) as part of the early intervention and research program initiated soon after the accident. The bereaved parents were visited in their homes, and the project included both clinical interviews (1 and 2 year follow ups) and self-report questionnaires (1, 2, and 5 year follow

ups). In 2009 the project was finalized with a 23 year follow-up consisting of both self-report questionnaires and a personal interview.

The procedure for contacting the parents at the 23 year follow-up was similar to the one described in the Tsunami bereavement study. While the interviews at the 1 and 2 year follow-ups were conducted by the same psychiatrist (PH), one clinical psychologist (the author/PK, n=12) and two psychiatrists (LW, n=3/TH, n=1) conducted the interviews at the final 23-year follow-up. The interviews were either conducted in the parent's own homes or at our office.

4.2 Participants

The Tsunami bereavement study

Among the 202 registered individuals, 191 were eligible for participation. Of the 191 individuals who were contacted by phone, 132 (69.1 %) agreed to participate in the study. Among the participants 37 (28.0%) were directly exposed to the disaster, and 95 (72.0%) were not. The 11 missing individuals were either untraceable or ineligible because of severe physical and/or mental illness unrelated to the disaster. Fifty-nine individuals refused to participate. Non-participants did not differ significantly from participants in age, gender or relationship to deceased. Reasons for refusing to participate were: being too emotionally painful or wish to put the loss behind them (n=13, 22.0 %), being too busy (n=6, 10.2 %), not interested/no reason (n=32, 54.2 %) and other reasons (n=8, 13.6 %).

Among the total of 130 persons who participated in the postal survey 35 (26.9%) were directly exposed to the disaster and 95 (73.1%) were not. The participants had an average age of 45.7 years with a range of 19 to 80 years. Among the participants 37 (28.5%) had lost a child, 23 (17.7%) had lost spouse or partner and 77 (59.2%) had lost a sibling and/or parent.

There were 111 persons who agreed to take part in a personal interview. Among the interviewed participants, 32 (28.8%) were directly exposed to the disaster and 79 (71.2%) were not. There were no significant differences between the two bereaved groups in regards to age, gender, or education, but there was a significant difference in their relationship to the deceased. Among the directly exposed, the majority had lost children (14/43.8%) and/or spouse/cohabitant (22/68.8%) while among the not directly exposed the majority had lost children (19/24.1%) or parents/siblings (58/73.4%).

The Vassdalen avalanche study

Thirty-two parents from the 16 families of the deceased soldiers were eligible for participation in the study. The response rates were as follows; 94% at 1 year, 94% at 2 years, and 73% at 5 years. At the 23-year follow-up, 8 fathers (mean age 73.4 years, range 67-83 years) and 12 mothers (mean age 70.6 years, range 65-77 years) were alive, and all except four of the mothers were willing to participate (80%). Five couples and two single parents participated in all four follow-ups.

4.3 Measures

The self-report questionnaire, developed for the Tsunami bereavement study, covered items such as sociodemographic characteristics, disaster exposure, relationship to the deceased, time elapsed until confirmation of death, previous losses, psychological treatment, medication after the tsunami, sick leave, and questions regarding visit to the site of death. A short version of the questionnaire was adapted for the Vassdalen avalanche study, and covered items such as sociodemographic characteristics, loss-related variables, psychological treatment, and questions regarding visits to the site of death.

4.4 Psychometric assessments

MINI International Neuropsychiatric Interview (M.I.N.I.)

In paper II and IV we used the MINI International Neuropsychiatric Interview (M.I.N.I.) to diagnose axis I DSM-IV mental disorders (Sheehan et al., 1998). The structured clinical interview has demonstrated acceptable reliability and validity. In the Tsunami bereavement study (paper II) the modules for major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) were chosen. The A1 criteria in question for PTSD constituted tsunami-related experiences in which 'the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others'. This also included 'learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate'. Participants were asked about stress symptoms related to the actual tsunami disaster and loss. In the Vassdalen avalanche study (paper IV) similar criteria for PTSD was

used as in the Tsunami bereavement study. The modules of other anxiety disorders, MDD substance use, and somatoform disorder were also applied in this study.

Inventory of Complicated Grief (ICG)

In paper I, II, III, and IV we measured grief reactions with the Norwegian version of Inventory of Complicated Grief (ICG, Prigerson, Maciejewski et al., 1995), which has been used and validated in previous bereavement studies (Dyregrov, Nordanger, & Dyregrov, 2003). The ICG consists of 19 items and answers are given on a 5-point scale ranging from *never* (0) to *always* (4). ICG gives a possible range of 0–76 with high scores indicating high levels of CG. The ICG has shown high internal consistency, test–retest reliability, and concurrent validity (Prigerson, Maciejewski et al., 1995). Cronbach’s alpha was 0.93 (paper I and paper III) and 0.83 (in paper IV).

In paper I we used a dimensional cut-off score of >25, recommended by Prigerson, Maciejewski et al., (1995), to screen positive for PGD. In paper III we used ICG as a continuous score. In paper II and IV, PGD was identified by using the results of the self rated ICG scale to best fit the recent proposed symptom criteria (Keesee, Currier, & Neimeyer, 2008; Prigerson et al., 2009). To fulfil the criteria for PGD the participants had to report that they “*often*” or “*always*” experienced at least one of three symptoms of separation distress (upsetting memories, yearning/longing and excessive loneliness), at least four of eight cognitive, emotional or behavioural symptoms (difficulties accepting death, anger, disbelief, feeling stunned/dazed by the loss, inability to trust others, avoiding loss reminders, feeling life is empty, and bitterness), and at least one of two types of functional impairment (thoughts of deceased affect normal activities and diminished ability to care for others).

The Expanded Texas Inventory of Grief (ETIG)

In paper IV, The Expanded Texas Inventory of Grief (ETIG) scale was used to assess grief intensity at the 2-, 5- and 23-year follow-up (Hodgkinson et al., 1995; Zisook et al., 1982). The respondents were asked to rate the relevance of the statements on a 5-point scale ranging from *completely false* (1) to *completely true* (5). The items were summed for a total score; a high total score indicated more intense grief. Cronbach’s alpha ranged from 0.83 to 0.84 in this study.

The General Health Questionnaire (GHQ-12/20)

The General Health Questionnaire (Goldberg, 1979) was used in paper II, III (GHQ-12) and IV (GHQ-20). GHQ-12/20 contains questions about psychological problems or impaired function during the two weeks prior to the study. Respondents selected answers from a 4-point scale ranging from *much less than usual* (0) to *much more than usual* (3). The Likert-method of scoring (0-1-2-3) was chosen in both studies giving a potential sum score of 0-36 (paper II/III) and 0-60 (paper IV). A high total score indicated more intense distress. The Norwegian version of GHQ-12 has shown satisfactory psychometric properties (Vatshelle & Moen, 1997). In paper II and III Cronbach's alpha was 0.93. In paper IV Cronbach's alpha ranged from 0.86 to 0.96.

Impact of Event Scale-22 Revised (IES-R)

In paper II and III the Impact of Event Scale-Revised (IES-R, Weiss, 2004) was used to measure symptoms of post-traumatic stress. The scale consists of 22 items divided into three subscales: intrusion, avoidance, and hyperarousal. The respondents were asked to evaluate how disturbing the symptoms had been during the last seven days and replies were given on a 5-point scale ranging from *not at all* (0) to *extremely* (4). The Norwegian version has shown good psychometric properties in a non-clinical sample (Eid et al., 2009), and Norwegian mean values of trauma victims have shown to be comparable to findings in other countries (Heir et al., 2011). IES-R gives a possible range of 0–88 with high scores indicating high levels of post-traumatic stress. IES-R is not designated to be used with a cut-off score, and sum scores were used in the analysis. Cronbach's alpha was 0.89 (intrusion), 0.83 (avoidance), and 0.88 (arousal) in paper II. In paper III Cronbach's alpha ranged from 0.84 to 0.94 on the different subscales.

Crisis Support Scale (CSS)

In paper I social support was measured with the Crisis Support Scale (CSS, Joseph, Andrews, Williams, & Yule, 1992). The Scandinavian version of CSS has been used and validated in several studies (Elklit, Pedersen, & Jind, 2001; Heir, Piatigorsky, & Weisæth, 2009). The scale is designed to measure received social support, and respondents are asked to rate the items on a 7-point Likert-scale ranging from *never* (1) to *always* (7). From a total of seven items, four items are categorized as positive social support (e.g., *'Whenever you want to talk,*

how often is there someone willing to listen at the present time?). Cronbach's alpha was 0.81 for these four questions in the study. One single item (*'Do people you expect to be supportive make you feel worse at any time at the present time?'*) is categorized as a negative social response and was analyzed separately (Andrews, Brewin, & Rose, 2003).

The Work and Social Adjustment Scale (WSAS)

In paper II the Work and Social Adjustment Scale (WSAS, Mundt, Marks, Shear, & Greist, 2002) was used to measure the degree of impaired functioning. The WSAS consists of five questions, each scored from *no impairment* (0) to *very severe impairment* (8). WSAS gives a possible range of 0–40 with high scores indicating high levels of impaired functioning. Cronbach's alpha was 0.91 in paper II.

Suicidal ideation

In paper II suicidal ideation was measured with one item from the GHQ-28 (Goldberg, 1979) not included in GHQ-12 (*"Have you recently found that the idea of taking your own life has kept coming into your mind?"*). Replies were given on a 4-point scale ranging from *definitely not* (0) to *definitely have* (3).

Self-blame and guilt

In paper II, self-blame or guilt was measured with one item from the PTSS-10 (Raphael et al., 1989) (*"Since losing family member(s) in the tsunami disaster I've had a bad conscience, self-blame, or feelings of guilt"*). Replies were given on a 4-point scale ranging from *not at all* (0) to *very much* (3).

Sick leave and mental health care utilization

In paper II, sick leave was measured by asking the respondent if they had been absent from work since the tsunami (yes or no). Mental health care utilization was measured by asking whether the respondents had received any grief counselling and/or mental health treatment since the disaster (yes or no).

Evaluation of visiting the site of death

In paper III questions regarding visits to the site of death included the following: (a) *“Have you travelled to the disaster affected area since the 2004 tsunami?”* (yes or no), (b) *“If yes; Did you attend one of the commemoration journeys or did you travel to the disaster area independently?”* (attended commemoration journey =1, travelled on their own =2), (c) *“Did you visit the location where your loved one had been when the tsunami struck?”* (yes or no), and (d) *“If yes; How important was the visit for you?”* (not important =0, of little importance =1, somewhat important =2, quite important =3, very important =4). We also included an open-ended question in the self-report questionnaire, (e) *“What do you consider most important about the visit?”*

4.5 Statistical analyses

Statistical analyses were performed using the software package SPSS version 16.0. Significance level was set at $p < 0.05$ for all papers.

Paper I

In paper I we used chi-square to compare participants and non-participants with regard to gender, age (over/under 46 years), rates of education, family groups, and closeness to the deceased. The prevalence of CG in subgroups of participants was compared using logistic regression. Odds ratios were used as the measure of the strength of an association. Multiple logistic regression analysis was performed to study adjusted effects of several variables. In the process of model building, step-wise multiple logistic regression analysis with backward elimination was performed. Limits for removal and re-entry were set at $p = 0.10$ and $p = 0.05$, respectively. All tests were two-tailed.

Paper II

In paper II chi-square analysis was used to compare the age, gender, education, relationship to the deceased, and prevalence of PTSD, MDD, and PGD in directly and not directly exposed individuals. The Fisher exact test was used when expected values were less than 5. Student's *t*-test was used to compare mean scores on semi-continuous variables (IES-R, GHQ-12, WSAS, suicidal ideation, and guilt). We used a logistic regression model to examine the

association between demographics, disaster exposure, relationship to the deceased, and the outcome variables PTSD, MDD, and PGD. A linear regression model was used to examine the association between exposure, relationship to the deceased, and the outcome variables psychological distress and impaired functioning. We also used linear regression to examine the association between PTSD, MDD and PGD and the outcome variable impaired functioning. All tests were two-tailed.

Paper III

In paper III chi-square analysis was used to compare age, gender, education, exposure and relationship to the deceased among participants visiting the disaster area or not. The Fisher exact test was used when expected values were less than 5. Student's *t*-test was used to compare mean scores on semi-continuous variables (ICG, IES-R and GHQ-12). All tests were two-tailed.

Paper IV

In paper IV data were analyzed with a multilevel model (Hox, 2002) with the self-report measures (GHQ-20 and ETIG) as dependent variables. We estimated mean values and gender differences with corresponding p-values and confidence intervals. The proportions of variance associated with intra-family relationship and gender were quantified with the intraclass correlation coefficient (ICC). We denoted spouses as a family (intra-family relationship) which was modelled as a random error term (variance term). Gender was included as another random error term. The ICC for family and gender were computed as $s_{fam}^2 / (s_{fam}^2 + s_{gen}^2 + s_{ind}^2)$ and $s_{gen}^2 / (s_{fam}^2 + s_{gen}^2 + s_{ind}^2)$, respectively, where s_{fam}^2 , s_{gen}^2 and s_{ind}^2 were estimates of family, gender and individual variances, respectively. ICC ranges from zero to one.

Paper V

No statistical analyses were performed in paper V.

5. SUMMARY OF RESULTS

5.1 Main findings from paper I

This study examined predictors of complicated grief (CG) two years after bereavement in the 2004 South-east Asian tsunami. Among the 130 respondents (35 directly exposed to the disaster and 95 not directly exposed to the disaster) 47.7% screened positive for CG according to the Inventory of Complicated grief (ICG). The study identified a positive association between CG and being female (OR = 4.73/p=0.009), losing a child (OR=5.27/p=0.013) or spouse (OR=4.93/p=0.039), and time to death confirmation (OR=4.57/p=0.007), and negative association with previous losses (OR=0.19/p=0.005), being employed (OR=0.20/p=0.049), and receiving social support (OR=0.24/p=0.012). Direct exposure did not increase CG risk. In conclusion, it is suggested that support service providers should be aware of the high prevalence of severe, persistent grief found after loss due to a natural disaster. Certain subgroups, such as parents who have lost children, should especially be considered in the long-term follow-up.

5.2 Main findings from paper II

This study examined the prevalence and predictors of psychiatric disorders and psychological distress in Norwegians (n=111) who lost close family members in the 2004 South-east Asian tsunami disaster. The respondents were either directly (n=32) or not directly exposed (n=79) to the tsunami. The study was conducted 2 years post-disaster and we used a face-to-face structured clinical interview to diagnose post-traumatic stress disorder (PTSD) and depression (MDD) and a self-report scale to measure prolonged grief disorder (PGD). The prevalence of psychiatric disorders was twice as high among individuals directly exposed to the disaster compared to individuals who were not directly exposed (46.9 vs. 22.8 per 100). The prevalence of disorders among the directly exposed was; PTSD (34.4%), MDD (25%) and PGD (23.3 %), whereas the prevalence among the not directly exposed was; PGD (14.3%), MDD (10.1%) and PTSD (5.2%). The co-occurrence of disorders was higher among the directly exposed (21.9% vs. 5.2%). Low education and loss of a child predicted PGD, while direct exposure to the disaster predicted PTSD. All three disorders were independently associated with functional impairment. The dual burden of direct trauma and loss can inflict a complex set of long-term reactions and mental health problems in bereaved individuals. The relationship between PGD and impaired functioning actualizes the incorporation of PGD in future diagnostic manuals of psychiatric disorders.

5.3 Main findings from paper III

In this study we examined how many bereaved relatives of Norwegian tourists who perished in the 2004 South-east Asian Tsunami had visited the site of death and the most important outcome from the visit. We conducted in-depth interviews (n=110) and used self report questionnaires (Impact of Event Scale-Revised, Inventory of Complicated Grief and General Health Questionnaire) in a total of 130 first degree family members 2 years post disaster. Results showed that the majority of participants (n=113; 87%) had visited the site of death. In the self-reported evaluation of the visit, 68.1% (n=77) of the participants reported that visiting the site of death had been very important for them, 23.9% (n=27) reported that the visit had been quite important, and 2.7% (n=3) reported that the visit had been of some importance. No participant reported that visiting the site of death had been of little or no importance or affected them negatively. The most important outcome was gaining an increased understanding of what occurred (61%) and a feeling of closeness to the deceased (21%). Those who had visited the site of death reported lower avoidance behaviour and higher degree of acceptance of the loss than non-visitors. Although this could be a cause as well as a consequence of the visit, visiting the site of death may be an important part of the support offered to bereaved families after experiencing a disaster loss.

5.4 Main findings from paper IV

In this study we prospectively examined parental mental health after suddenly losing a son in a military training accident. Parents (N=32) were interviewed at 1, 2 and 23 years after the death of their son. The General Health Questionnaire (GHQ-20) and Expanded Texas Inventory of Grief (ETIG) were self-reported at 1, 2, 5 and 23 years; the Inventory of Complicated Grief (ICG) was self-reported at 23 years. We observed a high prevalence of psychiatric disorders at 1- and 2-year follow-ups (57% and 45%, respectively), particularly major depression (43% and 31%, respectively). Only one case of mental disorder was diagnosed at the 23-year follow-up. Grief and psychological distress were highest at 1- and 2-year follow-ups. Spouses exhibited a high concordance of psychological distress. Mothers reported more intense grief reactions than fathers. Loss of a son during military service may have a substantial impact on parental mental health particularly during the first two years after the death. Spouses' grief can be interrelated and may contribute to their psychological distress.

5.5 Main findings from paper V

In this paper we have reviewed the literature on the psychological consequences of sudden and violent losses of loved ones, including disaster and military losses. It also reviews risk and resilience factors for grief and mental health and describes the effects and possible benefit of different rituals and psychosocial interventions. The review reveals gaps in the literature on grief and bereavement after sudden and violent deaths. Still, some preliminary conclusions can be made. Several studies show that a sudden and violent loss of a loved one can adversely affect mental health and grief in a substantial number of the bereaved. The prevalence of mental disorders such as post-traumatic stress disorder (PTSD), major depressive disorder (MDD), and prolonged grief disorder (PGD) varies, however, widely from study to study. Moreover, mental health disorders are more elevated after sudden and violent losses than losses following natural deaths, and the trajectory of recovery seems to be slower. Several factors related to the circumstances of the loss may put the bereaved at heightened risk for mental distress. These factors may be differentially related to different outcomes; some increase the risk for PTSD, others for PGD. Given the special circumstances, bereavement following sudden and violent death may require different interventions than loss from natural death. Clinicians should be aware of the increased risk of mental health disorders and impaired functioning often found after sudden and violent losses, and that grief may follow a different course compared to losses from natural deaths. More research on the mental health effect and the potential benefit of different rituals and/or interventions for those who suffer sudden and violent losses is needed.

6. GENERAL DISCUSSION

6.1 Methodological considerations

The Tsunami bereavement study is a cross-sectional study which makes it difficult to evaluate causality. In paper III those who had visited the site of death reported lower avoidance and greater acceptance of the death compared to those who had not visited the site. This can be either a result or a cause of the visit. Also, as shown in paper I, suffering from CG could either be a cause or an effect of low positive or high negative social support.

Paper II included two groups of bereaved (directly exposed and not directly exposed) that differed in their relationship to the deceased. While the majority in the directly exposed group had lost younger children and spouses, the majority in the not directly exposed group had lost adult children and siblings/parents. This may have influenced outcome in addition to the level of exposure to the disaster. Closeness in the relationship to the deceased has been found to predict both prolonged grief (Neria et al., 2007) and traumatic stress symptoms (Holland & Neimeyer, 2011). The small number of respondents in both our studies means that statistical associations may not be detected due to weak statistical power. We also call for caution regarding generalizing our findings. For example, the findings in the Vassdalen avalanche study were based on the death of a young adult son in a military accident, and thus, are not applicable to the general loss of a child

The development of a grief disorder is still in its infancy. At the time of our studies there was, as far as we knew, no valid structured clinical interview for PGD. ICG was used as a self-report measure of PGD both in paper I, II, and IV. The use of self-report questionnaires is not considered a clinical measure of mental health disorders. Also, the ICG does not permit evaluation of functional impairment which is a necessary criterion for a positive screen for PGD (Prigerson et al., 2008).

A limitation in the Tsunami bereavement study is that participant's grief reactions may have been influenced by sharing of a common family context. This was not adjusted for in paper I and II, and may have affected outcomes. Studies on bereavement are commonly based on individual reactions to loss, and our statistical methods assume that participants are independent. In reality some of the participant's reactions, for example among the couples who had lost children, could have interacted. Subsequently, the basic assumptions for statistical independence were not completely satisfied.

We did not systematically assess pre-existing mental health difficulties in the bereaved populations, a factor that has shown to predict outcome in other studies (e.g., Simon et al., 2005). Also, in the Tsunami bereavement study we did not perform a full M.I.N.I. Consequently, we cannot rule out the presence of other psychiatric disorders such as anxiety and substance use disorders either comorbid or primary to the trauma. In paper IV a validated structured interview (M.I.N.I.) was only used at the final follow-up. There is some evidence that participants in research may be more healthy and recovered from their bereavement than non-responders (Stroebe & Stroebe, 1989). If this was the case in our study, the prevalence of PGD and other mental disorders may have been underestimated. Although rigorous standards for coding answers on the open-ended question in paper III were conducted, there is a possibility for subjectivity in interpretation of the data.

Notwithstanding these limitations, one of the major strengths of the Tsunami bereavement study is that we were able to identify the whole population of bereaved Norwegians aged 18-80. Most research has to date relied on convenience samples or subgroups of affected people in disaster research (Bonanno et al., 2010). The Norwegian tourists who experienced the tsunami were similar to the Norwegian population with regard to employment and marital status, but they had a higher than average education and more family constellations with children (Heir et al., 2009). Another strength is the homogeneity of the study sample. The study had an almost equal gender distribution, which is not common in bereavement studies (Keese et al., 2008). Also, women and men in all age groups were represented. The response rates in the Tsunami bereavement study (69%) and Vassdalen avalanche study (73-94%) were acceptable. Also, prospective longitudinal studies are rare in disaster research (paper IV).

6.2 The level of grief and mental disorders

The prevalence of mental disorders after disaster-related bereavement varies widely from study to study probably due to studies examining different samples, different level of exposure to the disaster, different kinship or relationship to the deceased, and time since death (paper V). Overall, this makes it difficult to compare studies. Still, we consider the level of grief and mental distress in the bereaved populations we studied to be elevated. In paper II we reported that almost 50% of those who were directly exposed to the tsunami had a psychiatric disorder two years after the disaster. The level of PTSD (34%) among those who were

directly exposed is consistent with other comparable disaster studies (Green et al., 1990; Kuo et al., 2003).

In paper II we showed that the prevalence of depression was relatively high in both groups of bereaved (25% among directly exposed, 10% among not directly exposed). In paper IV we showed that parents who lost sons in a military accident experienced extensive symptoms of depression during the first two years after the death (43% at 1 year and 31% at two years). The prevalence is high compared to the point prevalence in the normal population (5-7%) (Sandanger, Nygård, Sørensen, & Dalgard, 2007). Still, this finding is consistent with other studies underlining that depression is a common effect of disaster-related bereavement (Neria, et al., 2008; Salcioglu, Basoglu, & Livanou, 2007).

Our studies add to the so far small amount of research that has included grief measures in disaster studies. In paper I the number of persons scoring above the recommended cut-off for PGD (47%) is high. Given the magnitude of the losses it may not be surprising that the prevalence rates are high, and even higher than those of a similar study using the ICG in Karachi, Pakistan (Prigerson et al., 2002). Also, when using ICG scores according to the diagnostic criteria for PGD (paper II); the number is higher than general population studies (Kersting et al., 2011). The findings, however, correspond well with a similar Swedish disaster study (Johannesson et al., 2009) and with two studies after the 9/11 terrorist attacks (Neria et al., 2007; Shear et al., 2006). This supports the view that persons bereaved from natural disasters are vulnerable for a long-lasting and protracted grief.

The finding (paper II) that those who were directly exposed to the tsunami disaster were overall more affected than those who were not is opposed to some other studies (Ekeberg, Skogstad, & Myhrer, 2008; Green et al., 1983; Thompson et al., 1995), but concurs with another recent study after the tsunami disaster (Johannesson et al., 2011). The differences between the bereaved groups were most clearly associated with the development of new-onset PTSD (34% in directly exposed vs. 5% among not) and comorbid disorders (22% in directly exposed vs. 5% among not). One obvious explanation is that the large majority of those who were directly exposed to the disaster had been caught by the waves and had been pulled completely under water convinced that they were going to die. This shows that loss of family members may be closely associated with increased risk of life-threat among bereaved survivors. Thus, experiencing both loss and direct trauma or life-threat can have serious long-term mental health effects. The combination may intensify both grief and post-traumatic stress reactions, and can delay, prolong or even hinder processing of the loss (Stroebe & Schut, 2001). Preoccupation with the circumstances of the death can make

positive reminiscing of the deceased more difficult and comforting memories may be disturbed by recollection of disfigurement at death (Raphael, Martinek, & Wooding, 2004).

6.3 Risk and protective factors

Identifying subgroups that may be at particular risk for mental health problems may be an effective strategy to channel professional help to those who need it (Stroebe et al., 2006). Consistent with previous reports (e.g., Ghaffari-Nejad et al., 2007) our study showed that younger age and female gender was associated with higher grief symptomatology (paper I and IV). In paper I we showed that close kinship relationship is an important risk factor for the development of PGD. The fact that 66% of bereaved parents screened positive for PGD two years after the tsunami suggest that this is a highly vulnerable group. Our finding is consistent with both general bereavement studies (Cleiren et al., 1994; Middleton et al., 1998) and other disaster studies (Johannesson et al., 2009; Neria et al., 2007; Sing & Raphael, 1981), and supports the conceptualization of PGD with the related separation distress as a disruption of a strong attachment bond.

In paper II we showed that direct exposure to the disaster or threat to own life was predictive of PTSD, but not PGD which, as shown, was more related to the type of loss. This finding converges well with other studies (Morina, Rudari, Bleichardt, & Prigerson, 2010; Pynoos et al., 1987) and supports the conceptualization of grief and PTSD as two different conditions with grief being more related to closeness to the deceased, and PTSD more related to the magnitude of exposure to the traumatic event. Still, it contrasts the finding from a similar Swedish study which showed that life-threat was predictive of both PGD and PTSD (Johannesson et al., 2011).

Paper I, IV and V emphasised that difficult circumstances of disaster deaths may influence adjustment to the loss. In paper I, waiting for the confirmation of the death was significantly related to PGD. The uncertainty and confusion associated with waiting for the confirmation of death was almost unanimously reported as the most difficult period for bereaved relatives. Waiting for confirmation may prolong the impact phase of the disaster (Green et al., 1983), and without an official confirmation fantasies about the missing not being dead can create anxiety and denial about the outcome delaying and/or prolonging the grieving process. In paper IV we observed that perception of the deaths as preventable did complicate the bereavement course. Perceived preventability is commonly considered a risk

factor for a difficult grieving process (Rando, 1996), and may influence the psychological reactions seen among the bereaved. Several parents in the study expressed prolonged anger and bitterness related to their loss. Many also felt that lack of information of who was responsible for proceeding with the military operation under the dangerous conditions had been a huge stressor in addition to the loss.

Finally, and somewhat surprisingly, in paper I we found that previous loss in adult life protected against developing PGD. This certainly needs to be repeated in further research, but suggest that previous losses may not only be considered a risk factor for adverse mental health, but can also have a buffering effect when a new loss occurs. Several mechanisms can account for the latter outcome. Prior experience of loss can, for example, have a maturing or learning effect on some bereaved individuals enhancing their ability to cope with distressing emotions. Also, receiving positive social support seems to buffer against PGD among disaster bereaved (paper I).

6.4 The trajectory of grief

Longitudinal studies are important in order to understand more about the trajectory of grief and recovery from bereavement. As shown in paper V, the grieving process may take a different course after sudden and violent losses compared to losses after natural deaths. The nature and circumstances of these deaths makes it more difficult to grasp the reality of the loss and to reach acceptance or reconciliation. Also, grief reactions may intensify when the shock and disbelief gradually wear off, for many several months after the death. The trajectory of recovery seems to be particularly slow after the violent loss of a child. In paper IV we showed that parental distress reached its peak two years after the loss, before it gradually decreased towards the 5 year follow-up. This concurs with other studies which suggests that it may take 2-5 years for parents to accommodate to a sudden and violent loss of a child (Feigelman, Jordan, & Gorman, 2009; Murphy et al., 2000). This also indicate that time may not necessarily have a moderating effect on grief during the early phases of traumatic bereavement, and that grief does not always proceed in an orderly, linear fashion towards recovery. Although the participants showed a significant improvement in mental health during the long term course, many parents reported that they continued to grieve the loss of their son more than two decades after the death. Thus, a violent loss of a child cannot be considered a process with a concrete end point, but can be a difficult life-long process for many.

6.5 Support for a grief disorder?

Grief has traditionally been associated with depression, but research has shown that there may be more to grief than MDD. Recently, criteria for a grief disorder was proposed for DSM-5 and ICD-11 (Prigerson et al., 2009; Shear, Simon, et al., 2011). The proposal for a grief disorder is, however, controversial (Horwitz & Wakefield, 2007; Stroebe et al., 2000).

Shear, Simon et al. (2011) emphasises that one criterion for the definition of a mental disorder is that the symptoms have to be more than merely an expectable response to a common stressor such as grief after death of a loved one. Also, the syndrome or pattern that occurs in an individual must be followed by clinically significant distress or disability (Stein et al., 2010). Findings from paper II showed that PGD was independently associated with impaired functioning when controlling for other mental disorders. The syndrome of PGD has in several other studies been associated with functional impairment beyond that accounted for by comorbid depression, PTSD, and other anxiety disorder (e.g., Bonanno et al., 2007; Latham & Prigerson, 2004). Also, the finding that PGD may be associated with distinct risk factors compared to other disorders such as PTSD, support the uniqueness of the disorder (paper V). Although several other criteria need to be satisfied, our findings contribute to the amount of research that supports the inclusion of a grief disorder in the forthcoming diagnostic manuals.

6.6 The significance of interpersonal factors in grief

The study of grief and bereavement has for long been dominated by the focus on individual reactions to loss, and family grief therapists such as Shapiro (1994) has emphasised that the individual perspective on grief has failed to take into consideration the important role of the family in shaping the grief experience. Consistent with several other studies (e.g., Schwab, 1996), we showed, in paper IV, that mothers do report more intense grief reactions than fathers after loss of a child. More significantly, we found that the level of general psychological distress was highly interrelated within couples through all the follow-ups. This suggests that a father and mother may be affected both by the loss and by the way that their spouse reacts. This converges well with other recent studies that have shown that sudden and violent losses can have a significant impact both at the individual and at the family level

(Nickerson et al., 2010), with the possibility for mutual influence on the intensity and course of grief.

6.7 Early interventions after disasters - visiting the site of death

After disasters early interventions may be indicated in order to help the bereaved to grasp the reality of the death and to accept that the death was inevitable given the circumstances. In paper III we showed that visiting the site of death was important for the huge majority of the bereaved after the tsunami disaster. Obtaining an informed picture of what had happened in order to better understand what had caused the deaths was reported as the single most important factor. This is in accordance with what relatives reported after the school bus accident in Måbødalen in Norway in 1988 (Winje & Ulvik, 1995), and may be associated with the greater acceptance of the death that was found among the visitors. The need for an explanation of what caused the death, to get information and answers on how the death happened and why it couldn't be avoided seems fundamental for intellectual acceptance of the loss (Parkes & Weiss, 1983).

In order to process loss and trauma and at the same time learn from the experience it may be important to relate the traumatic event to a concrete setting. To have a precise perception of the detailed physical realities when lives are at stake is often a question of life and death. For survivors as well as for bereaved persons such exact information is needed in order to process the hazardous event. This need might have had an evolutionary advantage since it may have been beneficial both in terms of survival as well as recovering from posttraumatic distress.

Emotional aspects such as enhancing the continuing bond to the deceased combined with leave-taking rituals were other valuable factors related to the visit. While the mental health effect is uncertain, our findings suggest that visiting the site of death may be associated with lower avoidance of reminders of the traumatic event. This converges with a study of non-bereaved survivors who returned to the disaster affected area in the aftermath of the tsunami and who showed clear improvement in PTSD symptoms (Heir & Weisæth, 2006). Exposure to or confrontation with the reality of the death may be especially important for those who go to great lengths to avoid thinking about or avoid reminders of the deceased's absence (Gray & Litz, 2005).

Finally, the collective aspect of the commemoration journeys also seemed to have made a significant influence. Visiting the site of death may be one way to help families and individuals put fragmented pieces of information together to create a common understanding or narrative of what happened when their loved one died, also termed family meaning making (Nadeau, 2001). This may be particularly important when some family members are directly exposed to the disaster themselves, while others are not. The collective aspect may also involve bereaved families connecting with each other, which may promote feelings of togetherness and understanding.

6.8 Implications

6.8.1 Implications for clinicians

Our findings have some implications not only for clinicians working with the traumatically bereaved, but also for governmental agencies and authorities responsible for national preparedness, crisis management and execution of emergency plans. This thesis has shown that certain subgroups are at high-risk for long term mental health problems after disasters such as persons exposed to the combination of life-threat and bereavement and bereaved parents. Consequently, a proactive outreach model seems to be warranted in the follow-up of disaster bereaved with particular focus on these two groups.

While there often is much focus on immediate crisis intervention after disaster-related bereavement, planning also needs to take into account the need for long-term follow-up of the bereaved. The need for special services will often go far beyond the immediate crisis management stage. The local health care system including RPG's and community mental health workers will be important both in short term and long term after disasters. Specialised help and support such as collective family gatherings may supplement the regular health care system in order to meet the often expressed need for bereaved families to meet others affected by the same disaster (Dyregrov et al., 2009).

In paper II we found that around 50% of those who screened positive for PGD did not meet the criteria for other disorders. This may, at least theoretically, suggest that a significant number of bereaved may not be offered adequate psychological help and that their grief may be under-recognized and/or under-treated (Shear, Simon et al., 2011). Being able to differentiate between normal acute grief, PGD and other disorders is crucial for clinicians (Zisook & Shear, 2009). Grief-specific interventions specifically aiming to help those who are

suffering from PGD are beginning to emerge (Boelen et al., 2007; Shear, Frank et. al., 2005), and health agencies have a responsibility to educate mental health personnel in effective interventions addressing both trauma and bereavement. A greater focus on how maladaptive grief reactions can best be treated is needed.

The finding from paper III suggests that visiting the disaster- affected area can be recommended as a part of collective preventive intervention program offered to bereaved families. While the direct confrontation with the site of death can be challenging, we did not discover any negative lasting side effects or re-traumatisation after the visits. However, we would emphasize that visiting the site of loss and trauma should be voluntary offered and not be presented as a necessary intervention for healthy adaptation to the loss. Also, good preparation beforehand is essential. First of all, the timing of the visit may be important. Some may want to visit the site of death soon after the disaster in order to see the area while the disastrous impacts still are evident. Others may want the reconstruction to be underway to mute the visual impact of the disaster. In either case, it is necessary to ensure that the site is safe to visit and that all human remains are recovered that can be.

Bereaved relatives should have the opportunity to ask questions regarding the circumstances of death and it is important to ensure that factual information such as where the body was located, the cause of death etc. is correct. We did observe some of the risks involved arranging for such “re-visits” as it is vitally important that those who meet bereaved families have in-depth and complete knowledge as to the specific circumstances of each specific site. Some of the very few complaints when evaluating the visits were related to guides that had wrong information or did not have enough or specific enough information about the specific circumstances of the deaths. From a mental health perspective it may be that certain subgroups of bereaved, for example individuals struggling with symptoms of prolonged grief and/or posttraumatic stress can benefit even more from such visits.

Our finding from paper IV suggests that both intra-personal and interpersonal aspects are important after disaster-related bereavement. The finding that spouse’s grief reactions may influence each other suggests that it is vital to understand that grief may reciprocally affect family members and that this may have consequences for adjustment to the loss (Wijngaards-de Meij et al., 2008). For therapists and counsellors this finding stresses the need to have a family focus when performing clinical work with bereaved parents. This would certainly also include bereaved children.

6.8.2 Implications for future research

This thesis has shown that disaster-related bereavement may be followed by a particularly difficult bereavement course for a substantial number of bereaved. Increased knowledge of reactions and adaptation after traumatic bereavement represents a critical area for future research (Watson, Brymer, & Bonanno, 2011). There is a need for more systematic longitudinal studies focussing on factors that may increase risk, resilience and recovery from losses after disasters, including assessment of early predictors for complicated bereavement. More research on family grief will increase our knowledge on how families may be affected by disasters and the potential reciprocal influence of grief between family members.

Although PGD seems recognized both among clinicians and researchers it is still not clear whether the criteria for PGD are sufficient for bereavement following sudden and violent deaths. The inclusion of a PGD subtype, “traumatic bereavement” suggested in DSM-5, may be useful since traumatic symptomatology related to the circumstances of such deaths are common in addition to separation distress (Holland & Neimeyer, 2011; Kaltman & Bonanno, 2003; Rynearson, 2001). Still, there is a need to clarify what differentiates PGD and PTSD after sudden and violent losses, and to develop assessment instruments that capture both separation distress and trauma symptoms (Watson et al., 2011).

Little is known about the effect of early or preventive interventions after disaster-related bereavement such as psychological first aid (PFA) which is a recently developed intervention to be applied in the acute aftermath of disasters (Watson et al., 2011). Also, more systematic evaluation of how death notification is handled, the value of information about cause of death and other circumstances surrounding the death as well as the effect of visiting the site of death and other grief rituals, also termed ‘confrontational support’ (Winje & Ulvik, 1995) is warranted since these interventions or rituals may have a significant impact on a bereaved persons adjustment to the death. The identification of trauma-like symptoms following sudden and violent losses could also influence the course of psychological treatment, and more research on effective psychotherapeutic interventions addressing both trauma and bereavement is indicated.

6.9 General conclusions

The main aim of this thesis was to examine the long-term mental health effects of disaster-related bereavement and interventions in adults bereaved by the 2004 tsunami disaster (the

Tsunami bereavement study), and parents bereaved by the avalanche in Vassdalen in 1986 (the Vassdalen avalanche study). In a review article we summarized what is currently known about the mental health effects of sudden and violent losses in general. On the basis of five different papers some conclusions can be made: There is still a lot to be learned about the mental health effects of disaster-related bereavement and how we best can assist those who are bereaved. While most bereaved persons will eventually adjust well to their loss and do not need any professional help, a significant number will struggle with prolonged grief (PGD) and other mental health disorders after disasters. Parents losing children are one vulnerable group, and loss in combination with severe life-threat can be considered a substantial risk factor for adverse mental health. Other factors related to the circumstances of the loss such as waiting for death confirmation and/or perceiving the death as preventable may increase mental distress. Both intra- and interpersonal aspects of loss are important after disasters. Grief and bereavement affect persons on an individual level, but grief reactions may also be interrelated and family members can reciprocally influence each other after a significant loss. This may contribute to additional loss-related distress. Early intervention after disasters, such as visiting the site of death may be indicated for bereaved families in order to gain a better picture or understanding of what has happened to their loved one.

REFERENCE LIST

- Adler, A. (1943). Neuropsychiatric complications in victims of Boston's Coconut Grove disaster. *Journal of American Medical Association, 123*, 1098-1101.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (4th edn) (DSM-IV)*. Washington, DC: APA.
- American Psychiatric Association (2011). *DSM-5 development: G 06 Adjustment disorders*. Retrieved from <http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=367>.
- Andrews, B., Brewin, C. R., & Rose, S. (2003). Gender, social support and PTSD in victims of violent crime. *Journal of Traumatic Stress, 16*, 421-427.
- Archer, J. (1999). *The nature of grief: The evolution and psychology of reactions to loss*. London: Routledge.
- Askevold, F. (1976/1977). War sailor syndrome. *Psychotherapy and Psychosomatics, 27*, 133-138.
- Barry, L. C., Kasl, S. V., Prigerson, H. G. (2002). Psychiatric disorders among bereaved persons: the role of perceived circumstances of death and preparedness for death. *American Journal of Geriatric Psychiatry, 10*, 447-457.
- Beck, A. M. & Konnert, C. A. (2007). Ethical issues in the study of bereavement: the opinions of bereaved adults. *Death Studies, 31*, 783-799.
- Boelen, P. A., de Keijser, J., van den Hout, J., & van den Bout, M. A. (2007). Treatment of complicated grief: a comparison between cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology, 75*, 277-284.
- Boelen, P. A. & van den Bout, J. (2003). Complicated grief, depression and anxiety as distinct postloss syndromes. A confirmatory factor analysis study. *American Journal of Psychiatry, 165*, 2175-2177.
- Boelen, P. A. & van den Bout, J., & van den Hout, M. A. (2006). Negative cognitions and avoidance in emotional problems after bereavement: a prospective study. *Behaviour Research and Therapy, 44*, 1657-1672.
- Bonanno, G. A. (2004). Loss, trauma and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*, 20-28.
- Bonanno, G. A. (2009). *The other side of sadness. What new science of bereavement tells us*

- about life after loss*. New York: Basic Books.
- Bonanno, G. A., Brewin, C. R., Kaniasty, K., & LaGreca, A. M. (2010). Weighing the costs of disaster: consequences, risks, and resilience in individuals, families, and communities. *Psychological Science in the Public Interest*, *11*, 1-49.
- Bonanno, G. A. & Kaltman, S. (1999). Toward an Integrative Perspective on Bereavement. *Psychological Bulletin*, *125*, 760-776.
- Bonanno, G. A. & Kaltman, S. (2001). The varieties of grief experience. *Clinical Psychology Review*, *21*, 705-734.
- Bonanno, G. A., Neria, Y., Mancini, A., Coifman, K. G., Litz, B., & Insel, B. (2007). Is there more to complicated grief than depression and posttraumatic stress disorder? A test of incremental validity. *Journal of Abnormal Psychology*, *116*, 342-351.
- Bonanno, G. A., Papa, A., Lalande, K., Zhang, N., & Noll, J. G. (2005). Grief processing and deliberate grief avoidance: a prospective comparison of bereaved spouses and parents in the United States and the People's Republic of China. *Journal of Consulting and Clinical Psychology*, *73*, 86-98.
- Bonanno, G. A., Wortman, C. B. & Nesse, R. M. (2004). Prospective patterns of resilience and maladjustment during widowhood. *Psychology and Aging*, *19*, 260-271.
- Bowlby, J. (1963). Pathological mourning and childhood mourning. *Journal of the American Psychoanalytic Association*, *11*, 500-541.
- Bowlby, J. (1980). *Attachment and Loss: Loss, sadness and depression*. London: Hogarth Press.
- Bowlby, J. & Parkes, C. M. (1970). Separation and loss within the family. In E. J. Anthony (Ed.). *The child in his family*. New York: J. Wiley.
- Byrne, G. J. A. & Raphael, B. (1994). A longitudinal study of bereavement phenomena in recently widowed elderly men. *Psychological Medicine*, *24*, 411-421.
- Cleiren, M., Diekstra, R. F., Kerkhof, A. J., & van der Wal, J. (1994). Mode of death and kinship in bereavement: Focusing on "who" rather than "how". *Crisis*, *15*, 22-36.
- Cohen, J. A., Mannarino, A. P., Greenberg, T., Padlo, S., & Shipley, C. (2002). Childhood traumatic grief. *Trauma, Violence, & Abuse*, *3*, 307-327.
- Costa, R., & McRae, P. (1988). Psychological resilience among widowed men and women: a 10-year follow-up of a national sample. *Journal of Social Issues*, *44*, 129-142.
- Currier, J. M, Holland, J. M., & Neimeyer, R. A. (2006). Sense-making, grief and the experience of violent loss: toward a mediational model. *Death Studies*, *30*, 403-428.
- Currier, J. M., Neimeyer, R. A., & Berman, J. S. (2008). The effectiveness of

- psychotherapeutic interventions for bereaved persons: a quantitative review. *Psychological Bulletin*, 134, 648-661.
- Deutsch, H. (1937). Absence of grief. *Psychoanalytic Quarterly*, 6, 12-22.
- Dynes, R. R., & Quarantelli, E. L. (1976). The family and community context of individual reactions to disaster. I H. J. Parad, H. L. P. Resnik, & L. G. Parad (Eds.), *Emergency and disaster management*. Bowie, MD: The Charles Press Publishers.
- Dyregrov, A. (1988). *Parental reactions to the death of an infant child*. Doctoral dissertation. Department of Pediatrics, University of Bergen.
- Dyregrov, A., Straume, M., & Sari, S. (2009). Long-term collective assistance for the bereaved following a disaster: A Scandinavian approach. *Counselling and Psychotherapy Research*, 9, 33-41.
- Dyregrov, K. (2003). *The loss of a child by suicide, SIDS, and accidents. Consequences, needs, and provisions of help*. Doctoral dissertation, HEMIL, Psykologisk fakultet, University of Bergen.
- Dyregrov, K. (2004). Bereaved parents' experience of research participation. *Social Science and Medicine*, 58, 391-400.
- Dyregrov, K., Dieserud, G., Rasmussen, M., Straiton, M., Hjelmeland, H., Knizek, B., & Leenaars, A. (2010-11). Motivation for research participation among suicide bereaved. *Omega (Westport)*, 62, 149-168.
- Dyregrov, K., Nordanger, D. & Dyregrov, A. (2003). Predictors of psychosocial distress after suicide, SIDS and accidents. *Death Studies*, 27, 143-165.
- Eid, J. Larsson, G., Johnsen, B. H., Laberg, J. C., Bartone, P. T., & Carlstedt, B. (2009). Psychometric properties of the Norwegian Impact of Event Scale-Revised in a non-clinical sample. *Nordic Journal of Psychiatry*, 63, 426-432.
- Eitinger, L. (1964). *Concentration camp survivors in Norway and Israel*. Oslo: Universitetsforlaget.
- Eitinger, L. & Ström, A. (1973). *Mortality and morbidity after excessive stress: A follow-up investigation of Norwegian concentration camp survivors*. New York: Humanities Press.
- Ekeberg, Ø., Skogstad, L. & Myhrer, S. (2008). Tsunamien-ettervirkninger for overlevende og pårørende. *Tidsskrift for Norsk Lægeforening*, 128, 1939-1942.
- Elklit, A. (2007). Psychological consequences of a firework disaster in a local community. *Social Psychiatry and Psychiatric Epidemiology*, 42, 664-668.
- Elklit, A. & O'Connor, M. (2005). Posttraumatic stress disorder in a Danish population of

- elderly bereaved. *Scandinavian Journal of Psychology*, 46, 439-445.
- Elklit, A., Pedersen, S. S., & Jind, L. (2001). The Crisis Support Scale: psychometric qualities and further validation. *Personality and Individual Differences*, 31, 1291-1302.
- Engel, G. L. (1961). Is grief a disease? A challenge for medical research. *Psychosomatic Medicine*, 23, 18-22.
- Enright, B. P. & Marwit, S. (2002). Reliability of diagnosing complicated grief: a closer look. *Journal of Clinical Psychology*, 58, 747-757.
- Evalueringsutvalget for flodbølgekatastrofen i Sør-Asia (2005). *26.12 Rapport fra evalueringsutvalget for flodbølgekatastrofen i Sør-Asia*. Oslo.
- Faberow, N. L., Gallagher-Thompson, D. Gilewski, M., & Thompson, L. (1992). Changes in grief and mental health of bereaved spouses of older suicides. *Journal of Gerontology*, 47, 357-366.
- Faschingbauer, T. R., DeVaul, R. A., Zisook, S. (1977). Development of the Texas Inventory of Grief. *American Journal of Psychiatry*, 134, 696-698.
- Feigelman, W., Jordan, J. R., & Gorman, B. S. (2009). How they died, time since loss, and bereavement outcomes. *Omega (Westport)*, 58, 251-273.
- Freud, S. (1917/1957). Mourning and melancholia (Trauer und Melancholie). In J. Strachey (Ed. and Trans.), *The complete psychological works of Sigmund Freud* (pp. 152-170). London: The Hogarth Press and the Institute of Psychoanalysis.
- Fujisawa, D., Miyashita, M., Nakajima, S., Ito, M., Kato, M., & Kim Y. (2010). Prevalence and determinants of complicated grief in general population. *Journal of Affective Disorders*, 127, 352-358.
- Ghaffari-Nejad, A., Ahmadi-Mousavi, M., Gandomkar, M., Reihani-Kermani, H. (2007). The prevalence of complicated grief among Bam earthquake survivors in Iran. *Archives of Iranian Medicine*, 10, 525-528.
- Gleser, G., Green, B. L., & Winget, C. (1981). *Prolonged psychological effects of disaster: A study of Buffalo Creek*. New York: Academic Press.
- Goenjian, A. K., Karayan, I., Pynoos, R. S., Minassian, D., Najarian, L. M., Steinberg, A. M., & Fairbanks, L. A. (1997). Outcome of psychotherapy among early adolescents after trauma. *American Journal of Psychiatry*, 154, 536-542.
- Goldberg, D. P., Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine*, 9, 139-145.
- Golden, A. J. & Dalgliesh, T. (2010). Is prolonged grief as a disorder distinct from

- bereavement-related posttraumatic stress? *Psychiatry Research*, 178, 336-341.
- Gray, M. J. & Litz, B. T. (2005). Behavioral interventions for recent trauma. *Behavior Modification*, 29, 189-215.
- Gray, M. J., Maguen, S., & Litz, B. T. (2004). Acute psychological impact of disaster and large-scale trauma: Limitations of traditional interventions and future practice recommendations. *Prehospital and Disaster Medicine*, 19, 64-72.
- Green, B. L. (2000). Traumatic loss: Conceptual and empirical links between trauma and bereavement. *Journal of Personal and Interpersonal Loss*, 5, 1-17.
- Green, B. L., Grace, M. C., Lindy, J., Titchener, J. L. & Lindy, J. G. (1983). Levels of functional impairment following a civilian disaster: The Beverly Hills Supper Club fire. *Journal of Consulting and Clinical Psychology*, 51, 573-580.
- Green, B. L., Krupnick, J. L., Stockton, P., Goodman, L., Corcoran, C., & Petty, C. (2001). Psychological outcomes associated with traumatic loss in a sample of young women. *American Behavioral Scientist*, 44, 817-837.
- Green, B. L., Lindy, J., Grace, M. C., Gleser, G., Leonard, A., Korol, M.,.... Winget, C. (1990). Buffalo Creek survivors in the second decade: stability of stress symptoms. *American Journal of Orthopsychiatry*, 60, 43-54.
- Hardison, H. G., Neimeyer, R. A., & Lichstein, K. L. (2005). Insomnia and complicated grief symptoms in bereaved college students. *Behavioral Sleep Medicine*, 3, 99-111.
- Heir, T., Hussain, A., & Weisæth, L. (2008). Managing the after-effects of disaster trauma: the essentials of early intervention. *European Psychiatric Review*, 1, 66-69.
- Heir, T., Piatigorsky, A. & Weisæth, L. (2009). Longitudinal changes in recalled perceived life threat after a natural disaster. *British Journal of Psychiatry*, 194, 510-514.
- Heir, T., Rosendal, S., Berg-Johannesson, K., Michel, P-O., Mortensen, E. L., Weisæth, L.,... Hultman, C. M. (2011). Tsunami-affected Scandinavian tourists: Disaster exposure and post-traumatic stress symptoms. *Nordic Journal of Psychiatry*, 65, 9-15.
- Heir, T. & Weisæth, L. (2006). Back to where it happened: Self-reported symptom improvement of tsunami survivors who returned to the disaster area. *Prehospital and Disaster Medicine*, 21, 59-63.
- Hjemdal, O. K. (2007). *Follow-up of disaster victims. The role of the general practitioners*. Oslo: Norwegian Centre for Violence and Traumatic Stress Studies (NKVTS).
- Hobfoll, S. E., Tracy, M., & Galea, S. (2006). The impact of resource loss and traumatic growth on probable PTSD and depression following terrorist attacks. *Journal of Traumatic Stress*, 19, 867-878.

- Hodgkinson, P. E., Joseph, S., Yule, W., & Williams, R. (1993). Viewing human remains following disaster: helpful or harmful? *Medicine, Science and Law*, *33*, 197-202.
- Hodgkinson, P. E., Joseph, S., Yule, W., Williams, R. (1995). Measuring grief after sudden violent death: Zeebrugge bereaved at 30 months. *Personality and Individual Differences*, *18*, 805-808.
- Holen, A. (1990). *A long-term outcome study of survivors from a disaster. The Alexander Kielland disaster in perspective*. Dissertation. Department of Psychiatry. Oslo: University of Oslo.
- Holen, A. (1991). A longitudinal study of the occurrence and persistence of post-traumatic stress health problems in disaster survivors. *Stress Medicine*, *7*, 11-17.
- Holgerson, K. H. (2011). *Survivors in their third decade after the North Sea oil rig disaster of 1980. Long-term perspectives on mental health*, NTNU- Trondheim, Trondheim
- Holland, J. M. & Neimeyer, R. A. (2011). Separation and traumatic distress in prolonged grief: The role of cause of death and relationship to the deceased. *Journal of Psychopathology and Behavioral Assessment*, *33*, 254-263.
- Holland, J. M., Neimeyer, R. A., Boelen, P. A., & Prigerson, H. G. (2008). The underlying structure of grief: a taxonomic investigation of prolonged and normal reactions to loss. *Journal of Psychopathology and Behavioral Assessment*, *31*, 190-201.
- Holm, H. J. & Martinsen, E. (1982). Inkorporering av det tapte objekt. En spesiell type patologisk sorg. *Nordisk Psykiatrisk Tidsskrift*, *36*, 259-267.
- Horwitz, A. V. & Wakefield, J. C. (2007). *The loss of sadness. How psychiatry transformed normal sorrow into depressive disorder*. Oxford New York: Oxford University Press.
- Horowitz, M. J., Bonanno, G. A. & Holen, A. (1993). Pathological grief: diagnosis and explanation. *Psychosomatic Medicine*, *55*, 260-273.
- Horowitz, M. J., Siegel, B., Holen, A., Bonanno, G. A., Milbrath, C. & Stinson, C. H. (1997). Diagnostic criteria for complicated grief disorder. *American Journal of Psychiatry*, *154*, 904-910.
- Hox, J. (2002). *Multilevel analysis. Techniques and applications*. Mahwah, NJ: Erlbaum.
- Hull, A., Alexander D. A., & Klein S. (2002). Survivors of the Piper Alpha platform disaster: a long term follow-up study. *British Journal of Psychiatry*, *181*, 433-438.
- Jacobs, S. (1993). *Pathological grief. Maladaptation to loss*. American Psychiatric Press: Washington.
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York: Free Press.

- Johannesson, K. B., Lundin, T., Hultman, C. M. & Fröjd, T. & Michel, P-O. (2011). Prolonged grief among traumatically bereaved exposed and not exposed to a tsunami. *Journal of Traumatic Stress*. DOI: 10.1002/jts.20668.
- Johannesson, K. B., Lundin, T., Hultman, C. M., Lindam, A., Dyster-Aas, J., Arneberg, P.,... Michel, P-O. (2009). The effect of traumatic bereavement on Tsunami-exposed survivors. *Journal of Traumatic Stress*, 22, 497-504.
- Johannesson, K. B., Stefanini, S. Lundin, T., & Anchisi, R. (2006). Impact of bereavement among relatives in Italy and Sweden after the Linate airplane disaster. *International Journal of Disaster Medicine*, 4, 110-117.
- Johnson, J. G., First, M. B., Block, S., Vanderwerker, L. C., Zivin, K., Zhang, B., ... Prigerson, H. G. (2009). Stigmatization and receptivity to mental health services among recently bereaved adults. *Death Studies*, 33, 691-711.
- Joseph, S., Andrews, B., Williams R., & Yule W. (1992). Crisis support and psychiatric symptomatology in adult survivors of the Jupiter cruise ship disaster. *British Journal of Clinical Psychology*, 31, 63-73.
- Kaltman, S. & Bonanno, G. A. (2003). Trauma and bereavement: examining the impact of sudden and violent deaths. *Journal of Anxiety Disorders*, 17, 131-47.
- Keesee, N. J., Currier J. M., & Neimeyer R. A. (2008). Predictors of grief following the death of one's child: the contribution of finding meaning. *Journal of Clinical Psychology*, 64, 1-19.
- Kersting, A., Braehler, E., Glaesmer, H., & Wagner, B. (2011). Prevalence of complicated grief in a representative population-based sample. *Journal of Affective Disorders*, 131, 339-343.
- Klass, D., Silverman, P. R., & Nickman, S. L. (1996). *Continuing bonds: New understandings of grief*. Phil. PA, USA: Taylor & Francis.
- Kohn, R. & Levav, I. (1990). Bereavement in disasters: An overview of the research. *International Journal of Mental Health*, 19, 61-76.
- Kubler-Ross, E. (1969). *On death and dying*. New York: MacMillan.
- Kuo, C. J., Tang, H. S, Tsay, C. J., Lin, S. K., Hu, W. H., Chen, C. C. (2003). Prevalence of psychiatric disorders among bereaved survivors of a disastrous earthquake in Taiwan. *Psychiatric Services*, 54, 249-251
- Lacey, G. N. (1972). Observations on Aberfan. *Journal of Psychosomatic Research*, 16, 257.
- Latham, A. E. & Prigerson, H. G. (2004). Suicidality and bereavement: Complicated grief as

- psychiatric disorder presenting greatest risk for suicidality. *Suicide and Life-Threatening Behaviour*, 34, 350-362.
- Li, J., Laursen, T., Precht, D., Olsen, J., & Mortensen, P. (2005). Hospitalization for mental illness among parents after the death of a child. *New England Journal of Medicine*, 352, 1190-1196.
- Li, J., Mortensen, P., & Olsen, J. (2003). Mortality in parents after death of a child in Denmark: A nationwide follow-up study. *The Lancet*, 361, 363-367.
- Lindemann, E. (1944). Symptomatology and management of acute grief. *American Journal of Psychiatry*, 101, 141-148.
- Lobb, E. A., Kristjanson, L. J., Aoun, S. M., Monterosso, L., Halkett, G. K. D., & Davis, A. (2010). Predictors of complicated grief: a systematic review. *Death Studies*, 34, 673-698.
- Lundin, T. (1984a). Morbidity following sudden and unexpected bereavement. *British Journal of Psychiatry*, 144, 84-88.
- Lundin, T. (1984b). Long-term outcome of bereavement. *British Journal of Psychiatry*, 145, 424-428.
- Maercker, A. & Znoj, H. (2010). The younger sibling of PTSD: similarities and differences between complicated grief and posttraumatic stress disorder. *European Journal of Psychotraumatology*, DOI:10.3402/ejpt.v1i0.5558.
- Maguen, S., Neria, Y., Conoscenti, L. M., & Litz, B. T. (2009). Depression and prolonged grief in the wake of disasters. In Y. Neria, S. Galea, & F. H. Norris (Eds.), *Mental Health and Disasters* (pp. 116-130). New York: Cambridge University Press.
- Malt, U. F. (1987). *Biopsychosocial aspects of accidental injuries*. University of Oslo, Oslo.
- Malt, U. F. & Weisæth, L. (1989). Disaster psychiatry and traumatic stress studies in Norway. History, current status and future. *Acta Psychiatrica Scandinavica*, 80 (Suppl. 355), 7-12.
- Mawson, D., Marks, I., Ramm, K., & Stern, R. S. (1981). Guided mourning for morbid grief: A controlled study. *British Journal of Psychiatry*, 138, 185-193.
- McFarlane, A. C. & Norris, F. H. (2006). Definitions and concepts in disaster research. In F. H. Norris, S. Galea, M. J. Friedman, & P. J. Watson (Eds.), *Methods for Disaster Mental Health Research* (pp. 3-19). New York: The Guilford Press.
- Michel, P-O., Rosendal, S., Weisæth, L., & Heir, T. (2011). Use of and satisfaction with support received among survivors from three Scandinavian countries after the 2004 South-east Asian tsunami. *European Psychiatry*. DOI:10.1016/j.eurpsy.2010.09.009

- Middleton, W., Mouland, A., Raphael, B. Burnett, P., & Martinek, N. (1993). An international perspective on bereavement related concepts. *Australian and New Zealand Journal of Psychiatry*, 27, 457-463.
- Middleton, W., Raphael, B., Burnett, P., & Martinek, N. (1998). A longitudinal study comparing bereavement phenomena in recently bereaved spouses, adult children and parents. *Australian and New Zealand Journal of Psychiatry*, 32, 235-241.
- Monk, T. H., Houck, P. R., & Shear, M. K. (2006). The daily life of complicated grief patients-what gets missed, what gets added? *Death Studies*, 30, 77-85.
- Morina, N., Rudari, V., Bleichardt, G., & Prigerson, H. G. (2010). Prolonged grief disorder, depression, and posttraumatic stress disorder among bereaved kosovar civilian war survivors: a preliminary investigation. *International Journal of Social Psychiatry*, 56, 288-297.
- Mundt, J. C., Marks, I. M., Shear, M. K., & Greist, J. H. (2002). The Work and Social Adjustment Scale: a simple measure of impaired functioning. *British Journal of Psychiatry*, 180, 461-464.
- Murphy, S. A., Brown, T., Tillery, L., Cain, K. C., Johnson, L. C. & Beaton, R. D. (1999). PTSD among bereaved parents following the violent deaths of their 12- to 28-year-old children: A longitudinal prospective analysis. *Journal of Traumatic Stress*, 12, 273-291.
- Murphy, S. A., Johnson, L. C., Lohan, J. (2000). The aftermath of the violent death of a child: An integration of the assessments of parents mental distress and PTSD during the first 5 years of bereavement. *Journal of Loss and Trauma*, 7, 203-222.
- Nadeau, J., W. (2001). Meaning making in family bereavement. In M. Stroebe, R. O. Hansson, W. Stroebe, and H. Schut, (Eds), *Handbook of Bereavement Research. Consequences, coping, and care* (pp. 329-348). Washington, DC: American Psychological Association.
- Neria, Y., Gross, R., Litz, B., Maguen, S., Insel, B., Seirmarco, G., ... Marshall, R. D. (2007). Prevalence and psychological correlates of complicated grief among bereaved adults 2.5-3.5 years after September 11th attacks. *Journal of Traumatic Stress*, 20, 251-262.
- Neria, Y. & Litz, B. T. (2004). Bereavement by traumatic means: the complex synergy of trauma and grief. *Journal of Loss and Trauma*, 9, 73-87.
- Neria, Y., Olfson, M., Gameroff, M. J., Wickramaratne, P., Gross, R., Pilowsky, D.J.,

- ... Weissman, M. M. (2008). The mental health consequences of disaster-related loss: findings from primary care one year after the 9/11 terrorist attacks. *Psychiatry*, *71*, 339-348.
- Newson, R. S., Boelen, P. A., Hek, K., & Hofman, A. (2011). The prevalence and characteristics of complicated grief in older adults. *Journal of Affective Disorders*, *132*, 231-238.
- Nickerson, A., Bryant, R. A., Brooks, S., Steel, Z., Silove, D., & Chen, J. (2011). The family influence of loss and trauma on refugee mental health: a multilevel path analysis. *Journal of Traumatic Stress*, *24*, 25-33.
- Norris, F. H. (2006). Disaster research methods: past progress and future directions. *Journal of Traumatic Stress*, *19*, 173-184.
- Norris, F. H., Friedman, M. J. & Watson, P. J. (2002). 60,000 disaster victims speak: Part II. Summary and implications of the disaster mental health research. *Psychiatry*, *65*, 240-260.
- Norris, F. H. & Wind, L. H. (2009). The experience of disaster: Trauma, loss, adversities, and community effects. In Y. Neria, S. Galea, & F. H. Norris (Eds.), *Mental Health and Disasters* (pp. 29-46). New York: Cambridge University Press.
- Norwegian Knowledge Centre for the Health Services (2006). *Psychosocial interventions after large-scale accidents and disasters. Systematic review*. Oslo.
- NOU (1986). *Skredulykken i Vassdalen 5. mars 1986*. Oslo: Justis og Politidepartementet.
- O'Connor, M. F., Wellisch, D. K., Stanton, A. L., Eisenberger, N. I., Irwin, M. R., & Lieberman, M. D. (2008). Craving love? Enduring grief activates brain's reward center. *Neuroimage*, *42*, 969-972.
- Parkes, C. M. (1965). Bereavement and mental illness. A classification of bereavement reactions. *British Journal of Medical Psychology*, *38*, 13-26.
- Parkes, C. M. (1971). The first year of bereavement: A longitudinal study of the reaction of London widows to the death of their husbands. *Psychiatry*, *33*, 444-467.
- Parkes, C. M. (2006). *Love and loss. The roots of grief and its complications*. New York: Routledge.
- Parkes, C. M. (2007). Complicated grief: The debate over a new DSM-V diagnostic category. In K. J. Doka (Ed.). *Living with grief: Before and after the death*. Hospice Foundation of America: Washington.
- Parkes, C. M. & Weiss, R. (1983). *Recovery from bereavement*. New York: Basic Books.
- Prigerson, H. (2004). Complicated grief: when the path of adjustment leads to a dead end.

- Bereavement Care*, 23, 38-40.
- Prigerson, H. G., Ahmend, I., Silverman, G. K., Saxena, A. K., Maciejewski, P. K., Jacobs, S. C., ... Hamirani, M. (2002). Rates and risks of complicated grief among psychiatric clinic patients in Karachi, Pakistan. *Death Studies*, 26, 781-792.
- Prigerson, H. G., Bierhals, A. J., Kasl, S. V., Reynolds, C. F., Shear, M. K., Day, N., ... Jacobs, S. (1997). Traumatic grief as a risk factor for mental and physical morbidity. *American Journal of Psychiatry*, 154, 616-623.
- Prigerson, H. G., Frank, E., Kasl, S. V., Reynolds, C. F., Anderson, B., Zubenko, G. S., ... Kupfer, D. J. (1995). Complicated grief and bereavement-related depression as distinct disorders: preliminary empirical validation in elderly bereaved spouses. *American Journal of Psychiatry*, 152, 22-30.
- Prigerson, H. G., Horowitz, M. J., Jacobs, S. C., Parkes, C. M., Aslan, M., Goodkin, K., ... Maciejewski, P. K. (2009). Prolonged grief disorder: Psychometric validation of criteria proposed for DSM-V and ICD-11. *PLoS Medicine*, 6:e 1000121.
- Prigerson, H. G., Maciejewski, P. K., Reynolds, C. F., Bierhals, A. K., Newsom, J. T., Fasiczka, A., ... Miller, M. (1995). Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. *Psychiatry Research*, 59, 65-79.
- Prigerson, H. G., Shear, M. K., Jacobs, S. C., Parkes, Reynolds, C. F., Maciejewski, P. K., ... Zisook, S. (1999). Consensus criteria for traumatic grief. A preliminary empirical test. *British Journal of Psychiatry*, 174, 67-73.
- Prigerson, H. G. Vanderwerker, L. C., & Maciejewski, P. K. (2008). A case for inclusion of Prolonged Grief Disorder in DSM-V. In M. S. Stroebe, R. Hansson, H., Schut, & W. Stroebe (Eds.), *Handbook of bereavement research and practice* (pp.165-186). Washington, DC: American Psychological Association.
- Pynoos, R., Nader, K., Frederick, C., Gonda, L., & Stuber, M. (1987). Grief reactions in school age children following a sniper attack at school. *Israeli Journal of Psychiatry and Related Sciences*, 24, 53-63.
- Rando, T. A. (1996). Complications in mourning traumatic death. In K. J. Doka (Ed.), *Living with grief after sudden loss* (pp 139-160). Washington DC: Taylor and Francis.
- Raphael, B. (1977). Preventive intervention with the recently bereaved. *Archives of General Psychiatry*, 34, 1450-1454.
- Raphael, B. (1986). *When disasters strikes: How individuals and communities cope with catastrophe*. New York: Basic Books.
- Raphael, B. (1997). The interaction of grief and trauma. In D. Black & M. Newman, J. Harris-

- Hendricks & G. Mezey (Eds.). *Psychological trauma: a developmental approach* (pp. 31-43). London: Gaskell.
- Raphael B., Lundin, T., & Weisæth L. (1989). A research method for the study of psychological and psychiatric aspects of disaster. *Acta Psychiatrica Scandinavica*, 80 (suppl S353), 1-75.
- Raphael, B. & Maguire, P. (2009). Disaster mental health research: past, present, and future. In Y. Neria, S. Galea, and F. H. Norris (Eds.), *Mental Health and Disasters* (pp. 7-28). Cambridge: University Press.
- Raphael, B., Martinek, N. & Wooding, S. (2004). Assessing Traumatic Bereavement. In J. Wilson & T. Keane (Eds.), *Assessing Psychological Trauma and PTSD*, (pp. 492-510). New York: The Guilford Press.
- Raphael, B & Wooding, S. (2004). Early mental health interventions for traumatic loss in adults. In B. T. Litz (ed.), *Early intervention for trauma and traumatic loss* (pp. 147-178). Guilford Press: New York.
- Reynolds, C. F., Miller, M. D., Pasternak, R. E., Frankl, E., Perel, J. M., Cornes, C.,... Kupfer, D. J. (1999). Treatment of bereavement-related major depressive episodes in later life: a controlled study of acute and continuation treatment with nortriptyline and interpersonal psychotherapy. *American Journal of Psychiatry*, 156, 202-208.
- Ringdal, G. I., Jordhøy, M. S., Ringdal, K., & Kaasa, S. (2001a). The first year of grief and bereavement in close family members to individuals who have died of cancer. *Palliative Medicine*, 15, 91-105.
- Ringdal, G. I., Jordhøy, M. S., Ringdal, K., & Kaasa, S. (2001b). Factors affecting grief reactions in close members to individuals who have died of cancer. *Journal of Pain and Symptom Management*, 22, 1016-1026.
- Rogers, C. H., Floyd, F. J., Seltzer, M. M., Greenberg, J. & Hong, J. (2008). Long-term effects of the death of a child on parents adjustment in midlife. *Journal of Family Psychology* 22, 203-211.
- Rubin, S. S. (1999). The two-track model of bereavement: Overview, retrospect and prospect. *Death Studies*, 23, 681-714.
- Rynearson, T. K. (2001). *Retelling violent death*. Philadelphia: Brunner-Routledge.
- Salcioglu, E., Basoglu, M., & Livanou, M. (2007). Post-traumatic stress disorder and comorbid depression among survivors of the 1999 earthquake in Turkey. *Disasters*, 31, 115-129.
- Sandanger, I., Nygård, J. F., Sørensen, T., & Dalgard, O. S. (2007). Return of depressed men:

- Changes in distribution of depression and symptoms in Norway between 1990 and 2001. *Journal of Affective Disorders*, 100, 153-162.
- Schaal, S., Elbert, T., & Neuner, F. (2009). Prolonged grief disorder and depression in widows due to the Rwandan genocide. *Omega (Westport)*, 59, 203-219.
- Schaefer, J. A. & Moos, R. H. (2001). Bereavement experiences and personal growth. In M. S. Stroebe, R. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research. Consequences, coping, and care* (pp. 145-168). Washington, DC: American Psychological Association.
- Schwab, R. (1996). Gender differences in parental grief. *Death Studies*, 20, 103-113.
- Shapiro, E. (1994). *Grief as a family process*. New York: Guilford Press.
- Shear K., Frank, E., Houck, P. R., & Reynolds, C. F. (2005). Treatment of complicated grief: a randomized controlled trial. *JAMA*, 293, 2601-2608.
- Shear, K. M., Jackson, C. T., Essock, S. M., Donahue, S. A. & Felton, C. J. (2006). Screening for complicated grief among Project Liberty service recipients 18 months after September 11, 2001. *Psychiatric Services*, 57, 1291-1297.
- Shear, K. M., McLaughlin, K. A., Ghesquiere, A., Gruber, M. J., Sampson, N. A., & Kessler, R. C. (2011). Complicated grief associated with Hurricane Katrina. *Depression and Anxiety*, 28, 648-657.
- Shear, K. M. & Shair, H. (2005). Attachment, loss, and complicated grief. *Developmental Psychobiology*, 47, 253-267.
- Shear, K. M., Simon, N., Wall, M., Zisook, S., Neimeyer, R. A., Duan, N., ... Keshaviah, A. (2011). Complicated grief and related bereavement issues for DSM-5. *Depression and Anxiety*, 28, 103-117.
- Sheehan, D.V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., ... Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59 (suppl 20), 22-33.
- Shore, J. H., Tatum, E. L., & Vollmer, W. M. (1986). Psychiatric reactions to disaster: The Mount St. Helens experience. *American Journal of Psychiatry*, 143, 590-595.
- Silverman, G. K., Jacobs, S. C., Kasl, S. V., Shear, M. K., Maciejewski, P. K., Noaqhiul, F. S., ... Prigerson, H. G. (2000). Quality of life impairments associated with diagnostic criteria for traumatic grief. *Psychological Medicine*, 30, 857-862.
- Simon, N. M., Pollack, M. H., Fischmann, D., Perlman, C. A., Muriel, A. C., Moore, C. W.,

- ... Shear, M. K. (2005). Complicated grief and its correlates in patients with bipolar disorder. *Journal of Clinical Psychiatry*, *66*, 1105-1110.
- Sing, B. & Raphael, B. (1981). Postdisaster morbidity of the bereaved: A possible role for preventive psychiatry. *Journal of Nervous and Mental Disease*, *169*, 203-212.
- Sireling, L., Cohen, D., & Marks, I. (1988). Guided mourning for morbid grief: a controlled replication. *Behavior Therapy*, *29*, 121-132.
- Souza, R., Bernatsky, S., Reyes, R., & de Jong, K. (2007). Mental health status of vulnerable tsunami-affected communities: a survey in Aceh Province, Indonesia. *Journal of Traumatic Stress*, *20*, 263-269.
- Stein, D. J., Phillips, K. A., Bolton, D., Fulford, K. W. M., Sadler, J. Z., & Kendler, K. S. (2010). What is a mental/psychiatric disorder? From DSM-IV to DSM-V. *Psychological Medicine*, *40*, 1759-1765.
- Stroebe, M. S. (2009). From vulnerability to resilience. Where should research priorities lie? *Bereavement Care*, *2*, 18-24.
- Stroebe, M. S., Folkman, S., Hansson, R. O., & Schut, H. (2006). The prediction of bereavement outcome. *Social Science and Medicine*, *63*, 2440-2451.
- Stroebe, M. S., Hansson, R. O., Schut, H., & Stroebe, W. (2008). Bereavement Research: Contemporary perspectives. In M. S. Stroebe, R. Hansson, H. Schut, & W. Stroebe (Eds.), *Handbook of Bereavement Research and Practice* (pp. 463-484). Washington, DC: American Psychological Association.
- Stroebe, M. S. & Schut, H. (1999). The dual process model of coping with bereavement: Rationale and description. *Death Studies*, *23*, 197-224.
- Stroebe, M. S. & Schut, H. (2001). The traumatization of grief? A conceptual framework for understanding the trauma-bereavement interface. *Israeli Journal of Psychiatry and Related Sciences*, *38*, 185-201.
- Stroebe, M. S., Schut, H., & Stroebe, W. (2007). Health outcomes of bereavement. *The Lancet*, *370*, 1960-1973.
- Stroebe, M. S. & Stroebe, W. (1989). Who participates in bereavement research? A review and empirical study. *Omega (Westport)*, *20*, 1-29.
- Stroebe, M., van Son, M., Stroebe, W., Kleber, R., Schut, H., & van den Bout, J. (2000). On the classification and diagnosis of pathological grief. *Clinical Psychology Review*, *20*, 57-75.
- Thompson, J., Chung, M. C., & Rosser, R. (1995). Psychological effects of the Marchioness disaster on survivors and relatives. *European Journal of Psychiatry*, *9*, 197-208.

- Vatshelle, A., & Moen, B. E. (1997). Serious on-the-track accidents experienced by train drivers: Psychological reactions and long term health effects. *Journal of Psychosomatic Research*, 42, 43-52.
- Wagner, B. & Maercker, A. (2007). A 1.5 year follow-up of an internet-based intervention for complicated grief. *Journal of Traumatic Stress*, 20, 625-629.
- Watson, P. J., Brymer, M. J., & Bonanno, G. A. (2011). Postdisaster psychological intervention since 9/11. *American Psychologist*, 66, 482-494.
- Weiss, D. S. (2004). The Impact of Event Scale-Revised. In J. Wilson & T. Keane (Eds.), *Assessing psychological trauma and PTSD*, (pp. 168-189). New York: Guilford Press.
- Weisæth, L. (1984). *Stress reactions to an industrial disaster: an investigation of disaster behaviour and acute post-traumatic stress reactions, and a prospective, controlled, clinical and interventive study of sub-acute, and long-term posttraumatic stress*. University of Oslo, Oslo.
- Wijngaards-de Meij, L., Stroebe, M., Schut, H., Stroebe, W., van den Bout, J., van der Heijden, P. G., ... Dijkstra, I. (2008). Parents grieving the loss of their child: interdependence in coping. *British Journal of Clinical Psychology*, 47, 31-42.
- Winje, D. (1997). *Psychological adjustment after severe trauma. A longitudinal study of adults' and children's posttraumatic reactions and coping after the bus accident in Måbødalen, Norway 1988*. University of Bergen, Bergen.
- Winje, D. (1998). Cognitive coping: The significance of knowing what happened in the traumatic event. *Journal of Traumatic Stress*, 11, 627-643.
- Winje, D. & Ulvik, A. (1995). Confrontation with reality: Crisis intervention services for traumatized families after a school bus accident in Norway. *Journal of Traumatic Stress*, 8, 429-444.
- Wittouck, C., Van Autreve, S., De Jaegere, E., Portzky, G., & Van Heeringen, K. (2011). The prevention and treatment of complicated grief: A meta-analysis. *Clinical Psychology Review*, 31, 69-78.
- Worden, J. W. (1991). *Grief counselling and grief therapy. A handbook for the mental health practitioner*. NY: Springer Publishing.
- World Health Organization (WHO) (1992). *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines*. Geneva: World Health Organization.
- Wortman, C. B. & Silver, R. C. (1989). The myths of coping with loss. *Journal of Consulting Clinical and Psychology*, 57, 349-357.

- Zisook, S., Chentsova-Dutton, Y., & Shuchter, S. R. (1998). PTSD following bereavement. *Annals of Clinical Psychiatry, 10*, 157-163.
- Zisook, S., DeVaul, R. A., & Click, M. A. (1982). Measuring symptoms of grief and bereavement. *American Journal of Psychiatry, 139*, 1590-1593.
- Zisook S. & Shear, K. (2009). Grief and bereavement: what psychiatrists need to know. *World Psychiatry, 8*, 67-74.

PAPERS I-V

PREDICTORS OF COMPLICATED GRIEF AFTER A NATURAL DISASTER: A POPULATION STUDY TWO YEARS AFTER THE 2004 SOUTH-EAST ASIAN TSUNAMI

PÅL KRISTENSEN, LARS WEISÆTH, and TROND HEIR

Norwegian Centre for Violence and Traumatic Stress Studies, Oslo, Norway

The authors examined predictors of complicated grief (CG) in Norwegians 2 years after bereavement in the 2004 South-East Asian tsunami. A cross-sectional postal survey retrospectively covering disaster experiences and assessing CG according to the Inventory of Complicated Grief yielded 130 respondents (35 directly disaster-exposed and 95 not directly exposed), with 47.7% screening CG positive. They identified positive associations between CG and being female, losing a child or spouse, and time to death confirmation, and negative associations with previous losses, being employed, and receiving social support. Direct exposure did not increase CG risk. Support service providers should be aware of this high prevalence of severe, persistent grief.

Massive loss of human life is a tragic but often inevitable consequence of natural disasters. Although loss and bereavement are common in disasters, few studies have focused on grief (Shear, Jackson, Essock, Donahue, & Felton, 2006). There is especially a paucity of disaster studies examining complicated grief (CG). CG (also termed *prolonged grief disorder*) is a mental health disorder proposed for inclusion in the *DSM-V* (Prigerson, Vanderwerker, & Maciejewski, 2008), with symptoms differentiating it from posttraumatic stress disorder and depression (Boelen & van den Bout, 2005; Prigerson, Bierhals, et al., 1996; Prigerson, Frank, et al., 1995). Two studies of bereaved adults after the terrorist attacks on September 11, 2001, in the United States (Shear et al., 2006;

Received 20 September 2008; accepted 30 March 2009.

Address correspondence to Pål Kristensen, Norwegian Centre for Violence and Traumatic Stress Studies, Kirkeveien 166, Building 48, 0407 Oslo, Norway. E-mail: pal.kristensen@nkvts.unirand.no

Neria et al., 2007) and one study after the Bam earthquake in Iran in 2003 (Ghaffari-Nejad, Ahmadi-Mousavi, Gandomkar, & Reihani-Kermani, 2007) found that from 43% to 76% of participants screened positive for CG 2–4 years post-disaster. Female gender and loss of a close relative, especially loss of a child, were significant predictors of CG (Ghaffari-Nejad et al., 2007; Neria et al., 2007).

Disasters are often characterized by circumstances that can prolong and complicate the grieving process (Parkes, 2008; Raphael, 1986). The sudden, unexpected and violent nature of death often leads to a more difficult course of bereavement (Kaltman & Bonnano, 2003; Lundin, 1984; Stroebe & Schut, 2001). Bereaved individuals directly exposed to the disaster may experience elevated mental distress because of coping both with the trauma and the loss (Neria & Litz, 2004). However, Green, Grace, Lindy, Titchener, and Lindy (1983) found that bereaved people directly exposed to the Beverly Hills Supper Club fire were not more impaired than non-exposed bereaved individuals 2 years after the fire. Also Thompson, Chung, and Rosser (1995) found no differences in mental distress between directly exposed and non-exposed bereaved individuals after the Marchioness riverboat disaster. Other factors that increase mental health problems among disaster bereaved include waiting for confirmation of death (Green, Grace, & Gleser, 1985), experiencing multiple disaster losses (Montezari et al., 2005; Souza, Bernatsky, Reyes, & de Jong, 2007), and lack of social support (Fullerton, Ursano, Kao, & Bharitya, 1999; Sing & Raphael, 1981). An important research question is whether these factors also may predict CG.

The 2004 tsunami in South-East Asia was one of the largest human tragedies caused by a natural disaster in recent history. More than 220,000 people died when the tsunami hit the coast along the Indian Ocean on the morning of December 26, 2004 (Centre for Research on the Epidemiology of Disasters, 2008). The majority of casualties were among the local populations. Still, a large number of tourists travelling for the Christmas holidays also died in the tsunami disaster and among them were 84 Norwegians (from 50 families), of whom 26 were between 7 months and 18 years of age. Several families experienced multiple losses. Some of the bereaved had to struggle for their lives; others had been staying far away from the disaster area. For many

bereaved, it took months before the death of their family member could be confirmed.

Aim of the Study

In this bereavement study, we examined potential predictors of CG, such as demographic variables, disaster exposure, relationship to the deceased, multiple losses, time elapsed before confirmed death, previous losses, and the importance of social support. We wanted to assess whether direct exposure to the disaster would increase the risk of screening positive for CG.

Materials and Methods

Participants and Procedures

We used a cross-sectional study design including individuals aged 18–80 who lost close family members in the tsunami disaster in 2004. The 84 Norwegians who died in the tsunami were all found and identified within six months. A list of the deceased was obtained from the Norwegian Police Directorate and the deceased's next of kin was identified through the Norwegian National Population Register. We defined *next of kin* as first-degree family relationships (adult children, parents, siblings or spouses/cohabitants). A total of 200 individuals above 18 years of age, representing all 84 deceased, was registered and constituted the Norwegian Tsunami bereaved population. Among the 200 individuals, 189 were eligible for participation in the study (see Figure 1). The 11 missing individuals were either untraceable or ineligible because of severe physical and/or mental illness unrelated to the disaster.

The bereaved individuals were contacted 26 months after the tsunami. They first received a letter with information about the aim of the study and about the research center and the researcher in charge of the study. They were informed that they would be contacted by phone during the following two weeks unless they gave information by letter or e-mail that they did not want to be contacted. Data were gathered from March 2007 to June 2007. The total number of bereaved who agreed to participate in the study was 130 (68.8%). Among the participants, 35 (26.9%) had been directly disaster-exposed (exposed bereaved) and 95

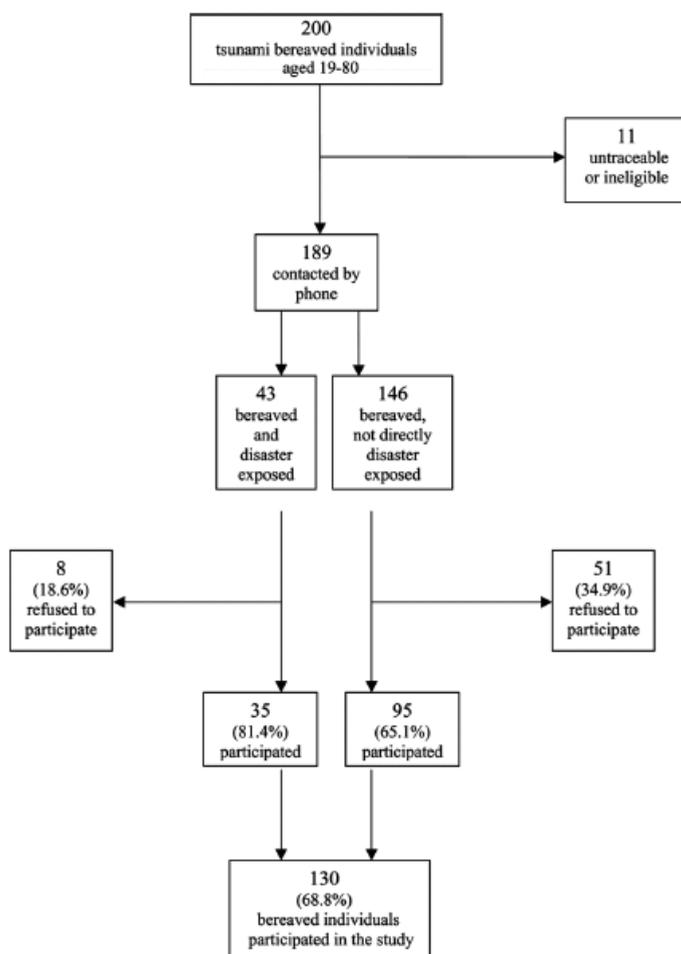


FIGURE 1 Flow chart of inclusion/exclusion of Norwegian tsunami bereaved individuals.

(73.1%) had not (non-exposed bereaved). Participants did not differ significantly from non-participants in age, gender, or relationship to the deceased. The 59 nonparticipants gave the following reasons for not participating: too emotionally painful ($n=13$, 22.0%), too busy ($n=6$, 10.2%), not interested/no reason ($n=32$, 54.2%), and other reasons ($n=8$, 13.6%). Descriptive statistics on demographic and loss variables of both participants and non-participants are presented in Table 1.

TABLE 1 Demographic and Loss-Related Variables in the Norwegian Tsunami Bereaved Population Divided into Participants and Non-Participants

Variable	Participants (<i>n</i> = 130)	Non-participants (<i>n</i> = 59)
Mean age and range	45.7 (19–80 yrs.)	46.3 (21–75 yrs.)
Gender		
Male	63 (48.5)	32 (54.2)
Female	67 (51.5)	27 (45.8)
Education level		
Low (≤ 12 years)	50 (38.5)	n/a
High (> 12 years)	80 (61.5)	
Marital status		
Married/cohabitating	77 (59.2)	n/a
Separated/divorced	8 (6.2)	
Never married	28 (21.5)	
Widowed	17 (13.1)	
Deceased		
Child	37 (28.5)	19 (32.2)
Spouse	23 (17.7)	6 (10.2)
Parent/sibling	77 (59.2)	34 (57.6)
Time elapsed before death confirmed		
≤ 1 month	60 (46.2)	29 (49.2)
> 1 month	70 (53.8)	30 (50.8)
Multiple losses		
Loss of one family member	120 (92.3)	56 (94.9)
Loss of two or more family members	10 (7.7)	3 (5.1)

Note. Unless stated otherwise, results are given as number (percentage).

The study is part of a tsunami research program conducted at the Norwegian Centre of Violence and Traumatic Stress Studies in Oslo, Norway. It was initiated by the Norwegian Directorate of Health with the aim of studying the long-term psychological effects of traumatic loss after a natural disaster. The study was approved by the Regional Committee for Medical and Health Research Ethics and Norwegian Social Science Data Services.

Measures

The self-report questionnaire covered demographic characteristics, disaster exposure, relationship to the deceased, time elapsed until confirmation of death, previous losses, CG reactions, and social support.

Grief reactions were assessed with the Norwegian version of Inventory of Complicated Grief (ICG; Prigerson, Maciejewski, et al., 1995), which has been used and validated in previous bereavement studies (Dyregrov, Nordanger, & Dyregrov, 2003). The ICG consists of 19 items (e.g., "I feel I cannot accept the death of him/her/them," "I feel myself longing for the person(s) who died") and answers are given on a 5-point scale ranging from 0 (*never*) to 4 (*always*). ICG gives a possible range of 0–76 with high scores indicating high levels of CG. A cut-off score of >25 has been recommended for designating individuals with CG (Prigerson, Maciejewski, et al., 1995). The ICG has shown high internal consistency, test-retest reliability, and concurrent validity (Prigerson, Maciejewski, et al., 1995). Cronbach's alpha in this study was 0.93.

Social support was measured with the Crisis Support Scale (CSS; Joseph, Andrews, Williams, & Yule, 1992). The Scandinavian version of CSS has been used and validated in several studies (Elklit, Pedersen, & Jind, 2001; Heir, Piatigorsky, & Weisæth, 2009). The scale is designed to measure received social support, and respondents are asked to rate the items on a 7-point Likert-scale ranging from 1 (*never*) to 7 (*always*). From a total of seven items, four items are categorized as positive social support (e.g., "Whenever you want to talk, how often is there someone willing to listen at the present time?"). Cronbach's alpha was 0.81 for these four questions in the study. One single item ("Do people you expect to be supportive make you feel worse at any time at the present time?") is categorized as a negative social response and was analyzed separately (Andrews, Brewin, & Rose, 2003).

Statistical Analysis

We used chi-square to compare participants and non-participants with regard to gender, age (over/under 46 years), rates of education, family groups, and closeness to the deceased. The prevalence of CG in subgroups of participants was compared using logistic regression. Odds ratios were used as the measure of the strength of an association. Multiple logistic regression analysis was performed to study adjusted effects of several variables. In the process of model building, step-wise multiple logistic regression analysis with backward elimination was performed. Limits for removal and re-entry were set at $p=0.10$ and $p=0.05$,

respectively. All tests were two-tailed, and differences were considered significant if $p < 0.05$. The statistical analysis was performed using the software package SPSS version 16.0.

Results

A total of 47.7% of respondents screened positive for CG. The prevalence was higher among the directly disaster exposed compared to the non-exposed (Table 2). In the bivariate analysis, a higher prevalence of CG was found among females and among individuals without pre-disaster employment. A higher prevalence was also found among parents who had lost children, among those who had to wait more than 1 month for identification of the deceased, and among the bereaved who received low positive or high negative social support. The bereaved who had experienced previous losses in adult life had a lower prevalence of CG.

The difference between those who were directly disaster exposed and those who were non-exposed was not significant when adjusting for other variables associated with CG. Table 3 shows results of a multiple regression analysis that included age, gender, and predictors that were significantly associated with CG. With the exception of being directly disaster exposed, all other variables that were significantly associated with CG in the bivariate analysis were also significant in the multiple logistic model.

Discussion

Using the recommended 25-point cut-off on the ICG (Prigerson, Maciejewski, et al., 1995), we found that almost 50% of the bereaved screened CG positive 2 years after the disaster. The prevalence is higher than in a similar study, also using the ICG, in Karachi, Pakistan where 34% met criteria for CG (Prigerson et al., 2002). It is also considerably higher than the 10–15% estimated prevalence in other bereavement studies (Barry, Kasl, & Prigerson, 2002; Latham & Prigerson, 2004; Prigerson, 2004). However, the finding is comparable to what has been found in some other studies of mass death disasters (Neria et al., 2007; Shear et al., 2006).

Although a high total number of the bereaved screened positive for CG, there were subgroups that must be considered to be

TABLE 2 Inventory of Complicated Grief (ICG Total Score >25) and Odds Ratios (OR) Two Years Post-Disaster in Subgroups of Tsunami-Bereaved Individuals

Variable	N	ICG caseness (%)	OR
Age			
19–45	67	33 (49.3)	
46–80	61	28 (45.9)	0.87
Gender			
Male	63	24 (38.1)	
Female	65	37 (56.9)	2.1*
Education			
Low (≤ 12 years)	49	28 (57.1)	
High (> 12 years)	79	33 (41.8)	0.54
Married			
No	52	30 (57.7)	
Yes	76	31 (40.8)	0.51
Pre-disaster employment			
No	18	13 (72.2)	
Yes	104	45 (43.3)	0.29*
Previous loss			
No	44	27 (61.4)	
Yes	73	27 (37.0)	0.37*
Bereaved and disaster exposed			
No	93	38 (40.9)	
Yes	35	23 (65.7)	2.8*
Loss of child			
No	92	37 (40.2)	
Yes	36	24 (66.7)	3.4**
Loss of spouse			
No	112	52 (46.4)	
Yes	16	9 (56.2)	2.2
Multiple losses			
No	118	54 (45.8)	
Yes	10	7 (70.0)	2.8
Time elapsed until death confirmed			
≤ 1 month	60	23 (38.3)	
> 1 month	68	38 (55.9)	2.0*
Positive social support			
Low degree	64	38 (59.4)	
High degree	63	22 (34.9)	0.37**
Negative social response			
Low degree	65	17 (28.3)	
High degree	60	42 (64.6)	4.6***

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

TABLE 3 Adjusted Odds Ratios (OR) for Complicated Grief (Cut-Off Value >25 on ICG) in Norwegian Tsunami-Bereaved Individuals Two Years Post-Disaster

Variable	OR	95% confidence interval	<i>p</i>
Age (high vs. low)	0.66	0.22–2.00	0.460
Gender (women vs. men)	4.73	1.48–15.14	0.009
Pre-disaster employment (yes vs. no)	0.20	0.04–0.99	0.049
Previous loss	0.19	0.06–0.60	0.005
Loss of child	5.27	1.42–19.57	0.013
Loss of spouse	4.93	1.09–22.36	0.039
Time elapsed until death confirmed >1 month	4.57	1.50–13.89	0.007
Positive social support	0.24	0.08–0.73	0.012
Negative social response	3.81	1.34–10.83	0.012

at special risk of long-lasting post-disaster problems. As in other disaster studies (Neria et al., 2007) and bereavement studies in general (Bonanno, Papa, Lalande, Zhang, & Noll, 2005; Cleiren, Diekstra, Kerkhof, & van der Wal, 1994; Mitchell, Kim, Prigerson, & Mortimer-Stephens, 2004), close kinship relationships increased the risk for CG. The long-lasting and devastating effect of losing a child reflects the vulnerability of parents experiencing sudden and violent losses (Dyregrov et al., 2003; Keesee, Currier, & Neimeyer, 2008; Lehman, Wortman, & Williams, 1987; Murphy, Johnson, Wu, Fan, & Lohan, 2003).

Direct disaster exposure did not increase the risk of screening positive for CG. This finding does not indicate that these two groups were similar with regard to other postdisaster problems, such as posttraumatic stress disorder or psychological distress in general. However, the experience of being directly exposed to the disaster did not seem to influence the grief process as measured in this study. The findings that loss of a child or spouse, but not exposure to the traumatic event, increased CG risk support prior reports showing that CG risk is a function of attachment to the deceased (Johnson, Zhang, Greer, & Prigerson, 2007). Some researchers have stated that CG is an attachment disturbance (e.g., Prigerson, 2004) and distinguishes it from posttraumatic stress reactions, which are a function of the magnitude of exposure to the traumatic event (Neria, Nandi, & Galea, 2008).

Individuals who had suffered a significant loss in adult life prior to the tsunami had a lower risk of screening positive for CG compared with individuals who had not suffered such a loss. Contrary to research demonstrating that experiencing previous losses is associated with poorer outcome in the bereaved (Rando, 1983; Silverman, Johnson, & Prigerson, 2001; Zisook, Shuchter, & Schuckit, 1985), our findings suggest a hypothesis that suffering a significant loss earlier in adult life has the potential to moderate the negative mental health consequences of new losses. One possible explanation is that bereavement experiences may have a learning and/or maturing effect on bereaved individuals (Bornstein, Clayton, Halikas, Maurice, & Robins, 1973; Shanfield & Swain, 1984), for example, by enhancing their ability to cope with distressing emotions (Znoj & Keller, 2002). However, this finding was unexpected and should be examined further in other relevant populations.

Late confirmation of death also predicted CG in the tsunami disaster bereaved. Waiting for confirmation may prolong the impact phase of the disaster, making it more difficult to move on and achieve closure (Green et al., 1985). Without an official confirmation, fantasies about the missing not being dead can create a great deal of anxiety and denial about what is the most likely outcome, which can delay and/or prolong the grieving process.

This study has some limitations. The study is small and the cross-sectional design makes it impossible to evaluate causality. For example, CG may be both a cause and effect of low positive or high negative social support. Moreover, the use of self-report measures of CG does not permit evaluation of functional impairment, which may be helpful for a clinical diagnosis of CG (Prigerson et al., 2008).

In this article we have used statistical methods that assume that participants are independent. In reality some of them are family members whose reactions may have interacted. For example, there were eight couples included in the sample. Thus, the basic assumptions for statistical independence are not completely satisfied, and the p values should therefore be interpreted with caution. However, as the p values of the main findings were far below the 5% significant level, it is unlikely that this lack of independence has an impact on the conclusions in our study. Also, the eight couples were the only participants that had shared addresses.

Strengths of the study are the acceptable response rate and the fact that it addressed the whole population of Norwegian tsunami bereaved, which reduces sample selection bias. The Norwegian tourists who experienced the tsunami were similar to the Norwegian population with regard to employment and marital status, but they had a higher than average education and more family constellations with children (Heir et al., 2009). Most other bereavement studies have an overrepresentation of women (Keesee et al., 2008); our study has an almost equal gender distribution. Also, women and men in all age groups were represented.

Our findings may have some important clinical and theoretical implications. Loss and grief are probably underrated as risks to mental health. The high prevalence of severe and long-lasting grief among the disaster bereaved makes it necessary for helpers involved in disaster care to be aware of the special needs of this group. Among the bereaved, the need for information and special services will often go far beyond the immediate crisis management stage, whether the bereaved were directly exposed to the disaster or not. The importance of closeness to the deceased, that is, loss of a child, indicates that such groups should be especially considered by service providers in long-term follow-up. It is a considerable challenge to health, social, and religious services to meet these needs. It is necessary to balance collective approaches after large-scale disasters, with individualized services for high-risk groups such as parents with child losses. The possible buffering effect of having experienced a previous significant loss in adult life supports crisis theory in that growth is a likely outcome for some people exposed to severe stress (Caplan, 1964), but more research is needed to test this hypothesis.

References

- Andrews, B., Brewin, C. R., & Rose, S. (2003). Gender, social support, and PTSD in victims of violent crime. *Journal of Traumatic Stress, 16*, 421-427.
- Barry, L. C., Kasl, S. V., & Prigerson, H. G. (2002). Psychiatric disorders among bereaved persons: The role of perceived circumstances of death and preparedness for death. *American Journal of Geriatric Psychiatry, 10*, 447-457.
- Boelen, P. A., & van den Bout, J. (2005). Complicated grief, depression, and anxiety as distinct postloss syndromes: A confirmatory factor analysis study. *American Journal of Psychiatry, 162*, 2175-2177.

- Bonanno, G. A., Papa, A., Lalande, K., Zhang, N., & Noll, J. G. (2005). Grief processing and deliberate grief avoidance: A prospective comparison of bereaved spouses and parents in the United States and the People's Republic of China. *Journal of Consulting and Clinical Psychology, 73*, 86–98.
- Bornstein, P. E., Clayton, P. J., Halikas, J. A., Maurice, W. L., & Robins, E. (1973). The depression of widowhood after thirteen months. *British Journal of Psychiatry, 122*, 561–566.
- Caplan, G. (1964). *Principles of preventive psychiatry*. New York: Basic Books.
- Centre for Research on the Epidemiology of Disasters. (2008). *EM-DAT: The international disaster database*. Retrieved August 19, 2008, from <http://www.emdat.be/Database/DisasterList/list.php>
- Cleiren, M., Diekstra, R. F., Kerkhof, A. J., & van der Wal, J. (1994). Mode of death and kinship in bereavement: Focusing on “who” rather than “how.” *Crisis, 15*, 22–36.
- Dyregrov, K., Nordanger, D., & Dyregrov, A. (2003). Predictors of psychosocial distress after suicide, SIDS, and accidents. *Death Studies, 27*, 143–165.
- Elklit, A., Pedersen, S. S., & Jind, L. (2001). The Crisis Support Scale: Psychometric qualities and further validation. *Personality and Individual Differences, 31*, 1291–1302.
- Fullerton, C. S., Ursano, R. J., Kao, T. C., & Bharitya, V. R. (1999). Disaster-related bereavement: Acute symptoms and subsequent depression. *Aviation, Space and Environmental Medicine, 70*, 902–909.
- Ghaffari-Nejad, A., Ahmadi-Mousavi, M., Gandomkar, M., & Reihani-Kermani, H. (2007). The prevalence of complicated grief among Bam earthquake survivors in Iran. *Archives of Iranian Medicine, 10*, 525–528.
- Green, B. L., Grace, M. C., & Gleser, G. C. (1985). Identifying survivors at risk: Long-term impairment following the Beverly Hills Supper Club fire. *Journal of Consulting and Clinical Psychology, 53*, 672–678.
- Green, B. L., Grace, M. C., Lindy, J. D., Tichtener, J. L., & Lindy, J. G. (1983). Levels of functional impairment following a civilian disaster: The Beverly Hills Supper Club Fire. *Journal of Consulting and Clinical Psychology, 5*, 573–580.
- Heir, T., Piatigorsky, A., & Weisæth, L. (2009). Longitudinal changes in recalled perceived life-threat after a natural disaster. *British Journal of Psychiatry, 194*, 510–514.
- Johnson, J. G., Zhang, B., Greer, J. A., & Prigerson, H. G. (2007). Parental control, partner dependency, and complicated grief among widowed adults in the community. *The Journal of Nervous and Mental Disease, 195*, 26–30.
- Joseph, S., Andrews, B., Williams, R., & Yule, W. (1992). Crisis support and psychiatric symptomatology in adult survivors of the Jupiter cruise ship disaster. *British Journal of Clinical Psychology, 31*, 63–73.
- Kaltman, S., & Bonanno, G. A. (2003). Trauma and bereavement: Examining the impact of sudden and violent deaths. *Journal of Anxiety Disorders, 17*, 131–147.
- Kessee, N. J., Currier, J. M., & Neimeyer, R. A. (2008). Predictors of grief following the death of one's child: The contribution of finding meaning. *Journal of Clinical Psychology, 64*, 1–19.

- Latham, A. E., & Prigerson, H. G. (2004). Suicidality and bereavement: Complicated grief as psychiatric disorder presenting greatest risk for suicidality. *Suicide and Life-Threatening Behavior, 34*, 350–362.
- Lehman, D. R., Wortman, C. B., & Williams, A. F. (1987). Long-term effects of losing a spouse or child in a motor vehicle crash. *Journal of Personality and Social Psychology, 52*, 218–231.
- Lundin, T. (1984). Morbidity following sudden and unexpected bereavement. *British Journal of Psychiatry, 144*, 84–88.
- Mitchell, A. M., Kim, Y., Prigerson, H. G., & Mortimer-Stephens, M. (2004). Complicated grief in survivors of suicide. *Crisis, 25*, 12–18.
- Montezari, A., Baradaran, H., Omidvari, S., Ali Azin, S., Ebadi, M., Garmaroudi, G., et al. (2005). Psychological distress among Bam earthquake survivors in Iran: A population-based study. *BMC Public Health, 5*, 4.
- Murphy, S. A., Johnson, L. C., Wu, L., Fan, J. J., & Lohan, J. (2003). Bereaved parents' outcomes 4 to 60 months after their children's deaths by accident, suicide, or homicide: A comparative study demonstrating differences. *Death Studies, 27*, 39–61.
- Neria, Y., Gross, R., Litz, B., Maguen, S., Insel, B., Seimarco, G., et al. (2007). Prevalence and psychological correlates of complicated grief among bereaved adults 2.5–3.5 years after September 11th attacks. *Journal of Traumatic Stress, 20*, 251–262.
- Neria, Y., & Litz, B. (2004). Bereavement by traumatic means: The complex synergy of trauma and grief. *Journal of Loss and Trauma, 9*, 73–87.
- Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: A systematic review. *Psychological Medicine, 38*, 467–480.
- Parkes, C. M. (2008). Bereavement following disasters. In M. S. Stroebe, R. Hansson, H. Schut, & Stroebe, W. (Eds.), *Handbook of bereavement research and practice* (pp. 463–484). Washington, DC: American Psychological Association.
- Prigerson, H. G. (2004). Complicated grief: When the path of adjustment leads to a dead-end. *Bereavement Care, 23*, 38–40.
- Prigerson, H. G., Ahmed, I., Silverman, G. K., Saxena, A. K., Maciejewski, P. K., & Jacobs, S. C., et al. (2002). Rates and risks of complicated grief among psychiatric clinic patients in Karachi, Pakistan. *Death Studies, 26*, 781–792.
- Prigerson, H. G., Bierhals, A. J., Kasl, S. V., Reynolds, C. F., Shear, M. K., Newsom, J. T., & Jacobs, S. (1996). Complicated grief as a disorder distinct from bereavement-related depression and anxiety: A replication study. *American Journal of Psychiatry, 153*, 1484–1486.
- Prigerson, H. G., Frank, E., Kasl, S. V., Reynolds, C. F., Anderson, B., Zubenko, G. S., et al. (1995). Complicated grief and bereavement-related depression as distinct disorders: Preliminary empirical validation in elderly bereaved spouses. *American Journal of Psychiatry, 152*, 22–30.
- Prigerson, H. G., Maciejewski, P. K., Reynolds, C. F., Bierhals, A. J., Newsom, J. T., Fasiczka, A., et al. (1995). Inventory of Complicated Grief: A scale to measure maladaptive symptoms of loss. *Psychiatry Research, 59*, 65–79.
- Prigerson, H. G., Vanderwerker, L. C., & Maciejewski, P. K. (2008). A case for inclusion of Prolonged Grief Disorder in *DSM-V*. In M. Stroebe, R. Hansson,

- H. Schut, & W. Stroebe (Eds.), *Handbook of Bereavement Research and Practice* (pp. 165–186). Washington, DC: American Psychological Association.
- Rando, T. A. (1983). An investigation of grief and adaptation in parents whose children have died from cancer. *Journal of Pediatric Psychology, 8*, 3–20.
- Raphael, B. (1986). *When disaster strikes. How individuals and communities cope with catastrophe*. New York: Basic Books.
- Shanfield, S. B., & Swain, B. J. (1984). Death of adult children in traffic accidents. *The Journal of Nervous and Mental Disease, 172*, 533–538.
- Shear, K. M., Jackson, C. T., Essock, S. M., Donahue, S. A., & Felton, C. J. (2006). Screening for complicated grief among Project Liberty service recipients 18 months after September 11, 2001. *Psychiatric Services, 57*, 1291–1297.
- Silverman, G. K., Johnson, J. G., & Prigerson, H. G. (2001). Preliminary explorations of the effects of prior trauma and loss on risk for psychiatric disorders in recently widowed people. *Israel Journal of Psychiatry and Related Sciences, 38*, 202–215.
- Sing, B., & Raphael, B. (1981). Postdisaster morbidity of the bereaved. A possible role for preventive psychiatry? *The Journal of Nervous and Mental Disease, 169*, 203–212.
- Souza, R., Bernatsky, S., Reyes, R., & de Jong, K. (2007). Mental health status of vulnerable tsunami-affected communities: A survey in Ache Province, Indonesia. *Journal of Traumatic Stress, 20*, 263–269.
- Stroebe, W., & Schut, H. (2001). Risk factors in bereavement outcome: A methodological and empirical review. In M. S. Stroebe, R. O. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research: Consequences, coping, and care* (pp. 349–371). Washington, DC: American Psychological Association.
- Thompson, J., Chung, M. C., & Rosser, R. (1995). Psychological effects of the Marchioness disaster on survivors and relatives. *European Journal of Psychiatry, 9*, 197–208.
- Zisook, S., Shuchter, S., & Schuckit, M. (1985). Factors in the persistence of unresolved grief among psychiatric outpatients. *Psychosomatics, 26*, 497–499.
- Znoj, H., & Keller, D. (2002). Mourning parents: Considering safeguards and their relation to health. *Death Studies, 26*, 545–565.

Research Article

PSYCHIATRIC DISORDERS AMONG DISASTER BEREAVED: AN INTERVIEW STUDY OF INDIVIDUALS DIRECTLY OR NOT DIRECTLY EXPOSED TO THE 2004 TSUNAMI

Pål Kristensen, PsyD.,* Lars Weisæth, M.D. Ph.D., and Trond Heir, M.D. Ph.D.

Background: Few studies have explored the long-term mental health consequences of disaster losses in bereaved, either exposed to the disaster themselves or not. This study examined the prevalence and predictors of mental disorders and psychological distress in bereaved individuals either directly or not directly exposed to the 2004 tsunami disaster. **Method:** A cross-sectional study of 111 bereaved Norwegians (32 directly and 79 not directly exposed) was conducted 2 years postdisaster. We used a face-to-face structured clinical interview to diagnose current posttraumatic stress disorder (PTSD) and depression (major depressive disorder, MDD) and a self-report scale to measure prolonged grief disorder (PGD). **Results:** The prevalence of psychiatric disorders was twice as high among individuals directly exposed to the disaster compared to individuals who were not directly exposed (46.9 vs. 22.8 per 100). The prevalence of disorders among the directly exposed was PTSD (34.4%), MDD (25%), and PGD (23.3%), whereas the prevalence among the not directly exposed was PGD (14.3%), MDD (10.1%), and PTSD (5.2%). The co-occurrence of disorders was higher among the directly exposed (21.9 vs. 5.2%). Low education and loss of a child predicted PGD, whereas direct exposure to the disaster predicted PTSD. All three disorders were independently associated with functional impairment. **Conclusions:** The dual burden of direct trauma and loss can inflict a complex set of long-term reactions and mental health problems in bereaved individuals. The relationship between PGD and impaired functioning actualizes the incorporation of PGD in future diagnostic manuals of psychiatric disorders. *Depression and Anxiety* 26:1127–1133, 2009. © 2009 Wiley-Liss, Inc.

Key words: posttraumatic stress disorder; major depressive disorder; prolonged grief disorder; complicated grief; disasters

INTRODUCTION

Bereavement caused by disasters often leads to detrimental long-term effects on mental health.^[1] High prevalence of posttraumatic stress disorder (PTSD) and depression (major depressive disorder, MDD) has been reported in disaster bereaved.^[2,3] Recently, some studies have shown that disaster deaths can be followed by prolonged grief disorder (PGD) in a substantial number of bereaved.^[4–6] PGD (also referred to as complicated or traumatic grief) is considered a mental health disorder proposed for DSM-V and ICD-11, and consists of symptoms such as severe yearning for the deceased, difficulties accepting the loss, bitterness or

Norwegian Centre for Violence and Traumatic Stress Studies, Oslo, Norway

Contract grant sponsor: Directorate of Health and Social Welfare.

*Correspondence to: Pål Kristensen, Norwegian Centre for Violence and Traumatic Stress Studies, Kirkeveien 166, building 48, 0407 Oslo, Norway. E-mail: Pal.Kristensen@nkvts.unirand.no

Received for publication 1 April 2009; Revised 25 August 2009; Accepted 26 August 2009

DOI 10.1002/da.20625

Published online in Wiley InterScience (www.interscience.wiley.com).

anger related to the loss ongoing for at least 6 months after the death.^[7,8]

Although they share some common features, the core symptoms of PGD are different from the core symptoms of PTSD and depression.^[9] Although comorbidity between these disorders is common,^[9,5,10] PGD has shown to be independently associated with physical and psychological health problems such as cancer, heart trouble, high blood pressure, and suicidality.^[11-13] Although pharmacological therapy (nortriptyline) and interpersonal therapy can reduce bereavement-related depressive symptoms, these therapies have not proven effective for the reduction of grief symptoms.^[14,15] Still, there is an ongoing debate concerning the use of psychiatric diagnosis after bereavement due to the risk of pathologizing and over-diagnosing normal reactions.^[16] There have also been controversies about how to define pathological/prolonged grief disorder, and whether it can be distinguished from normal grief and other psychiatric disorders.^[17,18]

Disaster losses affect both bereaved individuals directly hit by the disaster themselves and those far from the disaster site,^[19] but few studies have examined mental distress in both bereaved individuals directly exposed to the disaster and those who were not. Green et al.^[20] found that, 1 year after the disaster, bereaved individuals not exposed to the Beverly Hills Supper Club fire were more impaired than those who were directly exposed, but no differences were found after 2 years. Also, Thompson et al.^[21] found differences in neither general psychological distress nor posttraumatic stress symptoms between these two bereaved groups after the Marchioness river boat disaster.

The 2004 tsunami in South-East Asia was one of the largest human tragedies caused by a natural disaster in recent history. More than 220,000 people died when the tsunami hit the coast along the Indian Ocean in the morning of December 26, 2004.^[22] The majority of casualties were among the local populations, but a large number of tourists travelling for the Christmas holidays also died in the disaster.

In this study, we wanted to examine the association between disaster exposure, relationship to the deceased and mental disorders among individuals bereaved after the 2004 tsunami disaster. We hypothesized that being directly exposed to the disaster would be related more to PTSD and co-morbid disorders, and that depression and grief would dominate in the bereaved who were not directly exposed. We also wanted to examine risk factors for PTSD, depression, and PGD, and to estimate their mutual association with functional impairment.

METHODS

PARTICIPANTS AND PROCEDURES

A cross-sectional study design was used that included individuals aged 18-80 who lost close family members in the 2004 tsunami. Descriptive statistics of the demographics and relationship with the

deceased individuals both directly and not directly exposed are presented in Table 1. There were 84 Norwegians from 50 families who lost their lives in the tsunami disaster, of whom 26 were less than 18 years of age. All of the deceased were found and identified within 6 months. A list of the deceased was obtained from the Norwegian Police Directorate and the next of kin identified through the Norwegian National Population Register. We defined next of kin as first-degree family relationships (adult children, parents, siblings, or spouses/cohabitants). A total of 201 individuals over 18 years of age, representing all of the 84 deceased individuals, were registered and constituted the Norwegian Tsunami bereaved population (see Fig. 1). Among the 201 individuals, 190 were eligible for participation in the study. The 11 missing individuals were either untraceable or ineligible because of severe physical and/or mental illness unrelated to the tsunami disaster.

The bereaved individuals were contacted 26 months after the tsunami and data gathered from March to November 2007. The total number of bereaved who participated in the study was 131 (68.9%), and 111 (84.7%) of them agreed to take part in an in-depth interview. Participants did not differ significantly from nonparticipants in regards to age, gender, or relationship to the deceased. The 59 nonparticipants gave the following reasons for not participating: too emotionally painful ($n = 13$, 22.0%), too busy ($n = 6$, 10.2%), not interested/no reason ($n = 32$, 54.2%), and other reasons ($n = 8$, 13.6%).

Among the interviewed participants, 32 (28.8%) had been together with or in close proximity to their deceased family member when the tsunami struck (directly exposed to the disaster). The remaining 79 (71.2%) did not stay in a disaster-affected country at the time of the disaster (not directly exposed). All directly exposed participants had been caught by the waves and a large majority ($n = 27$, 84.4%) reported that they were pulled completely under water and were convinced that they were going to die. There were no significant differences between directly and not directly exposed groups of bereaved in regards to age, gender, or education, but there was a significant difference in their relationship to the deceased (Table 1). The directly exposed participants had been repatriated soon after the disaster and, thus, did not suffer secondary disaster stressors.^[23]

Interviewed participants ($n = 111$) did not differ from noninterviewed ($n = 20$) in regards to age, education, relationship to the deceased, or score on the Inventory of Complicated Grief (ICG),

TABLE 1. Demographic variables and relationship to the deceased in the Norwegian tsunami bereaved population grouped by exposure

	Not directly exposed ($n = 79$)	Directly exposed ($n = 32$)
Age (mean and range)	46.9 (20-80)	44.8 (20-62)
Gender		
Male	32 (40.5)	16 (50.0)
Female	47 (59.5)	16 (50.0)
Education level		
>12 years	48 (60.8)	23 (71.9)
10-12 years	22 (27.8)	6 (18.8)
<10 years	9 (11.4)	3 (9.4)
Deceased		
Child	19 (24.1)	14 (43.8)
Spouse/cohabitant	2 (2.5)	22 (68.8)***
Parent/sibling	58 (73.4)	3 (9.4)***

Unless otherwise stated, results are given as number (percentage). *** $P < .001$.

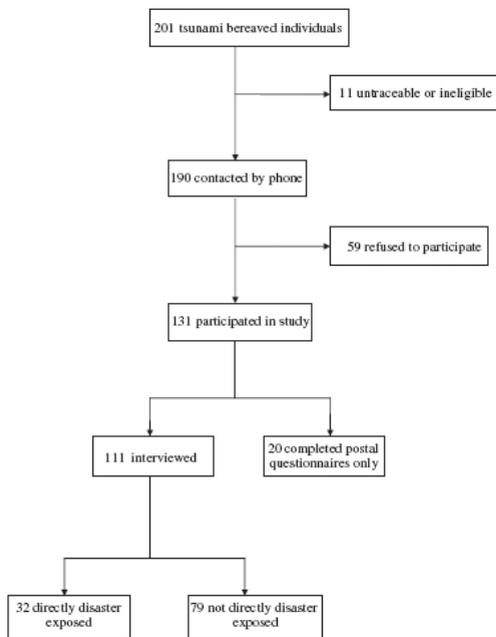


Figure 1. Flow chart of the inclusion/exclusion of Norwegian tsunami bereaved individuals.

Impact of Event Scale (IES-R), or General Health Questionnaire (GHQ-12). The reasons for not participating in the interviews were: being too busy ($n = 7$, 35%), too emotionally painful ($n = 3$, 15%), not interested ($n = 5$, 25%), and other reasons ($n = 5$, 25%).

Written informed consent was obtained from all participants. The study was approved by the Regional Committee for Medical and Health Research Ethics and Norwegian Social Science Data Services.

MEASURES

Diagnostic interview. The MINI International Neuropsychiatric Interview (M.I.N.I.) is a structured diagnostic interview developed to diagnose axis I DSM-IV mental disorders that have demonstrated acceptable reliability and validity.^[24] The modules for MDD and PTSD were chosen for this study because they are two of the most commonly reported psychological sequelae after disasters.^[25] The AI criteria in question for PTSD constituted tsunami-related experiences in which “the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.”^[26] This also included “learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate.”^[26] Participants were asked about stress symptoms related to the actual tsunami disaster and loss.

The interviews were conducted by a clinical psychologist ($n = 85$), a psychiatrist ($n = 12$), or a psychiatric nurse ($n = 14$). The interviewers were trained in structured diagnostic interviewing and the interviews were audiotaped. Four of the interviews were conducted over the telephone.

Self-report measures. Grief reactions were assessed with the 19 items ICG.^[27] Answers were given on a 5-point scale ranging from never (0) to always (4). The ICG has shown high internal consistency, test-retest reliability, and concurrent validity.^[27] Cronbach’s α was .93 in this study. PGD was identified by using the results of the self-rated ICG scale to best fit the proposed symptom criteria.^[9] To fulfill the criteria the participants had to report that they “often” or “always” experienced at least one of three symptoms of separation distress in ICG (upsetting memories, yearning/longing, and excessive loneliness), at least four of eight cognitive, emotional, or behavioral symptoms (difficulties accepting death, anger, disbelief, feeling stunned/dazed by the loss, inability to trust others, avoiding loss reminders, feeling life is empty, and bitterness), and at least one of two types of functional impairment (thoughts of deceased affect normal activities and diminished ability to care for others).^[28]

The IES-R^[29] was used to measure symptoms of posttraumatic stress. The scale consists of 22 items divided into three subscales: intrusion, avoidance, and hyperarousal. Replies were given on a 5-point scale ranging from not at all (0) to extremely (4). Cronbach’s α was .89 (intrusion), .83 (avoidance), and .88 (arousal) in this study.

The GHQ-12^[30] was used to measure general psychological distress. The scale contains questions about problems or impaired functioning during the last 2 weeks. Replies were given on a 4-point scale ranging from much less than usual (0) to much more than usual (3). Cronbach’s α was .93 in this study.

The Work and Social Adjustment Scale (WSAS)^[31] was used to measure the degree of impaired functioning. The WSAS consists of five questions, each scored from no impairment (0) to very severe impairment (8). The scale is a simple, reliable, and valid measure of functioning.^[31] Cronbach’s α was .91 in this study.

Suicidal thoughts were measured with one item from the GHQ-28^[30] that is not included in GHQ-12 (“Have you recently found that the idea of taking your own life has kept coming into your mind?”). Replies were given on a 4-point scale ranging from definitely not (0) to definitely have (3).

Self-blame or guilt was measured with one item from the PTSS-10^[32] (“Since losing family member(s) in the tsunami disaster I’ve had a bad conscience, self-blame, or feelings of guilt.”). Replies were given on a 4-point scale ranging from not at all (0) to very much (3).

Sick leave was measured by asking the respondent if they had been absent from work since the tsunami (yes vs. no). Health-care utilization was measured by asking whether the respondents had received any grief counselling and/or mental health treatment since the disaster (yes vs. no).

STATISTICAL ANALYSIS

χ^2 analysis was used to compare the age, gender, education, relationship to the deceased, and prevalence of PTSD, MDD, and PGD in directly and not directly exposed individuals. The Fisher exact test was used when expected values were less than 5. Student’s t -test was used to compare mean scores on semi-continuous variables (IES-R, GHQ-12, WSAS, suicidal ideation, and guilt). We used a logistic regression model to examine the association between demographics, disaster exposure, relationship to the deceased, and the outcome variables PTSD, MDD, and PGD. A linear regression model was used to examine the association between exposure, relationship to the deceased, and the outcome variables psychological distress and impaired functioning. We also used linear regression to examine the association between PTSD, MDD and PGD and the outcome variable impaired functioning. All tests were two tailed, and differences were considered significant if $P < .05$. The statistical analysis was performed using the software package SPSS version 16.0.

RESULTS

The prevalence of PTSD, MDD, and PGD and their co-occurrence in the directly and not directly exposed bereaved are presented in Table 2. Twice as many individuals who were directly exposed compared with being not directly exposed satisfied the criteria for at least one disorder. The only disorder, however, that was significantly more prevalent among the directly exposed bereaved was PTSD and comorbid conditions co-occurring with PTSD, even after adjusting for the relationship to the deceased (OR = 6.0, 95% CI: 1.2–29.9, $P = .03$). The co-occurrence of two or more disorders was about four times as frequent among the directly exposed individuals.

Table 3 shows the posttraumatic stress symptoms, general psychological distress, feelings of guilt, suicidal

thoughts, and impaired functioning in directly and not directly exposed individuals. All assessments, except avoidance symptoms, were significantly higher among the directly exposed group. With the exception of impaired functioning, the differences appeared significant even after adjusting for the relationship to the deceased (intrusion: $\beta = .27$, $P = .028$, arousal: $\beta = -.34$, $P < .001$, general psychological distress: $\beta = .38$, $P = .001$; guilt: $\beta = .51$, $P < .001$; suicidal thoughts: $\beta = .41$, $P = .001$).

We also found that the proportion of bereaved individuals who had been absent from work after the disaster was higher among those who were directly exposed (87.5%) compared to those who were not directly exposed (49.4%) ($P < .001$). This difference was significant even after adjusting for the relationship to the deceased (OR = 7.3, 95% CI: 1.8–29.6, $P = .005$). The proportion of bereaved individuals who received grief counselling and/or mental health treatment after the disaster was also higher among the directly exposed (85.5%) compared to the not directly exposed individuals (40.5%) ($P < .001$). The difference was significant after adjusting for the relationship to the deceased (OR = 8.7, 95% CI: 2.1–36.3, $P = .003$).

The results from the multiple regression analysis showed that low education (OR = 0.220, 95% CI: 0.062–0.784, $P = .020$) and loss of a child (OR = 18.81, 95% CI: 3.33–106.20, $P = .001$) predicted PGD, whereas direct exposure to the disaster (OR = 6.72, 95% CI: 1.11–40.61, $P = .038$) was the only variable that predicted PTSD. None of the variables predicted MDD, PTSD, MDD, and PGD were all independently associated with functional impairment (Table 4).

DISCUSSION

The aim of our study was to examine the prevalence and predictors of PTSD, MDD, and PGD in two groups of disaster bereaved; those who were directly exposed to the tsunami disaster and those who were not. Findings showed that bereaved individuals directly affected by the tsunami had a high prevalence of psychiatric disorders 2 years after the disaster. The most common disorder in directly exposed individuals was PTSD; it was close to seven times more prevalent among directly exposed individuals compared to those who were not directly exposed. The directly exposed group also had more co-morbidity disorders, general mental distress, suicidal thoughts, and guilt. Among those who were not directly exposed, PGD and MDD were the most frequent disorders, and the prevalence of PTSD was low. Direct exposure to the disaster predicted PTSD, whereas low education and loss of a child predicted PGD. Also, PGD was independently associated with functional impairment.

The prevalence of psychiatric disorders in directly exposed individuals is consistent with other bereavement-related disaster studies.^[2] Our findings that directly exposed individuals report more mental

TABLE 2. Prevalence of major depressive disorder (MDD), posttraumatic stress disorder (PTSD), prolonged grief disorder (PGD), and their co-occurrence in a tsunami bereaved population grouped by exposure

	Not directly exposed ($n = 79$)	Directly exposed ($n = 32$)
MDD	8 (10.1)	8 (25.0)
PTSD	4 (5.2)	11 (34.4)***
PGD	11 (14.3)	7 (23.3)
PGD+MDD	3 (3.9)	4 (13.3)
PGD+PTSD	1 (1.3)	5 (17.2)**
MDD+PTSD	2 (2.6)	6 (18.8)**
PGD+MDD+PTSD	1 (1.3)	4 (13.3)*
Any disorder	18 (22.8)	15 (46.9)*
One disorder only	14 (17.7)	8 (25.0)
Two or more disorders	4 (5.1)	7 (21.9)*

Results are given as numbers (percentage).

* $P < .05$; ** $P < .01$; *** $P < .001$.

TABLE 3. Psychological distress and impaired functioning in a tsunami bereaved population grouped by exposure

	Not directly exposed ($n = 79$)	Directly exposed ($n = 32$)
Impact of event (IES-22R) (0–4)	1.11 (0.95–1.26)	1.64 (1.38–1.91)***
Intrusion	1.38 (1.21–1.56)	1.94 (1.66–2.22)***
Avoidance	1.04 (0.88–1.20)	1.27 (0.97–1.58)
Arousal	0.83 (0.64–1.02)	1.74 (1.41–2.06)***
General psychological distress		
(GHQ-12) (0–3)	1.12 (1.01–1.22)	1.68 (1.42–1.94)***
Guilt (0–3)	0.48 (0.28–0.69)	1.50 (1.10–1.90)***
Suicidal thoughts (0–3)	0.17 (0.06–0.28)	0.97 (0.56–1.37)***
Impaired functioning (WSAS) (0–8)	1.67 (1.24–2.11)	3.14 (2.37–3.90)***

Results are given as mean item score (95% confidence interval). *** $P < .001$.

TABLE 4. Associations between psychiatric disorders and functional impairment in $n = 111$ tsunami bereaved Norwegians due to a multiple linear regression model, adjusted for age and gender

	β (with 95% CI)	Standardized β	P -values
Age (high vs. low)	0.788 (-2.31-3.89)	.039	.615
Gender (women vs. men)	-0.618 (-3.71-2.47)	-.030	.692
PGD (yes or no)	7.78 (3.35-12.22)	.285	.001
MDD (yes or no)	11.18 (6.17-16.19)	.380	<.001
PTSD (yes or no)	5.92 (0.67-11.18)	.189	.028

distress than those who were not directly exposed are contrary to both Green et al.'s^[20] study and Thompson et al.'s study.^[21] However, both sets of authors have questioned their findings due to referral^[20] or sample bias.^[21] The PTSD prevalence of 34% can be compared to the 37% found after the earthquake in Taiwan^[2] and the 44% found 2 years after the Buffalo Creek dam disaster.^[33] The prevalence of depression in both bereaved groups (25% in directly exposed vs. 10% in not directly exposed) was higher than the point prevalence in the normal population of Norwegians (5-7%).^[34] The rate of depression found in our study is also higher than what is found in nondisaster studies of bereavement-related depression (7%).^[35]

As we hypothesised, direct exposure to the disaster was more associated with PTSD. This finding is not surprising given that the large majority of directly exposed individuals in our study experienced both an extensive threat to their own life, physical injuries, and being either direct witnesses to deaths or scenes when the death of their family member occurred. In addition, many were exposed to other horrific scenes such as abandoned children, mutilated bodies, and body parts. Several of these factors are well known to correlate with symptoms of PTSD after disasters and accidents involving deaths.^[36,37]

The low prevalence of PTSD observed among the not directly exposed individuals was noteworthy given the violent circumstances of the disaster and the often reported link between sudden, violent loss and PTSD.^[38,39] It is feasible that only the most vulnerable individuals are likely to develop long-term PTSD without being directly exposed to a traumatic event; for example, through over-identification with the victim.^[40] Also, the strong relation between PTSD and directly experiencing the traumatic event may question the use of the term "confronted with" as a PTSD A-criterion in the DSM.^[41]

The finding that severity of exposure to the disaster predicted PTSD, whereas closeness to the deceased predicted PGD is consistent with what Pynoos and Nader^[42] found in school children who had experienced a sniper attack. This supports the notion of PTSD and PGD as two separate sets of phenomena.^[43] PGD is considered as an attachment disturbance,^[44] whereas PTSD is considered as a stress response syndrome determined more by the magnitude of exposure to the traumatic event.^[45] That both groups

of bereaved had a relatively high prevalence of depression also concurs with the view that the sudden and violent death of a close one may be a risk factor for persistent MDD.^[39]

Our finding that PGD was independently associated with impaired functioning, which also agrees with other studies,^[4,46] has some important implications. Nearly one-third of the bereaved participants who had PGD in our study did not meet criteria for MDD or PTSD. Thus, persons with a persistent and debilitating grief may not be identified by relying on the disorders currently found in DSM-IV. This supports the proposal of a new diagnosis in DSM-V and ICD-11^[7] and also underlines the importance of including PGD in future studies of trauma and loss.

The finding that direct exposure to a traumatic event can have a long-lasting and severe effect on mental health in a substantial number of bereaved individuals support the need for an active outreach strategy for this group after disasters to secure the identification and adequate follow-up of bereaved individuals.

The limitations of the study are the small number of participants and the biased distribution of the relationship to the deceased in the two groups of bereaved. The cross-sectional design makes it impossible to evaluate causality. Some participants (eight couples) in the study shared addresses and their reactions may have interacted. Thus, the basic assumptions for statistical independence are not completely satisfied. Another limitation is the use of a self-report questionnaire to diagnose PGD. A full M.I.N.I. was not performed and thus we cannot rule out the presence of other psychiatric comorbidity or primary disorders secondary to the trauma such as other anxiety and substance use disorders. Prior psychiatric histories were not assessed systematically and could have influenced the prevalence of reported disorders as well as the analysis of risk factors.^[47,48] Also, we did not differentiate whether the PTSD diagnosis resulted from the actual loss of the loved one or from the direct exposure to the tsunami. Thus, the PTSD symptoms in the directly exposed group may result both from direct exposure and loss.

The study addressed the whole population of Norwegian tsunami bereaved, which reduces sample selection bias. The Norwegian tourists who experienced the tsunami were similar to the Norwegian population with regard to employment and marital status, but they had a higher than average education

and more family constellations with children.^[49] Being a study of a healthy, normal population exposed to a massive natural disaster and not a high-risk population also increases the generalizability of the findings.

In conclusion, this study indicates that the dual burden of direct trauma and loss can inflict a complex set of long-term reactions and mental health problems in a substantial number of bereaved individuals. PTSD, MDD, and PGD are partly overlapping, partly autonomous phenomena. The relationship between PGD and impaired functioning implies further attention toward PGD as a possible disorder that should be incorporated in DSM-V and ICD-11.

Acknowledgments. The study was carried out as part of the centre's Tsunami Research Programme that was funded by the Directorate of Health and Social Welfare. Special gratitude is due to Ajmal Hussain and Anne Lie Andreassen for conducting diagnostic interviews.

REFERENCES

- Norris F, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part 1. An empirical review of the empirical literature, 1981–2001. *Psychiatry* 2002;65:207–239.
- Kuo C-J, Tang H-S, Tsay C-J, et al. Prevalence of psychiatric disorders among bereaved survivors of a disastrous earthquake in Taiwan. *Psychiatr Serv* 2003;54:249–251.
- Neria Y, Olsson M, Gameroff MJ, et al. The mental health consequences of disaster-related loss: findings from primary care one year after the 9/11 terrorist attacks. *Psychiatry* 2008;71:339–348.
- Shear MK, Jackson CT, Essock SM, et al. Screening for complicated grief among Project Liberty service recipients 18 months after September 11, 2001. *Psychiatr Serv* 2006;57:1291–1297.
- Neria Y, Gross R, Litz B, et al. Prevalence and psychological correlates of complicated grief among bereaved adults 2.5–3.5 years after September 11th attacks. *J Trauma Stress* 2007;20:251–262.
- Ghaffari-Nejad A, Ahmadi-Mousavi M, Gandomkar M, Reihani-Kermani H. The prevalence of complicated grief among Bam earthquake survivors in Iran. *Arch Iran Med* 2007;10:525–528.
- Prigerson HG, Horowitz MJ, Jacobs SC, et al. Prolonged grief disorder: psychometric validation of criteria proposed for DSM-V and ICD-11. *PLOS Med* 2009;6:1–12.
- Prigerson HG, Vanderwerker LC, Maciejewski PK. A case for inclusion of prolonged grief disorder in DSM-V. In: Stroebe M, Hansson R, Schut H, Stroebe W, editors. *Handbook of Bereavement Research and Practice*. Washington, DC: American Psychological Association; 2008:165–186.
- Shear MK, Mulhare E. Complicated grief. *Psychiatr Ann* 2008;38:662–670.
- Simon NM, Shear KM, Thompson EH, et al. The prevalence and correlates of psychiatric comorbidity in individuals with complicated grief. *Compr Psychiatry* 2007;48:395–399.
- Prigerson HG, Bierhals AJ, Kasl SV, et al. Traumatic grief as a risk factor for mental and physical morbidity. *Am J Psychiatry* 1997;154:616–623.
- Latham AE, Prigerson HG. Suicidality and bereavement: complicated grief as a psychiatric disorder presenting greatest risk for suicidality. *Suicide Life Threat Behav* 2004;34:350–362.
- Prigerson HG, Bridge J, Maciejewski PK, et al. Influence of traumatic grief on suicidal ideation among young adults. *Am J Psychiatry* 1999;156:1994–1995.
- Reynolds CF, Miller MD, Pasternak RE, et al. Treatment of bereavement-related major depressive episodes in later life: a controlled study of acute and continuation treatment with nortriptyline and interpersonal psychotherapy. *Am J Psychiatry* 1999;156:202–208.
- Pasternak RE, Reynolds CF, Schlerntzauer M, et al. Acute open-trial nortriptyline therapy of bereavement-related depression in late life. *J Clin Psychiatry* 1991;52:307–310.
- Horwitz AV, Wakefield JC. *The Loss of Sadness. How Psychiatry Transformed Normal Sorrow into Depressive Disorder*. Oxford, New York: Oxford University Press; 2007.
- Stroebe M, van Son M, Stroebe W, Kleber R, Schut H, van den Bout J. On the classification and diagnosis of pathological grief. *Clin Psychol Rev* 2000;20:57–75.
- Stroebe M, Schut H. Complicated grief: a conceptual analysis of the field. *Omega* 2005–2006;52:53–70.
- Raphael B. *When Disaster Strikes. How Individuals and Communities Cope With Catastrophe*. New York: Basic Books; 1986.
- Green BL, Grace MC, Lindy JD, et al. Levels of functional impairment following a civilian disaster: The Beverly Hills Supper Club fire. *J Consult Clin Psychol* 1983;51:573–580.
- Thompson J, Chung MC, Rosser R. Psychological effects of the Marchioness disaster on survivors and relatives. *Eur J Psychiatry* 1995;9:197–208.
- Centre for Research on the Epidemiology of Disasters. Retrieved August 19, 2008, from <http://www.emdat.be/Database/DisasterList/list.php>.
- Heir T, Sandvik L, Weisæth L. Hallmarks of posttraumatic stress: symptom Z scores in a Tsunami-affected tourist population. *Psychopathology* 2009;42:157–164.
- Sheehan DV, LeCrubier Y, Sheehan K, et al. The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998;59:22–33.
- Galea S, Ahern J, Resnick H, et al. Psychological sequelae of the September 11 terrorist attacks in New York City. *N Engl J Med* 2002;346:982–987.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. 4th ed., Text Revision*. Washington, DC: American Psychiatric Association; 2000.
- Prigerson HG, Maciejewski PK, Reynolds CF, et al. Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. *Psychiatry Res* 1995;59:65–79.
- Keesee NJ, Currier JM, Neimeyer RA. Predictors of grief following the death of one's child: the contribution of finding meaning. *J Clin Psychol* 2008;64:1–19.
- Weiss DS, Marmar CR. The Impact of Event Scale—Revised. In: Wilson JP, Keane TM, editors. *Assessing Psychological Trauma and PTSD*. New York: Guilford Press; 1997:399–411.
- Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9:139–145.
- Mundt JC, Marks IM, Shear MK, Greist JH. The Work and Social Adjustment Scale: a simple measure of impaired functioning. *Br J Psychiatry* 2002;180:461–464.
- Raphael B, Lundin T, Weisæth L. A research method for the study of psychological and psychiatric aspects of disaster. *Acta Psychiatr Scand* 1989;80:1–75.

33. Green BL, Lindy JD, Grace MC, et al. Buffalo Creek survivors in the second decade: stability of stress symptoms. *Am J Orthopsychiatry* 1990;60:43–53.
34. Sandanger I, Nygård JF, Sorensen T, Dalgard OS. Return of depressed men: changes in distribution of depression and symptoms in Norway between 1990 and 2001. *J Affect Disord* 2007;100:153–162.
35. Hensley PL, Clayton PJ. Bereavement: signs, symptoms, and course. *Psychiatr Ann* 2008;38:649–654.
36. Hull A, Alexander DA, Klein S. Survivors of the Piper Alpha platform disaster: a long term follow-up study. *Br J Psychiatry* 2002;181:433–438.
37. Shalev AY, Tuval-Mashiach R, Hadar H. Posttraumatic stress disorder as a result of mass trauma. *J Clin Psychiatry* 2004;65:4–10.
38. Murphy SA, Braun T, Tillery L, et al. PTSD among bereaved parents following the violent deaths of their 12- to 28-year-old children: a longitudinal prospective analysis. *J Trauma Stress* 1999;12:273–291.
39. Kaltman S, Bonanno GA. Trauma and bereavement: examining the impact of sudden and violent deaths. *J Anxiety Disord* 2003;17:131–147.
40. Ryanearson EK, Geoffrey R. Bereavement after homicide: Its assessment and treatment. In: Figley C, editor. *Traumatology of Grieving: Conceptual, theoretical, and treatment Foundations*. Philadelphia: Brunner/Mazel; 1999:109–130.
41. Spitzer RL, First MB, Wakefield JC. Saving PTSD from itself in DSM-V. *J Anxiety Disord* 2007;21:233–241.
42. Pynoos RS, Nader K. Psychological first aid and treatment approach to children exposed to community violence: research implications. *J Trauma Stress* 1988;445–473.
43. Raphael B. The interaction of trauma and grief. In: Black D, Newman M, Harris-Hendriks J, Mezey G, editors. *Psychological Trauma: A Developmental Approach*. London: Gaskell; 1997:31–43.
44. Prigerson HG. Complicated grief. When the path of adjustment leads to a dead-end. *Bereavement Care* 2004;23:38–40.
45. Neria Y, Nandi A, Galea S. Post-traumatic stress disorder following disasters: a systematic review. *Psychol Med* 2008;38:467–480.
46. Bonanno GA, Neria Y, Mancini A, Coifman KG, Litz B, Insel B. Is there more to complicated grief than depression and posttraumatic stress disorder? A test of incremental validity. *J Abnorm Psychol* 2007;116:342–351.
47. Simon NM, Pollack MH, Fischmann D, et al. Complicated grief and its correlates in patients with bipolar disorder. *J Clin Psychiatry* 2005;66:1105–1110.
48. Bromet E, Sonnega A, Kessler RC. Risk factors for DSM-III-R posttraumatic stress disorder: findings from the National Comorbidity Survey. *Am J Epidemiol* 1998;147:353–361.
49. Heir T, Piatigorsky A, Weisæth L. Longitudinal changes in recalled perceived life-threat after a natural disaster. *Br J Psychiatry* 2009;194:510–514.

Title: Visiting the site of death: Experiences of the bereaved after the 2004 South-east Asian tsunami

Short title: Visiting the site of death

Pål Kristensen, Arnfinn Tønnessen, Lars Weisæth, Trond Heir

P. KRISTENSEN, PsyD, A. TØNNESEN, PsyD, PhD, L. WEISÆTH, MD, PhD,
T. HEIR, MD, PhD.

Norwegian Centre for Violence and Traumatic Stress Studies, University of Oslo, Norway

Corresponding author: Pål Kristensen at Pal.Kristensen@nkvts.unirand.no or

Norwegian Centre for Violence and Traumatic Stress Studies, Kirkeveien 166, building 48,
0407 Oslo, Norway.

Phone: +47 22595500 Fax: +47 22595501

Abstract

The authors examined how many bereaved relatives of Norwegian tourists who perished in the 2004 Southeast Asia Tsunami had visited the site of death and the most important outcome from the visit. We conducted in-depth interviews (n=110) and used self report questionnaires (Impact of Event Scale-Revised, Inventory of Complicated Grief and General Health Questionnaire) in a total of 130 first degree family members 2 years post disaster. Results showed that the majority of participants (n=113; 87%) had visited the site of death. The most important outcome was gaining an increased understanding of what occurred (61%) and a feeling of closeness to the deceased (21%). Those who had visited the site of death reported lower avoidance behaviour and higher degree of acceptance of the loss than non-visitors. Although this could be a cause as well as a consequence of the visit, visiting the site of death may be an important part of the support offered to bereaved families after experiencing a disaster loss.

Keywords: disasters; traumatic bereavement; site of death; interventions; confrontational support

For the bereaved, violent deaths share two characteristics with other forms of sudden death: the inability to bid a final farewell and the lack of time to carry out last services for the loved one. Feelings of not having made closure with the loved one may hamper the separation process that is a part of the overall grieving period. Another challenge for the bereaved who experience sudden and violent losses is the difficulty grasping the reality that one or several close family members have died. Although disbelief and denial of death are natural parts of the initial shock phase and can be a healthy defense against feelings of being overwhelmed with reality (Archer, 1999), persistence of this disbelief (wishful thinking, for example) can inhibit the grieving process (Boelen, 2009). A second challenge is difficulty in accepting that death was the inevitable outcome given the circumstances. Furthermore, violent deaths may be accompanied by additional traumatic events for the next of kin, with family members being either close by and witnessing the death, or far away undergoing painful uncertainty while the loved ones are reported missing. The body may be severely mutilated or never recovered, thus leaving the bereaved family without a proper burial or grave. The mass deaths of disasters, such as those caused by the tsunami that struck Southeast Asia in 2004, are often associated with these potentially traumatic aspects (Raphael, 1986), and can lead to posttraumatic stress disorder, depression, and prolonged grief disorder (Kraemer, Wittman, Jenewein, & Schnyder, 2009; Kristensen, Weisæth, & Heir, 2009; Souza, Bernatsky, Reyes, & de Jong, 2007).

In contrast to traditional grief theories, in which confrontation with reality of the loss is considered vital for recovery (Parkes & Weiss, 1983; Worden, 2002), there has been a tendency among both professionals and lay persons to try to “spare” the bereaved from specific facts surrounding the circumstances of death, and instead create a more so-called comforting picture, using explanations such as *died during sleep* and *most likely experienced no pain*, for example. When the bereaved have also experienced a threat to their own life or other potentially traumatic events, it is also assumed that re-exposure to reminders of the trauma and loss may reactivate or exacerbate distress, including posttraumatic stress reactions, depressive reactions, anxiety, somatic distress, and acute grief reactions (Layne et al., 2006).

In the aftermath of events with multiple deaths, a certain practice has developed in Norway over the last two decades in which the bereaved are confronted with the brutal reality of death in a caring and supportive manner. This approach has been implemented during various phases, such as when the message of death is conveyed, during administration of information of the circumstances and cause of death, when the family is invited to visit the site of death, and when the family is invited to view the deceased loved one. To contrast this

practice with the previous more protective approach for the bereaved, this new approach has been termed *confrontational support* (Winje & Ulvik, 1995). After large-scale accidents, such interventions have been conducted from the disaster information and support centre, which brings together all parties who can contribute to an accurate and comprehensive picture of the event for those affected, including the bereaved (Weisæth, 2004).

Few studies have, however, examined whether bereaved families benefit over the long term from participating in interventions in the early phases after experiencing a disaster-related death (Raphael & Wooding, 2006). In an intervention study of the bereaved after a railway disaster in Australia in 1977 in which 83 persons were killed, Singh and Raphael (1981) found that the ability of bereaved family members to see the body and to bid a final farewell was related to better outcome.

After the tsunami in Southeast Asia in December 2004, in which 84 Norwegians (1-79 years old) perished, The Royal Norwegian Foreign Ministry announced the arrangement of commemoration journeys to Thailand for those who had lost close relatives (one in May 2005 and another in October 2005). Designed primarily for family of the deceased, the trips also included several experts such as representatives from the police identification squads, physical and psychiatric health care and the Seaman's Church.

The aim of our study was to estimate the proportion of bereaved Norwegians who had travelled to the disaster area after the 2004 tsunami and visited the actual site where death of their family member occurred. We also wanted to evaluate the importance of visiting the site of death for the bereaved, and what the most important aspect of the trip was for the next of kin. Finally, we wanted to examine any potential differences in mental health symptoms between those who had visited the site of death and those who had not.

Methods

Participants

The study population included bereaved adults who lost one or more close family members, defined as first degree family members (children, parents, siblings, or spouses/cohabitants), in the 2004 tsunami in Southeast Asia. A list of all Norwegian citizens who perished in the tsunami (n=84) was obtained from the Norwegian Police Directorate; the bereaved were identified through the Norwegian National Population Register, which registered a total of 200 bereaved individuals between 18 and 80 years old. Six were untraceable and five were ineligible due to severe physical and/or mental illness unrelated to the tsunami. Of the 189 bereaved individuals who were eligible for participation in the study,

130 (68.8%) agreed to participate (Figure 1). The bereaved adults first received a written letter with information about the study and that they would be contacted by phone unless they informed us that they did not want to participate in the study. The self-report questionnaire was distributed by ordinary mail, and the interviews were conducted face-to-face in the participants own homes by two researchers; a clinical psychologist (the first author), and a psychiatric nurse. Four of the interviews were conducted over the telephone. Data was gathered from March 2007 to November 2007.

Participants in the study did not differ significantly from non-participants in regards to age, gender, or relationship to the deceased (Table 1). The 59 non-participants did not take part in the study for the following reasons: too emotionally painful (n=13), too busy (n=6), not interested (n=32), or other reasons (n=8). Of the 130 participants, 111 agreed to take part in an in-depth interview. Written informed consent was obtained from all participants. The study was approved by the Regional Committee for Medical and Health Research Ethics and Norwegian Social Science Data Services.

The participants had quite different experiences with the tsunami; 35 were in the disaster area when the tsunami struck (directly exposed) and 95 were in Norway or in another country not affected by the tsunami (not directly exposed). Most of the directly exposed (n=27) reported that they were pulled completely under water and were convinced that they were going to die. All the directly exposed participants had been repatriated immediately after the disaster, and thus did not suffer secondary disaster stressors (Heir, Piatigorsky & Weisæth, 2009).

Measures

We used a cross-sectional study design and included a self report questionnaire and a semi-structured interview, with questions regarding demographics, exposure to the disaster, relationship to the deceased, whether the participants had travelled to the disaster affected area and visited the site of death, as well their experiences related to the trip. Current status of grief, stress reactions and general mental health was also assessed. Questions regarding the visit included the following: (a) "Have you travelled to the disaster affected area since the 2004 tsunami?" (yes or no), (b) "If yes; Did you attend one of the commemoration journeys or did you travel to the disaster area independently?" (attended commemoration journey =1, travelled on their own =2), (c) "Did you visit the location where your loved one had been when the tsunami struck?" (yes or no), and (d) "If yes; How important was the visit for you?"

(not important =0, of little importance =1, somewhat important =2, quite important =3, very important =4).

Also, we included an open-ended question in the self-report questionnaire, (e) “What do you consider most important about the visit?” In the in-depth interview (n=110) this question was asked in order to elaborate on answers given in the questionnaire. The verbal responses were tape-recorded. Participants’ written and verbal responses were parsed and organized into the following categories: increased understanding of what had happened, feeling of closeness to the deceased, togetherness with family members or other bereaved families, re-acquaintance with local people or culture, and coping with phobic experiences. The responses were coded into the corresponding categories by the first and last authors independent and blind to each others coding. From the 113 participants who had visited the site of death, we obtained responses from 105 (93%). The two coders agreed on 93 of the 105 codable responses (89%). The remaining 12 responses were coded according to an obtained consensus between the authors.

The *Inventory of Complicated Grief* (ICG) (Prigerson et al., 1995) was used to measure maladaptive grief symptoms. The ICG consists of 19 items; answers were ranked on a 5-point scale ranging from never (0) to always (4). The ICG has shown high internal consistency, test–retest reliability, and concurrent validity (Prigerson et al., 1995). Our Norwegian version has been used and validated in previous bereavement studies (Dyregrov, Nordanger & Dyregrov, 2003). In our study Cronbach’s alpha was 0.93.

The *Impact of Event Scale-Revised* (IES-R) (Weiss & Marmar, 1997) was used to measure symptoms of post-traumatic stress. IES-R consists of 22 items divided into three subscales: intrusion (reexperiencing the traumatic event), avoidance (avoiding trauma reminders), and hyperarousal (disturbed sleep, irritability, hypervigilance). Replies were given on a 5-point scale ranging from not at all (0) to extremely (4). Our Norwegian version has shown good psychometric properties in a non-clinical sample (Eid, Larsson, Johnsen, Laberg, Bartone, & Carlstedt, 2009), and Norwegian mean values of trauma victims have been shown to be comparable to findings in other countries (Heir et al., in press). Cronbach’s alpha was 0.94 (total scale), 0.89 (intrusion subscale), 0.84 (avoidance subscale), and 0.88 (arousal subscale).

The *General Health Questionnaire* (GHQ-12) (Goldberg & Hiller, 1979) was used to measure general psychological distress and contains questions on problems or impaired functioning during the previous two weeks. Replies were given on a 4-point scale, ranging from much less than usual (0) to much more than usual (3). Our Norwegian version has

shown satisfactory psychometric properties (Vatshelle & Moen, 1997). In our study Cronbach's alpha was 0.93.

Results

The majority of the participants (n=113, 87%) had travelled to the disaster affected area in the aftermath of the tsunami and all of them visited the site where their loved ones died. There were 17 participants who had not travelled to the disaster area. Among those who had travelled, 100 (88.5%) attended one of the commemoration journeys facilitated by The Norwegian Foreign Ministry (n=54 in May 2005 and n= 46 in October 2005), while 13 (11.5%) had travelled to the tsunami site independently.

There were no significant differences in age, gender, education, or relationship to the deceased between those who had visited the site of death and those who had not (Table 2). A significantly higher proportion of those who had visited the site of death had been directly exposed to the disaster themselves (Table 2). Reasons for not travelling included health problems (n=4), lack of information about the journeys (n=4), family related conflicts (n=3), lack of interest (n=2), or unknown (n=4).

There were no differences in sociodemographics, exposure to the disaster, relationship to the deceased, or symptom scores between bereaved individuals travelling on their own or participating on the commemoration journeys.

In the self-reported evaluation of the visit, 68.1% (n=77) of the participants reported that visiting the site of death had been very important for them, 23.9% (n=27) reported that the visit had been quite important, and 2.7% (n=3) reported that the visit had been of some importance. No participant reported that visiting the site of death had been of little or no importance or affected them negatively. There were no differences in the reported benefit of the visit between those who had participated in the commemoration journeys and those who travelled to the disaster area on their own. In response to the open-ended question as to the most important aspect of visiting the site of death, the most frequent responses were; increased understanding of what had happened (61%) and the feeling of closeness to the deceased (21%). Other important factors were togetherness with family members or other bereaved families (8%), re-acquaintance with local people or culture (4%) and coping with phobic experiences (3%).

Participants who had visited the site of death had significantly less avoidance than non-visiting participants (Table 3). Among those who had visited the site of death, the directly exposed individuals had significantly higher symptom scores than those who were not directly

exposed (each p -value < 0.05). According to the considerably higher proportion of directly exposed individuals among the visiting participants, we compared participants who had and who had not visited the site of death when including only those who had not been directly exposed in the disaster themselves. Similar results were obtained (Table 4). Avoidance was the only score on which the two groups differed significantly. In addition, the hyperarousal score approached a significant level.

There was no difference in the total ICG value between participants who had and who had not visited the site of death (table 3 and 4). Broken into single items, however, one of the 19 items on the ICG revealed a significant difference between the not directly exposed individuals who had and who had not visited the site of death; Difficulties with accepting the loss were higher among the non-visitors (mean item value 2.25) compared to the visitors (1.56, $p < 0.05$).

Discussion

In this two year follow-up, the majority of first degree family members had visited the site where their loved ones perished in the 2004 tsunami. The majority reported that they had benefited from the visit. The single most important outcome for the bereaved family in visiting the site of death was gaining an increased understanding of what had happened. This is consistent with the reasons for visiting the site of death after a bus accident in Norway in 1988 (Winje & Ulvik, 1995). Acquiring a fuller understanding of the cause of death may have been important in an effort to make sense of the loss (Gilles & Neimeyer, 2006).

The cognitive processing of the loss and trauma seemed to differ depending on whether the bereaved was directly exposed to the disaster or not. Among the directly exposed, many reported that the visit helped them to reconstruct the events that had occurred (Heir & Weisæth, 2006). By reviewing the factual circumstances the participants could fill in memory gaps, acquire a more comprehensible sequence of events and subsequently reconstruct an overall memory of what had occurred both to themselves and to their deceased loved ones. For example, a typical statement was: “It was important for me to see the disaster area after the tsunami, to follow the route I took, see the distances and find the stairs that helped me out of the water.”

Some who had directly experienced the disaster reported that visiting the site of death had allowed them to gain higher acceptance for their own powerlessness during the tsunami, especially their inability to rescue close ones; e.g., “The visit helped me to understand more of

what had happened, to realize that I actually was helpless and that I could not have done more to help.” Accordingly, the visit appeared to have reduced initial feelings of guilt or self-blame, which are often reported among bereaved survivors after disasters (Hull, Alexander, & Klein, 2002). Those who had been directly involved in the disaster often acted as the storyteller; sharing their stories with other family members was important in creating a common narrative of what had happened, a process referred to as *family meaning making* (Nadeau, 2001).

Among those who were not directly exposed to the disaster an increased understanding was related to a concretization of the disaster scenario, making the loss more real. This may have been particularly important since viewing of the body after death was not possible. Seeing the site of death also contributed to the realization that death was inevitable, or at least a more likely outcome than survival. As one participant stated: “When I saw the place where it all happened I knew right away why they didn’t survive.” Confrontation with the physical realities of the disaster area may also have reduced confusion and uncertainty and led to a more unambiguous picture of the scene of loss and trauma. As another participants stated: “After the visit to the site of death all the *if’s* and *but’s* were gone.” Combined with information and a more precise explanation this may have contributed to cognitive coping or acceptance of the loss (Winje, 1998).

Visiting the site of death was also in many related to a feeling of closeness to the deceased. The need to search for the deceased or seek out familiar places is common among the bereaved (Parkes, 1986) and can be considered an attempt to re-establish contact or maintain a continuing bond with the deceased, which many find comforting after a loss (Klass, Silverman, & Nickman, 1996; Vale-Taylor, 2009). Visiting the place where their loved one perished, termed a *sacred place* (Clark & Fransmann, 2006), also provided an opportunity for a private ceremony, to bid a final farewell or carry out a last service for the loved one, which can have a significant symbolic meaning for the surviving family members (Wijngaards-de Meij, et al, 2008). Several bereaved participants said that they found closure and that they felt more calm or more at ease after the visit.

The lower avoidance score and the higher degree of acceptance of the loss among those who had visited the site of death could be a cause as well as a consequence of the visit. However, others have reported that deliberate avoidance may exacerbate grief severity (Bonanno, Papa, Lalande, Zhang, & Noll, 2005). Our findings are also convergent with the symptom improvement found among other tsunami survivors after returning to the disaster area (Heir & Weisæth, 2006). Replacing avoidance behaviour with approach behaviour is thought to be an important strategy in overcoming the consequences of loss (Gray & Litz,

2005; Leventhal, 2008). Visiting the site of death may have incited a more active coping with the loss and gained more access to positive reinforcers such as support from family members and other bereaved families.

There are some limitations to the study. We have evaluated the possible benefits of visiting the site of death and not systematically examined the effect of a preventive intervention. Also, it may not be random who visited the site of death and who did not. We noted that the two most significant reasons for not participating were negative circumstances, either ill health (n=4) or family conflicts (n=4). Subsequently, there are indications of pre-travel differences in the groups, i.e. that the most resourceful had the energy to travel. Visiting the site of death also involves a personal investment that can enhance a positive evaluation in order to avoid cognitive dissonance. One strength of the study is the involvement of the entire Norwegian tsunami bereaved population, which reduces sample selection bias. The Norwegian tourist population who experienced the tsunami was similar to the general Norwegian population with regard to employment and marital status (Heir, et al., 2009), which increases the generalizability of the findings.

The lower avoidance, higher degree of acceptance of the loss and the close to significant lower level of arousal symptoms among those who had visited the site of death suggests that this intervention should be the object of future studies with more stringent research designs. Suggestions for future studies include investigating the role of the number of visits, the timing of the visits and what participants did or were exposed to during the visits.

Despite several limitations, current knowledge suggests that visiting the site of death may be incorporated as part of a confrontational support strategy for bereaved families after disasters, one that seems to have no measurable negative effects, and that engenders reported benefits for many.

References

- Archer, J. (1999). *The nature of grief. The evolution and psychology of reactions to loss*. London: Brunner-Routledge.
- Boelen, P. A. (2009). A sense of “unrealness” about the death of a loved one: An exploratory study of its role in emotional complications among bereaved individuals. *Applied Cognitive Psychology, 24*, 238-251.
- Bonanno, G. A., Papa, A., Lalande, K., Zhang, N., & Noll, J. G. (2005). Grief processing and deliberate grief avoidance: A prospective comparison of bereaved spouses and parents in the United States and the People’s Republic of China. *Journal of Consulting and Clinical Psychology, 73*, 86-98.
- Clark, J. & Franzmann, M. (2006). Authority from grief, presence and place in the making of roadside memorials. *Death Studies, 30*, 579-599.
- Dyregrov, K., Nordanger, D., & Dyregrov, A. (2003). Predictors of psychosocial distress after suicide, SIDS, and accidents. *Death Studies, 27*, 143–165.
- Eid, J. Larsson, G., Johnsen, B. H., Laberg, J. C., Bartone, P. T., & Carlstedt, B. (2009). Psychometric properties of the Norwegian Impact of Event Scale-Revised in a non-clinical sample. *Nordic Journal of Psychiatry, 63*, 426-432.
- Gilles, J. & Neimeyer, R. A. (2006). Loss, grief and the search for significance: Toward a model of meaning reconstruction in bereavement. *Journal of Constructivist Psychology, 19*, 31-65.
- Goldberg, D. P. & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine, 9*, 139–145.
- Gray, M. J. & Litz, B. T. (2005). Behavioral interventions for recent trauma. *Behavior Modification, 29*, 189-215.
- Heir, T., Piatigorsky, A., & Weisæth, L. (2009). Longitudinal changes in recalled perceived life-threat after a natural disaster. *British Journal of Psychiatry, 194*, 510-514.
- Heir, T., Rosendal, S., Berg-Johannesson, K., Michel, P-O., Mortensen, E. L., Weisæth, L., Andersen, H. S., & Hultman, C. M. (in press). Tsunami-affected Scandinavian tourists: Disaster exposure and post-traumatic stress symptoms. *Nordic Journal of Psychiatry*.
- Heir, T. & Weisæth, L. (2006). Back to where it happened: Self-reported symptom improvement of tsunami survivors who returned to the disaster area. *Prehospital and Disaster Medicine, 21*, 59-63.
- Hull, A., Alexander, D. A., & Klein, S. (2002). Survivors of the Piper Alpha platform

- disaster: a long term follow-up study. *British Journal Psychiatry*, 181, 433-438.
- Klass, D., Silverman, P. R., & Nickman, S. L. (1996). *Continuing bonds. New understanding of grief*. Philadelphia: Taylor & Francis.
- Kraemer, B., Wittman, L., Jenewein, J., & Schnyder, U. (2009). 2004 tsunami: long-term psychological consequences for swiss tourists in the area at the time of the disaster. *Australian and New Zealand Journal of Psychiatry*, 43, 420-425.
- Kristensen, P., Weisæth, L., & Heir, T. (2009). Psychiatric disorders among disaster bereaved: An interview study of individuals directly or not directly exposed to the 2004 Tsunami. *Depression and Anxiety*, 26, 1126-1133.
- Layne, C. M., Warren, J. S., Saltzman, W. R., Fulton, J. B., Steinberg, A. M., & Pynoos, R. S. (2006). Contextual influences on posttraumatic adjustment: Retraumatization and the roles of revictimization, posttraumatic adversities and distressing reminders. In L. A. Schein, H. I. Spitz, G. M. Burlingame, P. R. Muskin, & S. Vargo (eds.) *Psychological effects of catastrophic disasters. Group approaches to treatment*. (pp.235-286). New York: The Haworth Press.
- Leventhal, A. M. (2008). Sadness, depression and avoidance behavior. *Behavior Modification*, 32, 759-779.
- Nadeau, J., W. (2001). Meaning making in family bereavement. In M. Stroebe, R. O. Hansson, W. Stroebe, and H. Schut, (eds). *Handbook of Bereavement Research. Consequences, coping, and care*. (pp. 329-348). Washington, DC: American Psychological Association.
- Parkes, C. M. (1986). *Bereavement. Studies of grief in adult life*. London: Penguin Books.
- Parkes, C. M. & Weiss R. S. (1983). *Recovery from bereavement*. New York: Basic Books.
- Prigerson, H. G., Maciejewski, P. K., Reynolds, C. F., Bierhals, A. J., Newsom, J. T., Fasiczka, A., et al. (1995). Inventory of Complicated Grief: A scale to measure maladaptive symptoms of loss. *Psychiatry Research*, 59, 65-79.
- Raphael, B. (1986). *When disaster strikes. How individuals and communities cope with catastrophe*. New York: Basic Books.
- Raphael, B. & Wooding, S. (2006). Longer-term mental health interventions for adults following disasters and mass violence. In E. C. Ritchie, P. J. Watson & M. J. Friedman (eds.). *Interventions following mass violence and disasters* (pp. 174-192). London: Guilford Press.
- Sing, B. & Raphael, B. (1981). Postdisaster morbidity of the bereaved. A possible role for preventive psychiatry? *The Journal of Nervous and Mental Disease*, 169, 203-212.

- Souza, R., Bernatsky, S., Reyes, R., & de Jong, K. (2007). Mental health status of vulnerable tsunami-affected communities: a survey in Aceh Province, Indonesia. *Journal of Traumatic Stress, 20*, 263-269.
- Vale-Taylor, P. (2009). "We will remember them": a mixed-method study to explore which post-funeral remembrance activities are most significant and important to bereaved people living with loss, and why those particular activities are chosen. *Palliative Medicine, 23*, 537-544.
- Vatshelle, A., & Moen, B. E. (1997). Serious on-the-track accidents experienced by train drivers: Psychological reactions and long term health effects. *Journal of Psychosomatic Research, 42*, 43-52.
- Weiss, D. S., & Marmar C. R. (1997). The Impact of Event Scale -Revised. In J. P. Wilson & T. M. Keane (eds.). *Assessing psychological trauma and PTSD*. (pp. 399-411). New York: Guildford Press.
- Weisæth, L. (2004). Preventing after-effects of disaster trauma: the information and support centre. *Prehospital and Disaster Medicine, 19*, 86-89.
- Wijngaards-de Meij, L., Stroebe, M., Stroebe, W., Schut, H., van den Bout, J., van der Heijden, P. G. et al. (2008). The impact of circumstances surrounding the death of a child on parents' grief. *Death Studies, 32*, 237-252.
- Winje, D. (1998). Cognitive coping: The significance of knowing what happened in the traumatic event. *Journal of Traumatic Stress, 11*, 627-643.
- Winje, D., & Ulvik, A. (1995). Confrontation with reality: Crisis intervention services for traumatized families after a school bus accident in Norway. *Journal of Traumatic Stress, 8*, 429-444.
- Worden, J. W. (2002). *Grief counselling and grief therapy* (Third edition). New York: Taylor & Francis.

Figure 1. Flow chart of the inclusion/exclusion of Norwegian tsunami bereaved individuals.

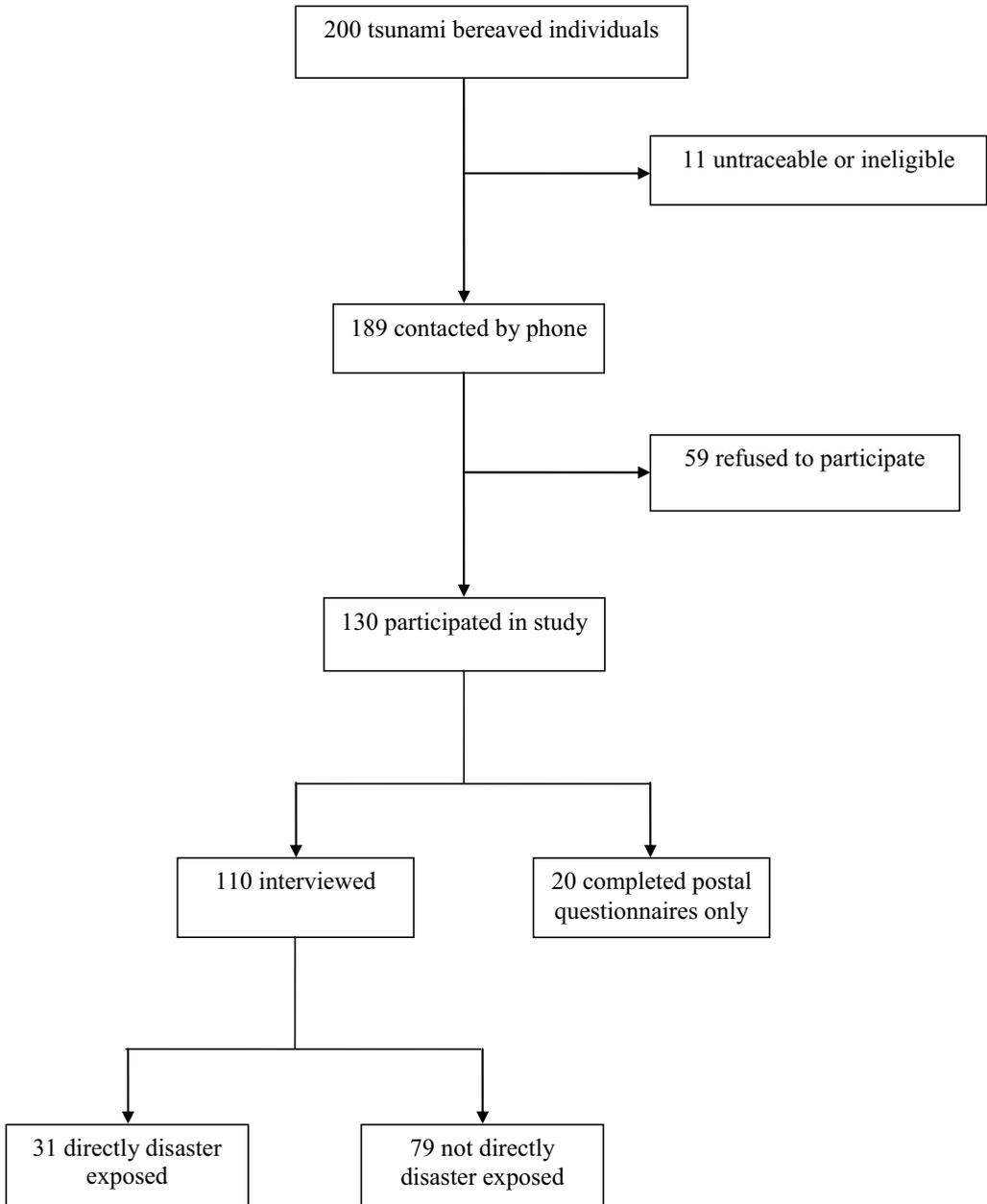


Table 1: Demographic and loss-related variables in the Norwegian tsunami bereaved population in study participants and non-participants. Unless stated otherwise, results are given as number (percentage).

	Participants n=130	Non-participants n=59
Age, mean (SD, range)	45.7 (13.7, 19–80)	46.3 (15.4, 21–75)
Gender		
Male	63 (48.5)	32 (54.2)
Female	67 (51.5)	27 (45.8)
Education level		
Low (≤ 12 years)	50 (38.5)	Not available
High (> 12 years)	80 (61.5)	
Marital status		
Married/cohabitating	77 (59.2)	Not available
Separated/divorced	8 (6.2)	
Never married	28 (21.5)	
Widowed	17 (13.1)	
Deceased was†		
Child	37 (28.5)	19 (32.2)
Spouse/cohabitant	23 (17.7)	6 (10.2)
Parent/sibling	77 (59.2)	34 (57.6)
Time until confirmation of death		
≤ 1 month	60 (46.2)	29 (49.2)
> 1 month	70 (53.8)	30 (50.8)
Disaster exposure		
Direct	35 (26.9)	8 (13.6)
Not direct	95 (73.1)	51 (86.4)
Multiple losses		
Loss of one family member	120 (92.3)	56 (94.9)
Loss of two or more family members	10 (7.7)	3 (5.1)

†Categories are not mutually exclusive

Table 2. Characteristics of tsunami bereaved Norwegians (n=130) visiting the site of death or not. Unless stated otherwise, results are given as number (percentage).

	Visited site of death n=113	Not visited site of death n=17
Age, mean (SD, range)	44.9 (13.1, 19-74)	50.8 (17.3, 20-80)
Gender		
Male	56 (49.6)	7 (41.2)
Female	57 (50.4)	10 (58.8)
Marital status (at time of study)		
Married/cohabiting	65 (57.5)	12 (70.5)
Separated/divorced	6 (5.3)	2 (11.8)
Never married	27 (23.9)	1 (5.9)
Widowed	15 (13.3)	2 (11.8)
Education		
Low (≤ 12 years)	44 (38.9)	6 (35.3)
High (> 12 years)	69 (61.1)	11 (64.7)
Deceased was [†]		
Child	32 (28.3)	5 (29.4)
Spouse/cohabitant	22 (19.5)	1 (5.9)
Sibling/parent	66 (58.4)	11 (64.7)
Time until confirmation of death		
Within 1 month	52 (46.0)	8 (47.1)
1-7 months	61 (54.0)	9 (52.9)
Disaster exposure		
Direct	34 (30.1)*	1 (5.9)
Not direct	79 (69.9)	16 (94.1)

[†] Categories are not mutually exclusive

*p< 0.05

Table 3. Mental health symptom scores (mean, (SD)) among all tsunami bereaved Norwegians (n=130) visiting the site of death or not.

	Visited site of death (n=113)	Not visited site of death (n=17)	<i>p-values</i>
Inventory of Complicated Grief (ICG)	27.31 (13.89)	29.47 (16.27)	0.56
Impact of Event Scale-R (IES-R)	26.75 (15.54)	34.06 (20.28)	0.086
Intrusion	12.16 (6.32)	13.82 (7.96)	0.33
Avoidance	8.40 (5.82)	12.41 (7.38)	0.012
Arousal	6.19 (5.40)	7.82 (7.01)	0.27
General Health Questionnaire (GHQ-12)	15.08 (7.03)	14.94 (6.76)	0.94

Table 4. Mental health symptom scores (mean, (SD)) among not directly exposed tsunami bereaved Norwegians (n=92) visiting the site of death or not.

	Visited site of death (n=76)	Not visited site of death (n=16)	<i>p-values</i>
Inventory of Complicated Grief (ICG)	24.55 (13.34)	29.69 (16.78)	0.18
Impact of Event Scale-R (IES-R)	22.32 (13.23)	33.44 (20.78)	0.055
Intrusion	10.53 (5.71)	13.81 (8.22)	0.15
Avoidance	7.53 (5.23)	11.63 (6.85)	0.008
Arousal	4.26 (4.36)	8.00 (7.20)	0.061
General Health Questionnaire (GHQ-12)	12.80 (5.06)	15.47 (6.64)	0.081

Parental Mental Health After the Accidental Death of a Son During Military Service

23-Year Follow-Up Study

Pål Kristensen, PsyD,* Trond Heir, MD, PhD,* Pål H. Herlofsen, MD,†
Øyvind Langsrud, PhD,‡ and Lars Weisæth, MD, PhD*

Abstract: We prospectively studied parental mental health after suddenly losing a son in a military training accident. Parents ($N = 32$) were interviewed at 1, 2 and 23 years after the death of their son. The General Health Questionnaire and Expanded Texas Inventory of Grief were self-reported at 1, 2, 5, and 23 years; the Inventory of Complicated Grief was self-reported at 23 years. We observed a high prevalence of psychiatric disorders at 1- and 2-year follow-ups (57% and 45%, respectively), particularly major depression (43% and 31%, respectively). Only one mental disorder was diagnosed at the 23-year follow-up. Grief and psychological distress were highest at 1- and 2-year follow-ups. Spouses exhibited a high concordance of psychological distress. Mothers reported more intense grief reactions than did fathers. The loss of a son during military service may have a substantial impact on parental mental health particularly during the first 2 years after death. Spouses' grief can be interrelated and may contribute to their psychological distress.

Key Words: Parental grief, military accident, mental health, couple distress, sex differences.

(*J Nerv Ment Dis* 2012;200: 00-00)

Loss and bereavement are an integral part of the military experience (Wright et al., 2005), and studies have shown that both civilian war survivors and combat veterans struggle with unresolved grief and other mental health problems after the death of a relative or comrade (Green et al., 1990; Morina et al., 2010; Pivar and Field, 2004). There is, however, a surprising lack of studies that examined parental mental health after the loss of a son in a military accident or at war.

The death of a child is considered one of the most stressful events that parents can experience, and parental grief is often more intense and prolonged than that after other losses (Kristensen et al., 2010; Middleton et al., 1998). The death of a child can have a profound effect on parents' physical and mental health, especially when the death is sudden and violent, for instance, through an accident, suicide, or homicide (Stroebe et al., 2007). An increased risk of mortality has been found among parents after the loss of a child from unnatural causes (Li et al., 2003). A wide range of mental health problems such as depression (major depressive disorder [MDD]), suicidal ideation, posttraumatic stress disorder (PTSD), and prolonged grief disorder (PGD) has also been reported (Dyregrov et al., 2003; Lehman et al., 1987; Murphy et al., 1999, 2003). The latter, also referred to as complicated grief, was recently proposed as a new mental

health disorder in *DSM-V* and *ICD-11* (Prigerson et al., 2009). Sex differences are frequently found, with mothers often reporting a more intense grief than fathers (Murphy et al., 2000; Schwab, 1996).

Longitudinal studies have shown that a substantial number of parents may continue to experience symptoms of depression and PTSD several years after the loss of their child (Lehman et al., 1987; Murphy et al., 1999; Rogers et al., 2008). Still, a few prospective studies have been conducted, and the longer-term trajectory of parental mental health is not well understood (Murphy, 2008). In a 29-year follow-up of a cohort of bereaved parents in Denmark, Li et al. (2005) found an increased risk, especially among mothers, of first-time psychiatric hospitalization after the loss of a child.

Moreover, although much research on parental grief has focused on the impact of a child's death on the individual parent, there is less knowledge of the interaction of spouses' grief after the loss of a child. Among the few studies that exist, most have examined spouses' grief after the natural death of an infant or child, and the findings are inconclusive. Some report a high concordance in grief and distress between spouses (Dyregrov and Matthiesen, 1991; Hoekstra-Weebens et al., 1991); others have found mothers to show consistently higher levels of emotional distress than fathers (Moriarty et al., 1996) or that spouses rarely are distressed at the same time (Vance et al., 2002).

The aim of this prospective study was to examine the trajectory of the mental health of parents after learning that their son had died in a military accident. We also examined differences in grief and psychological distress both between sexes and within couples.

METHODS

The Event

At 1:05 PM, on 5 March 1986, while performing the NATO exercise Anchor Express, a platoon of 31 Norwegian soldiers (3 non-commissioned officers and 28 conscripted men) was hit by a snow avalanche in Vassdalen in northern Norway. All soldiers except one were partly or completely buried, and 16 soldiers, aged 19 to 24 years, died (Rostrup et al., 1989). In the aftermath of the accident, the investigative commission concluded that a combination of circumstances contributed to the tragic outcome. Among these were the weather conditions of heavy snowfall and wind and the underestimation by military leaders of the potential risk associated with conducting exercises under difficult conditions in that mountainous area (Haug, 1986).

After the accident, the bereaved parents were transported to a military camp close to the disaster area. They attended a memorial service, and viewing of their deceased sons was held in a local church. Information on the cause of death was voluntarily presented to the parents by health personnel. Three months after the accident, the parents were flown into the disaster area to get a closer look at where the avalanche had occurred and to be informed about where their sons' bodies had been found.

*Norwegian Centre for Violence and Traumatic Stress Studies, University of Oslo, Oslo, Norway; †Private Practice, Drammen, Norway; and ‡Statistics, Oslo, Norway.

Send reprint requests to Pål Kristensen, PsyD, Norwegian Centre for Violence and Traumatic Stress Studies, Kirkeveien 166, Building 48, 0407 Oslo, Norway.

E-mail: Pål.Kristensen@nkvts.uinr.no.
Copyright © 2011 by Lippincott Williams & Wilkins
ISSN: 0022-3018/11/2001-0000
DOI: 10.1097/NMD.0b013e31823e5796

Subjects and Procedures

Thirty-two parents from the 16 families of the deceased soldiers were first contacted by the Brigade psychiatrist (third author) as part of the early intervention and research program conducted just after the accident. Demographic information of the parents at the time of the accident and at the final 23-year follow-up is presented in Table 1. All bereaved parents had other children at the time of their sons' death. The 1-year follow-up consisted of a clinical interview and self-reported measures. Further follow-ups were carried out at 2 years (clinical interview and self-reported measures), 5 years (self-reported measures only), and at 23 years (clinical interview and self-reported measures) after the accident. The assessments were timed to avoid triggering reactions to the anniversary of their son's death. At the 23-year follow-up, 8 fathers (mean age, 74 years; range, 67 to 83 years) and 12 mothers (mean age, 71 years; range, 65 to 77 years) remained alive, and all except four of the mothers were willing to participate. The response rates of the parents were 94% at 1 year, 94% at 2 years, 73% at 5 years, and 80% at 23 years (Fig. 1). Five spouses and two single parents participated in all four follow-ups. During the 23-year follow-up period, 12 parents had died. The parents died solely because of natural reasons such as terminal illness and/or age-related health problems.

This study was approved by the Regional Committee for Medical and Health Research Ethics and the Norwegian Social Science Data Services.

Measures

Clinical Interviews

Psychiatric morbidity at the 1- and 2-year follow-ups was assessed in face-to-face clinical interviews with the Brigade psychiatrist (third author) in the parents' homes. The diagnoses were described in terms of *DSM-IV* disorders retrospectively, based on former ICD-9 diagnoses and comprehensive clinical information from medical records and research protocols.

Psychiatric morbidity at the 23-year follow-up was assessed in the face-to-face structured diagnostic Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998), which was developed to diagnose Axis I *DSM-IV* psychiatric disorders. The interviews were conducted by the researchers, a clinical psychologist (first author), and two psychiatrists (second and last author), who visited participants in their homes. Psychiatric morbidity in the 5- to 23-year

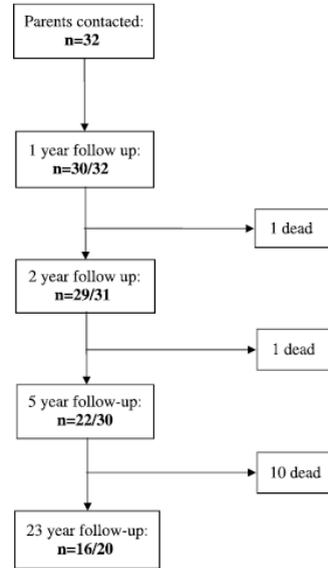


FIGURE 1. Flow chart of parents studied at different follow-up times after their son had died in a military accident.

follow-up period was retrieved with retrospective questions according to the MINI.

Self-Reported Measures

The General Health Questionnaire (GHQ-20) was used to measure general psychological distress (Goldberg and Hillier, 1979) at the 1-, 2-, 5-, and 23-year follow-ups. The GHQ-20 contained questions about psychological problems or impaired function during the 2 weeks before the follow-up. Respondents selected answers from a 4-point scale ranging from "much less than usual" (0) to

TABLE 1. Demographic Variables in Bereaved Mothers and Fathers at the Time of the Accident and at the 23-Year Follow-Up After Their Son Had Died

	Time of the Accident (n = 32)		23-Year Follow-Up (n = 16)	
	Mothers (n = 16)	Fathers (n = 16)	Mothers (n = 8)	Fathers (n = 8)
Age, mean (range), yrs	49.3 (40–61)	54.3 (44–69)	70.6 (65–77)	73.4 (67–83)
Education level				
Low (≤12 yrs)	11 (68.8)	7 (43.7)	5 (62.5)	2 (25.0)
High (>12 yrs)	5 (31.2)	9 (56.3)	3 (38.5)	6 (75.0)
Marital status				
Married/cohabitant	15 (93.8)	15 (93.8)	6 (75.0)	6 (75.0)
Separated/divorced	1 (6.2)	1 (6.2)	0	0
Widowed	0	0	2 (25.0)	2 (25.0)
Employment				
Yes	15 (93.8)	14 (87.5)	1 (12.5)	0
No	1 (6.2)	2 (12.5)	7 (87.5)	8 (100)

Unless stated otherwise, values are expressed as n (%).

TABLE 2. Prevalence of Psychiatric Disorders in Mothers and Fathers Studied at Different Follow-Up Times After Their Son Had Died in a Military Accident

	Participants in 1987 (n = 30 of 32)		Participants in 1988 (n = 29 of 31)		Participants in 2009 (n = 16 of 20)	
	Mothers (n = 15)	Fathers (n = 15)	Mothers (n = 15)	Fathers (n = 14)	Mothers (n = 8)	Fathers (n = 8)
Major depressive disorder	7 (46.7)	6 (40.0)	6 (40.0)	3 (21.4)	0	0
Anxiety disorders (GAD/panic disorders)	1 (6.7)	0	1 (6.7)	0	1 (12.5)	0
Somatoform disorder	1 (6.7)	3 (20.0)	1 (6.7)	3 (21.4)	0	0
Substance-related disorder	0	2 (13.3)	0	1 (7.1)	0	0
PGD ^a	—	—	—	—	0	0
PTSD ^a	—	—	—	—	0	0
Any disorder	9 (60.0)	8 (53.3)	8 (53.3)	5 (35.7)	1 (12.5)	0

Values are expressed as n (%).

^aPTSD and PGD diagnoses were not given at the 1- and 2-year follow-ups.

GAD indicates generalized anxiety disorder; PTSD, posttraumatic stress disorder; PGD, prolonged grief disorder.

“much more than usual” (3). The items were summed for a total score; a high total score indicated more intense distress. Cronbach alpha ranged from 0.86 to 0.96 in this study.

The Expanded Texas Inventory of Grief (ETIG) scale was used to assess grief intensity at the 2-, 5-, and 23-year follow-ups (Hodgkinson et al., 1995; Zisook et al., 1982). The respondents were asked to rate the relevance of statements regarding grief on a 5-point scale ranging from completely false (1) to completely true (5). The items were summed for a total score; a high total score indicated more intense grief. Cronbach alpha ranged from 0.83 to 0.84 in this study.

The Inventory of Complicated Grief (ICG) (Prigerson et al., 1995) scale was used to assess PGD at the 23-year follow-up. The ICG consists of 19 items, and answers are given on a 5-point scale ranging from never (0) to always (4). ICG gives a possible range of 0 to 76, with high scores indicating high levels of complicated or prolonged grief. PGD was identified when the results of the self-rated ICG scale fit the proposed symptom criteria (Keese et al., 2008; Prigerson et al., 2009). Cronbach alpha was 0.83 in this study.

Data Analysis

Data were analyzed using a multilevel model (Hox, 2002) with the self-report measures (GHQ and ETIG) as dependent variables. We estimated mean values and sex differences with the corresponding *p*-values and confidence intervals. The proportions of variance associated with intrafamily relationship and sex were quantified using intraclass correlation coefficients (ICCs). We denoted spouses as a family (intrafamily relationship) which was modelled as a random error term (variance term). Sex was included as another random error term. The ICCs for family and sex were computed as $s^2_{fam}/(s^2_{fam} + s^2_{gen} + s^2_{ind})$ and $s^2_{gen}/(s^2_{fam} + s^2_{gen} + s^2_{ind})$, respec-

tively, where s^2_{fam} , s^2_{gen} , and s^2_{ind} were estimates of family, sex, and individual variances, respectively. ICC ranges from 0 to 1. The multi-level analyses were performed using the mixed procedure in SPSS for Windows, version 16.0.

RESULTS

At the 1- and 2- year follow-ups, approximately half of the parents had experienced a psychiatric disorder (57% and 45%, respectively) (Table 2). The most common disorders were MDD and somatoform disorder. At the 23-year follow-up, only 1 of the 16 parents had a current psychiatric disorder (Table 2). We found no current cases of MDD, PTSD, or PGD. Although we found no current cases of PGD, 60% of the participants reported one or more symptoms of prolonged grief at the final follow-up. Among the most commonly reported symptoms were yearning for the deceased (33%), anger (33%), and bitterness (33%). Sum scores on the ICG scale concurred with results obtained on the ETIG scale (*r* = 0.80). Retrospective reports of the prevalence of psychiatric disorders in the 5-to 23-year follow-up period revealed that one third of the parents had experienced at least one episode of psychiatric disorder, including four cases of MDD and two cases of an anxiety disorder.

At the final follow-up, 4 of 16 parents (25%) reported that they had received psychiatric/psychological treatment in the years after their loss. Moreover, 11 parents (69%) reported that they had participated in a grief support group.

Tables 3 and 4 show psychological distress and grief at different follow-up times after the avalanche accident. Compared with fathers, mothers had higher scores of psychological distress and grief

TABLE 3. Psychological Distress (GHQ-20) and Sex Differences With 95% CI in Parents Studied at Different Time Points After Their Son Had Died in a Military Accident

Time After Accident	N	Mean for Mothers (95% CI)	Mean for Fathers (95% CI)	Sex Difference (95% CI)	Sex (ICC)	Family (ICC)
1 yr	27	1.89 (1.54–2.25)	1.90 (1.55–2.25)	−0.01 (−0.18 to 0.16)	0.00	0.91**
2 yrs	24	1.81 (1.46–2.16)	1.61 (1.26–1.96)	0.20* (0.04–0.36)	0.09*	0.84**
5 yrs	22	1.21 (0.89–1.53)	1.32 (1.0–1.64)	−0.11 (−0.43 to 0.21)	0.00	0.65*
23 yrs	15	1.01 (0.83–1.19)	0.88 (0.7–1.05)	0.13 (−0.06 to 0.32)	0.11	0.65

The proportion of variances that could be explained by sex and family were quantified using ICCs.

**p* < 0.05.

***p* < 0.01.

GHQ indicates General Health Questionnaire; ICC, intraclass correlation coefficient.

TABLE 4. Grief scores (ETIG) and Sex Differences With 95% CI in Parents Studied at Different Time Points After Their Son Had Died in a Military Accident

Time After Accident	N	Mean for Mothers (95% CI)	Mean for Fathers (95% CI)	Sex Difference (95% CI)	Sex (ICC)	Family (ICC)
2 yrs	23	3.73 (3.47–3.99)	3.24 (2.97–3.52)	0.49** (0.21–0.76)	0.53**	0.30*
5 yrs	21	3.41 (3.13–3.69)	3.07 (2.78–3.37)	0.34* (0.02–0.65)	0.31*	0.37
23 yrs	15	2.57 (2.10–3.05)	2.39 (1.94–2.84)	0.18 (–0.46–0.82)	0.00	0.33

The proportion of variances that could be explained by sex and family were quantified using ICCs.

* $p < 0.05$.

** $p < 0.01$.

ETIG indicates Expanded Texas Inventory of Grief; ICC, intraclass correlation coefficient.

at the 2-year follow-up and higher scores of grief at the 5-year follow-up. Intrafamily (between spouses) associations explained a considerable part of the variance in psychological distress, but not so much in grief reactions.

Figures 2 and 3 present trajectories of psychological distress and grief, respectively, for the five spouses who participated in all follow-up assessments. After 1 and 2 years, psychological distress and grief symptoms, respectively, progressively declined up to the 23-year follow-up ($p < 0.001$).

Table 5 shows longitudinal changes in psychological distress and grief of parents who participated in two consecutive follow-ups and parents who participated in the first and last assessments. In general, there were significant declines in psychological distress and grief in time. Intrafamily associations explained a significant part of the variance in psychological distress symptoms during the first 5 years of observation (1 to 2 years: $ICC = 0.75$, $p < 0.01$; 2 to 5 years: $ICC = 0.57$, $p < 0.05$).

DISCUSSION

This study showed that parents who lost a son in a military accident experienced extensive mental health problems during the first 2 years after the death of their son. During the long-term follow-up, the prevalence of mental health disorders decreased, and psychiatric morbidity at the 23-year follow-up had nearly disappeared. Self-reported psychological distress and grief provided strong support to the clinical diagnostic findings. High levels of psychological distress and grief were reported at the 1- and 2-year assessments, and significantly lower levels were reported at the 5- and 23-year follow-ups. The study also showed that although mothers reported more

intense grief reactions than fathers, there was a high concordance in psychological distress between the spouses.

The prevalence of depression during the first 2 years after the death was higher than that reported among widows and widowers (Zisook and Shuchter, 1991, 1993). In addition, the prevalence of depression and the level of psychological distress were considerably higher at 2 years compared with those reported in a similar study after the 2004 tsunami, which assessed bereavement in Norwegian citizens (Kristensen et al., 2009).

One possible explanation for the high level of psychopathology and long-lasting distress found in the present study may be the circumstances of the loss, which had created additional emotional strain. The fact that the son died during military service may have influenced the severity or duration of grief, because this is a sensitive period in the parent-child relationship (Alexander and Lavie, 1999). Leaving the family to serve in the military is often the first major separation between sons and parents, and parents may experience this transition as transference of responsibility and care to the military system. In addition, most parents in our study reported that, initially (for some, during the first 2 to 4 years), they had been preoccupied by questions regarding how the deaths happened. The parents claimed almost unanimously that the death of their son was a consequence of a failure in military leadership and that it should have been prevented. Many also felt that there was a lack of information about who was responsible for proceeding with the military operation under those dangerous conditions. Overall, this had initiated strong feelings of anger and bitterness in most of the parents. This suggested that the parents' perception that the deaths could have been prevented and the way information regarding the circumstances of the deaths was handled by the institution may negatively influence the parents' mental health in the long term (Rando, 1996; Ronen and Lebel, 2006).

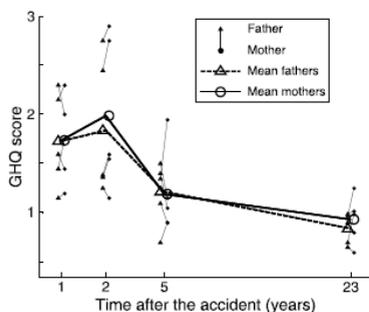


FIGURE 2. Trajectory of psychological distress (GHQ-20) in spouses that participated in all follow-ups after their son had died in a military accident. GHQ indicates General Health Questionnaire.

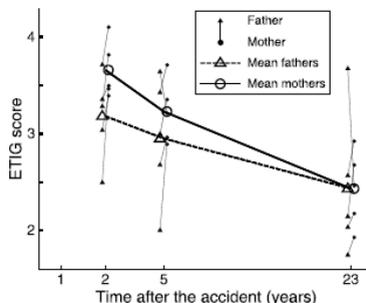


FIGURE 3. Trajectory of grief (ETIG) in spouses that participated in all follow-ups after their son had died in a military accident. ETIG indicates Expanded Texas Inventory of Grief.

TABLE 5. Trajectories of Psychological Distress (GHQ-20) and Grief (ETIG) With 95% CI in Parents Studied After Their Son Had Died in a Military Accident

Time After Accident	GHQ-20		ETIG	
	N	Difference (95% CI)	N	Difference (95% CI)
1–2 yrs	24	–0.23 (–0.53 to 0.08)	—	—
2–5 yrs	21	–0.55** (–0.87 to –0.23)	20	–0.33** (–0.54 to –0.11)
5–23 yrs	12	–0.44 (–0.90 to 0.02)	12	–0.59** (–0.87 to –0.31)
1(2)–23 yrs	14	–0.86*** (–1.22 to –0.50)	14	–0.86*** (–1.10 to –0.62)

p* < 0.05.*p* < 0.01.****p* < 0.001.

GHQ indicates General Health Questionnaire; ETIG, Expanded Texas Inventory of Grief; ICC, intraclass correlation coefficient.

Although the participants showed a significant improvement in mental health during the long-term course, many parents reported at the 23-year follow-up interview that they continued to grieve their son's death. About one third of the participants expressed sustained anger and bitterness related to the loss. Therefore, the loss of a child cannot be considered a process with a concrete endpoint, but it can be a difficult lifelong process for many parents (Malkinson and Bar-Tur, 2005). On the other hand, the elevated risk of mental health disorders appears to be highest during the first 2 years after death. This interpretation is consistent with the steep decline in psychological distress observed between the 2- and 5-year follow-ups. The significant improvement in mental health is in accordance with a large register study of hospitalization due to mental illness after the loss of a child (Li et al., 2005). The low level of mental disorders at the 23-year follow-up suggests no lasting psychopathological effect of the loss.

The tendency among mothers to report more intense grief reactions than fathers is consistent with results from previous studies that examined parental grief (Schwab, 1996). Of note, there was a strong concordance in psychological distress between spouses. This finding indicated that the sudden loss of a young adult son can influence the mental health of fathers and mothers equally and that sex differences in responses may diminish in the aftermath of extremely stressful situations (Heir and Weisæth, 2008). Our study also showed that spouses' grief reactions can be interrelated and may contribute to their psychological distress in their mourning. Subsequently, a father or mother may be affected by both the loss of their child and by the way their spouse reacts to the loss.

The small number of participants weakened the generalizability of the findings. Moreover, these findings were based on the death of a son in a military accident and are thus not applicable to the general loss of a child. Finally, face-to-face clinical diagnostic interviews were performed at three follow-ups, but a validated structured interview was only used at the last follow-up.

CONCLUSIONS

The sudden and violent loss of a child is a devastating experience for parents. Parental mental health seems most affected in the first 2 years after their son's accidental death, and spouses' grief reactions may be interrelated. Our findings may have some important clinical and theoretical implications. It is essential that mental health professionals be aware of the heightened risk of mental health problems in bereaved parents, particularly when the parents perceive that the deaths could have been prevented. Furthermore, it may take 2 to 5 years for many parents to accommodate their loss (Murphy et al., 2000). The fact that each spouse's grief may influence the other spouse highlights the importance of understanding grief in an interpersonal context (Wijngaards-de Meij et al., 2008). For therapists and counselors, the finding stresses the need to focus on the family

when performing clinical work with bereaved parents. In reference to future research, the high concordance in psychological distress between mothers and fathers suggested that data from spouses cannot be considered independent observations, which is a basic assumption in standard statistical analyses (Hox, 2002). A multilevel analysis is required to take into account the correlation between mothers and fathers. This approach has not been performed routinely in studies of parental bereavement (Wijngaards-de Meij et al., 2005).

DISCLOSURE

The authors have nothing to disclose.

REFERENCES

- Alexander A, Lavie Y (1999) "The wounded healer": Group cotherapy with bereaved parents. In: Malkinson R, Rubin SS, Witzum E (Eds), *Traumatic and nontraumatic loss and bereavement. Clinical theory and practice* (pp 231–254). Psychosocial Press.
- Dyregrov A, Mathiesen SB (1991) Parental grief following the death of an infant—a follow up over one year. *Scand J Psychol*. 32:193–207.
- Dyregrov K, Nordanger D, Dyregrov A (2003) Predictors of psychosocial distress after suicide, SIDS, and accidents. *Death Stud*. 27:143–165.
- Green BL, Grace MC, Lindy JD, Gleser GC (1990) War stressors and symptom persistence in posttraumatic stress disorder. *J Anxiety Disord*. 4:31–39.
- Goldberg DP, Hillier VF (1979) A scaled version of the General Health Questionnaire. *Psychol Med*. 9:139–145.
- Haug AN (1986) The avalanche in Vassdalen 5 March 1986: Report from the Investigative Commission designated by the Ministry of Justice. NOU, 20 [in Norwegian] Oslo, Norway.
- Heir T, Weisæth L (2008) Acute disaster exposure and mental health complaints of Norwegian tsunami survivors 6 months post disaster. *Psychiatry*. 71: 266–276.
- Hodgkinson PE, Joseph S, Yule W, Williams R (1995) Measuring grief after sudden violent death: Zeebrugge bereaved at 30 months. *Pers Individ Differ*. 18:805–808.
- Hoekstra-Weeber JEHM, Littlewood JL, Boon CMJ, Postma A, Humphrey GB (1991) A comparison of parental coping styles following the death of adolescent or preadolescent children. *Death Stud*. 15:565–575.
- Hox J (2002) *Multilevel analysis. Techniques and applications*. Mahwah, NJ: Erlbaum.
- Keesee NJ, Currier JM, Neimeyer RA (2008) Predictors of grief following the death of one's child: The contribution of finding meaning. *J Clin Psychol*. 64:1–19.
- Kristensen P, Weisæth L, Heir T (2009) Psychiatric disorders among disaster bereaved: An interview study of individuals directly or not directly exposed to the 2004 Tsunami. *Depress Anxiety*. 26:1127–1133.
- Kristensen P, Weisæth L, Heir T (2010) Predictors of complicated grief after a natural disaster: A population study 2 years after the 2004 South East Asian Tsunami. *Death Stud*. 34:134–150.
- Lehman DR, Wortman CB, Williams AF (1987) Long-term effects of losing a spouse or child in a motor vehicle crash. *J Pers Soc Psychol*. 52:218–231.

- Li J, Laursen T, Precht, D, Olsen J, Mortensen P (2005) Hospitalization for mental illness among parents after the death of a child. *N Engl J Med*. 352:1190–1196.
- Li J, Mortensen P, Olsen J (2003) Mortality in parents after death of a child in Denmark: A nationwide follow-up study. *The Lancet*. 361:363–367.
- Malkinson R, Bar-Tur L (2005) The aging of grief in Israel: A perspective of bereaved parents. *Death Stud*. 23:413–439.
- Middleton W, Raphael B, Burnett P, Martinek N (1998) A longitudinal study comparing bereavement phenomena in recently bereaved spouses, adult children and parents. *Aust N Z J Psychiatry*. 32:235–241.
- Moriarty HJ, Carroll R, Cotroneo M (1996) Differences in bereavement reactions within spouses following death of a child. *Res Nurs Health*. 19:461–469.
- Morina N, Rudari V, Bleichhardt G, Prigerson HG (2010) Prolonged grief disorder, depression, and posttraumatic stress disorder among bereaved Kosovar civilian war survivors: A preliminary investigation. *Int J Soc Psychiatry*. 56:288–297.
- Murphy SA (2008) The loss of a child: Sudden death and extended illness perspectives. In: Stroebe M, Hansson R, Schut H, Stroebe W (Eds), *Handbook of bereavement research and practice* (pp 165–186). Washington, DC: American Psychological Association.
- Murphy SA, Braun T, Tillery L, Cain KC, Johnson LC, Beaton RD (1999) PTSD among bereaved parents following the violent deaths of their 12- to 28-year-old children: A longitudinal prospective analysis. *J Trauma Stress*. 12:273–291.
- Murphy SA, Johnson LC, Lohan J (2000) The aftermath of the violent death of a child: An integration of the assessments of parents mental distress and PTSD during the first 5 years of bereavement. *J Loss Trauma*. 7:203–222.
- Murphy SA, Tapper VJ, Johnson LC, Lohan J (2003) Suicide ideation among parents bereaved by the violent deaths of their children. *Issues Ment Health Nurs*. 24:5–25.
- Pivar IL, Field NP (2004) Unresolved grief in combat veterans with PTSD. *J Anxiety Disord*. 18:745–755.
- Prigerson HG, Horowitz MJ, Jacobs SC, Parkes CM, Aslan M, Goodkin K, Raphael B, Marwit SJ, Wortman C, Neimeyer RA, Bonanno G, Block SD, Kissane D, Boelen P, Maercker A, Litz BT, Johnson JG, First MB, Maciejewski PK (2009) Prolonged grief disorder: Psychometric validation of criteria proposed for DSM-V and ICD-11. *PLoS Med*. 6:1–12.
- Prigerson HG, Maciejewski PK, Reynolds CF III, Bierhals AJ, Newsom JT, Fasiczka A, Frank E, Doman J, Miller M (1995) Inventory of Complicated Grief: A scale to measure maladaptive symptoms of loss. *Psychiatry Res*. 59:65–79.
- Rando TA (1996) Complications in mourning traumatic death. In: Doka KJ (Ed), *Living with grief after sudden loss* (pp 139–160). Washington DC: Taylor and Francis.
- Rogers CH, Floyd FJ, Seltzer MM, Greenberg J Hong J (2008) Long-term effects of the death of a child on parents adjustment in midlife. *J Fam Psychol*. 22:203–211.
- Ronen N, Lebel U (2006) When parents lay their children to rest: Between anger and forgiveness. *J Soc Pers Relation*. 23:507–522.
- Rostrup M, Gilbert M, Stalsberg H (1989) The avalanche in Vassdalen. Medical experiences [in Norwegian]. *Tidsskr Nor Lægeforen*. 109:807–813.
- Schwab R (1996) Gender differences in parental grief. *Death Stud*. 20:103–113.
- Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC (1998) The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry*. 59:22–33.
- Stroebe M, Schut H, Stroebe W (2007) Health outcomes of bereavement. *Lancet*. 370:1960–1973.
- Vance JC, Boyle FM, Najman JM, Thearle MJ (2002) Couple distress after sudden infant or perinatal death: A 30-month follow up. *J Paediatr Child Health*. 38:368–372.
- Wijngaards-de Meij L, Stroebe M, Schut H, Stroebe W, van den Bout J, van der Heijden PG, Dijkstra I (2005) Spouses at risk following the death of their child: Predictors of grief versus depression. *J Consult Clin Psychol*. 73: 617–623.
- Wijngaards-de Meij L, Stroebe M, Schut H, Stroebe W, van den Bout J, van der Heijden PG, Dijkstra I (2008) Parents grieving the loss of their child: Interdependence in coping. *Br J Clin Psychol*. 47:31–42.
- Wright KM, Burrell LM, Schroeder ED, Thomas JL (2005) Military spouses: Coping with the fear and the reality of service member injury and death. In: Castro CA, Adler AB, Britt TW (Eds), *Military life. The psychology of serving in peace and combat* (pp 64–90). Westport, CT: Praeger Security International.
- Zisook S, DeVaul RA, Click MA (1982) Measuring symptoms of grief and bereavement. *Am J Psychiatry*. 139:1590–1593.
- Zisook S, Shuchter SR (1991) Depression through the first year after the death of a spouse. *Am J Psychiatry*. 148:1346–1352.
- Zisook S, Shuchter SR (1993) Major depression associated with widowhood. *Am J Geriatr Psychiatry*. 1:316–326.

Title: Bereavement and mental health after sudden and violent losses: a review

Short title: Bereavement and mental health after sudden and violent losses

Pål Kristensen, Lars Weisæth, Trond Heir

P. KRISTENSEN, PsyD, L. WEISÆTH, MD, PhD, T. HEIR, MD, PhD.

Norwegian Centre for Violence and Traumatic Stress Studies, University of Oslo, Norway

Corresponding author: Pål Kristensen at Pal.Kristensen@nkvts.unirand.no or

Norwegian Centre for Violence and Traumatic Stress Studies, Kirkeveien 166,
building 48, 0407 Oslo, Norway.

Phone: +47 22 59 55 00 Fax: +47 22 59 55 01

Abstract

This paper reviews the literature on the psychological consequences of sudden and violent losses, including disaster and military losses. It also reviews risk and resilience factors for grief and mental health and describes the effects and possible benefit of psychosocial interventions. The review shows gaps in the literature on grief and bereavement after sudden and violent deaths. Still, some preliminary conclusions can be made. Several studies show that a sudden and violent loss of a loved one can adversely affect mental health and grief in a substantial number of the bereaved. The prevalence of mental disorders such as post-traumatic stress disorder (PTSD), major depressive disorder (MDD), and prolonged grief disorder (PGD, also termed complicated grief) varies, however, widely from study to study. Also, mental health disorders are more elevated after sudden and violent losses than losses following natural deaths, and the trajectory of recovery seems to be slower. Several factors related to the circumstances of the loss may put the bereaved at heightened risk for mental distress. These factors may be differentially related to different outcomes; some increase the risk for PTSD, others for PGD. Given the special circumstances, bereavement following sudden and violent death may require different interventions than loss from natural death. Recommendations for future research and clinical implications are discussed.

Key words: Sudden and violent death; mental health; grief; bereavement; risk and resilience; intervention; review

Introduction

Sudden and violent deaths usually include deaths from accidents, suicides, or homicides (Faberow, Gallagher-Thompson, Gilewski, & Thompson, 1992). In Western countries, such deaths account for approximately 5% of the total number of annual deaths (Norris, 1992). Sudden and violent deaths may also include disaster and war-related deaths. Those affect a great number of people every year, both adults and children, especially in poor countries. For example, in 2004 ca. 220,000 people died after a tsunami struck the coast of Southeast Asia, and approximately the same number of casualties was reported after the Haitian earthquake in 2010 (Centre for Research on the Epidemiology of Disasters, 2010). Thousands of civilians and soldiers have lost their lives during the recent wars in Afghanistan and Iraq (Papa, Neria, & Litz, 2008).

Most people adjust well with the loss of a loved one with support of family and close friends; they do not have lasting difficulties or need professional help (Bonanno, 2004; Stroebe, Schut, & Stroebe, 2007). Some deaths, however, such as the sudden and violent loss of a family member, may be followed by a particularly difficult course of bereavement (Rando, 1996). Some epidemiological studies have found that a sudden, unexpected, or violent loss of a loved one is one of the most common life events leading to post-traumatic stress disorder (PTSD) (Breslau et al., 1998; Van Ameringen, Mancini, Patterson, & Boyle, 2008). Still, the overall mental health consequences of violent losses for the next-of-kin are uncertain. Also, the need for and benefits of professional help from the public health care system are not clear.

Conceptual clarification

Concepts such as traumatic loss (Green et al., 2001), traumatic death (Rando, 1996), and traumatic bereavement (Raphael & Martinek, 2004) have all been used more or less interchangeably with sudden and violent deaths in the bereavement and trauma literature. However, some have argued that sudden and violent death should be used to denote the objective mode of death and that terms such as traumatic loss should be used to describe the subjective aspects or consequences of the loss experience (Currier, Holland, & Neimeyer, 2006).

This paper reviews the literature on the psychological consequences of sudden and violent deaths. It also reviews risk and resilience factors for grief and mental health outcomes

and describes the effects and possible benefit of psychological interventions commonly used in the aftermath of sudden and violent losses. We searched PubMed, Medline, and PsychINFO for relevant publications related to traumatic bereavement and/or sudden and violent losses.

Characteristics of sudden and violent losses

The sudden and violent loss of a loved one can be a devastating experience for the next-of-kin. Any sudden loss makes it difficult for relatives to grasp the reality that a close family member has died. Suddenness also hinders bereaved relatives from bidding a final farewell and carrying out any last services for the loved one. Furthermore, violent deaths may strike in horrifying ways, with relatives as helpless witnesses. After a sudden and violent death the body may be severely mutilated or disfigured; this can hinder viewing of the body.

Disaster and war-related losses are often characterized by unique stressors (Raphael, 1986). One common stressor is the delay until death can be confirmed. Without an official confirmation, fantasies about the missing can create anxiety and denial about what is the most likely outcome. Eventually, some bodies may not be recovered at all, leaving the bereaved family without a proper burial ceremony or site to visit. Bereaved survivors may experience threats to their own lives and other grotesque witness impressions that may have an enduring effect on their mental health (Hussain, Weisæth, & Heir, 2010). Other relatives may be far away from the disaster or war area, experiencing high levels of uncertainty and helplessness (Weisæth, 2006).

The violent nature of the loss can promote a complex interplay of grief and post-traumatic stress reactions, which can either be intertwined or fluctuating with one condition dominating the other (Raphael, 1997). PTSD symptoms, such as reliving the scene of the death, may hinder the resolution of normal grief. Re-enactment of the death or reliving the death scene can also occur without witnessing the death (Rynearson, 2001). Recently a new psychiatric diagnosis called prolonged grief disorder (PGD, also termed complicated grief) has been proposed for DSM-V and ICD-11 (Prigerson et al., 2009; Shear et al., 2011), and the current suggestion is to categorize PGD as an adjustment disorder (<http://www.dsm5.org>). PGD consists of a set of grief-specific symptoms such as yearning for the deceased, difficulties accepting the death, and difficulties moving on in life, that are distinct from both post-traumatic stress disorder (PTSD) and depression (MDD) (Boelen, van de Schoot, van den Hout, de Keijser, & van den Bout, 2010; Golden & Dalgliesh, 2010; Prigerson et al.,

1996). It is estimated that 10-15% of the bereaved population will suffer from PGD after loss due to natural causes (Prigerson, 2004). In this paper we have chosen to use the term prolonged grief disorder or PGD to denote maladaptive grief.

The mental health consequences of sudden and violent losses

Losses from homicide, suicide, or accident

A wide variety of mental health problems such as PGD, MDD, PTSD, alcohol and drug abuse/dependence, and suicidal ideation has been reported by bereaved relatives after sudden and violent losses (Amick-McCullan, Kilpatrick, & Resnick, 1991; Brent, Melham, Donohoe, & Walker, 2009; Dyregrov, Nordanger, & Dyregrov, 2003; Melham, Walker, Moritz, & Brent, 2008; Murphy, Tapper, Johnson, & Lohan, 2003; Zinsow, Rheingold, Hawkins, Saunders, & Kilpatrick, 2009). The majority of studies have focused on trauma-specific symptoms such as PTSD and depression. The prevalence of these varies considerably, but some studies have found high levels of distress several years after the death. In a follow-up of 171 parents who lost children to violent death Murphy et al. (1999) found that 21% of mothers and 14% of fathers met criteria for PTSD two years after the death. After five years, 28% of mothers and 12.5% of fathers continued to meet PTSD diagnostic criteria (Murphy, Johnson, Chung, & Beaton, 2003) which are considerably higher than women and men in the general population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Symptoms of re-experiencing related to visual or mental imagery of the deaths were frequently reported both in mothers (61%) and in fathers (55%).

Sleeping problems, ruminations of what caused the death and how it could have been prevented, and difficulties finding meaning in the loss are also commonly reported after violent losses (Currier et al., 2006; Hardison, Neimeyer, & Lichstein, 2005; Lehman, Wortman, & Williams 1987).

Symptoms of mental distress may decrease slowly after sudden and violent losses, and even a small increase has been reported during the second year of loss (Murphy et al., 1999). Several circumstances may contribute to this particular bereavement course. First, the shock and numbness frequently experienced after these losses (Lindemann, 1944) slowly wear off as the reality of the loss gradually sinks in. Second, the synergy of trauma reactions and grief may delay recovery (Armour, 2006). Third, there is often marked erosion of social support

over time, which can increase distress. Finally, the bereaved may expect to be better after the first year or so, and when they are not, that causes distress.

Deaths caused by suicide, homicide, and accident share some common features (e.g., suddenness and violence), but they also possess some unique stressors. Homicide, for example, involves media coverage and contact with the criminal justice system, which can constitute an additional burden for the next-of-kin (Gintner, 2001). There is some evidence that those bereaved by homicide exhibit higher levels of PGD and PTSD than those bereaved by accident or suicide (Currier et al., 2006; Murphy, Johnson, Wu, Fan, & Lohan, 2003). Those bereaved by suicide, on the other hand, often report higher levels of grief-specific symptoms such as rejection, shame, stigma, and blame, and they may be more inclined to conceal the cause of death (Sveen & Walbye, 2008).

Disaster losses

Loss of lives is an unfortunate, but common consequence of disasters (Norris & Wind, 2009). Losses of family members, close friends, or acquaintances often heighten the risk of mental health problems in populations struck by disaster (Fullerton, Ursano, Kao, & Bharitya, 1999; Heir & Weisæth, 2008; Norris et al., 1992). The two most commonly studied mental health disorders after disasters are PTSD and MDD (Galea et al., 2002) and the prevalence of these disorders varies from 5-68 % (PTSD) and 10-45 % (MDD) among disaster-bereaved populations (Kristensen, Weisæth, & Heir, 2009; Bonanno, Galea, Bucciarelli, & Vlahov, 2006; Kuo et al., 2003; Neria et al., 2008; Pfeffer et al., 2009). The connection between disaster losses and PTSD seems mainly to be a result of the threat to life and/or witnessing death. There is, however, also some evidence that the correlation between disaster-related bereavement and PTSD may be directly related to the loss, not only by witnessing death or viewing the corpse, but also by experiencing horrifying imagery regarding the manner of death and the degree of suffering before dying (Goenjian et al., 1994).

More recently, it is evident that disaster losses may result in a broader range of mental health problems including psychosomatic pain, functional impairment, and prolonged grief disorder (Neria et al., 2008; Maguen, Neria, Conoscenti, & Litz, 2009). PGD has been reported in 14% to 76% of bereaved populations after natural and human-caused disasters (Ghaffari-Nejad, Ahmadi-Mousavi, Gandomkar, & Reihani-Kermani, 2007; Johannesson et al., 2009; Kristensen et al., 2009; Neria et al., 2007; Shear, Jackson, Essock, Donahue, & Felton, 2006). Co-morbidity of PGD and PTSD are common after disaster losses and can have

a significant impact on adjustment (Pfefferbaum et al., 2001). Still, a substantial number of the disaster bereaved display symptoms of PGD alone. Two recent studies, one after the 2004 tsunami and one after the 9/11 terror attacks, show that 30-50% of the bereaved with PGD did not meet criteria for other kinds of psychopathology (Kristensen et al., 2009; Bonanno et al., 2007). Those who suffered from PGD alone were considerably impaired in their daily functioning.

Few longitudinal studies of disaster-bereaved populations exist. Although the level of distress commonly decreases with time, bereavement seems to have considerable long-term impact on psychological distress and appears to slow down the recovery process (Johannesson, Lundin, Frøyd, Hultman, & Michel, 2011). Green et al. (1990) found that loss of a household member predicted depression and PTSD 14 years after the Buffalo Creek dam collapse in 1972. In a follow-up study after the Piper Alpha platform disaster in 1988, where the majority reported that they had lost close friends, 21% met criteria for post-traumatic stress disorder 10 years after the disaster (Hull, Alexander, & Klein, 2002).

War or military losses

Loss and bereavement are an integral part of military experiences, but there is a dearth of studies examining the psychological consequences of loss in military settings, particularly in the next-of kin. A recent long-term follow-up study of bereaved parents after the accidental loss of sons during military service showed that 44% of the parents suffered from MDD during the first two years of their loss (Kristensen, Heir, Herlofsen, Langsrud, & Weisæth, in press). Also, one study of Israeli parents showed that approximately 30% reported prolonged grief 2.5 years after the loss of sons due to military operations or accidents (Ginzburg, Geron, & Solomon, 2002).

Bereaved civilian war survivors are also known to be at increased risk for prolonged grief and other mental health disorders (Momartin, Silove, Manicavasagar, & Stel, 2004). In a sample of bereaved who had lost first degree relatives seven years earlier due to war-related violence in Kosovo, 38% met criteria for PGD, 55% for PTSD, and 38% for MDD (Morina, Rudari, Bleichhardt, & Prigerson, 2010). Convergent with studies of the disaster bereaved, approximately half the participants had PGD without other mental health disorders. Finally, loss of comrades or friends during war or combat has also been associated with elevated risk of prolonged grief, depressive symptoms, anger, and guilt (Papa et al., 2008). In their study of Vietnam veterans, Pivar & Field (2004) found that, approximately 30 years after combat

losses, the level of prolonged grief was comparable to that of bereaved individuals whose spouse had recently died, suggesting that the loss of comrades may play a significant role in the distress suffered by combat veterans.

Sudden and violent losses vs. natural losses

A common assumption is that sudden, unexpected and violent losses are followed by a more difficult grieving process than losses from natural deaths (Parkes, 1998). This has been confirmed in several empirical studies showing a heightened risk for PGD, MDD, and PTSD after violent losses (Brent et al., 2009; Currier, Holland, Coleman, & Neimeyer, 2008; De Groot, Keijsers, & Neeleman, 2006; Hardison et al., 2005; Kaltman & Bonanno, 2003; Keesee, Currier, & Neimeyer, 2008; Lundin, 1984; Mancini, Prati, & Black, 2011; Miaybashi, & Yasuda, 2007; Schaal, Jacob, Dusingizemungu, & Elbert, 2010; Winjegaards de-Meij et al., 2005; Zisook, Chentsova-Dutton, & Shuchter, 1998). In a study measuring PGD in 1,723 college students who had experienced either sudden and violent or natural losses, Currier et al. (2006) showed that the violence of the loss, but not the suddenness, predicted the increased PGD risk. Also, it was more difficult to make sense of violent losses, and those students spent more time talking about the loss. In line with studies of PGD, the violence of the loss, but not the suddenness, has also been shown to account for the increased PTSD risk in the bereaved (Kaltman & Bonanno, 2003).

Also, prospective studies have suggested that the trajectory of grief and mental health outcomes may follow a different course after sudden and violent losses. A 2.5 year follow-up study of 199 naturally and 108 suicide-bereaved spouses found that symptoms of depression did not improve until after the first year in suicide bereavement, while those who had experienced a natural loss reported a major decline in symptoms during the first six months (Faberow et al., 1992). At the 2.5 year follow-up, however, symptoms had declined to the same level in both groups. Others studies support the notion that depressive symptoms may be more persistent after sudden and violent losses (Brent et al., 2009; Kaltman & Bonanno, 2003).

Risk factors for mental health complaints after sudden and violent losses

Identifying subgroups that may be at particular risk for mental health problems may be an effective strategy to channel professional help to those who need it (Stroebe, Folkman,

Hansson, & Schut, 2006). Risk factors can be defined as a variable that when present, increases the likelihood of poor outcome (Stroebe et al., 2006), and may be divided into personal, interpersonal, and situational factors (Stroebe & Schut, 2001). Table 1 lists studies that have examined risk factors for mental health complaints after sudden and violent losses.

Personal risk factors, such as female gender and pre-existing psychiatric difficulties have been shown to increase the probability for mental distress (Brent et al., 2009; Ghaffari-Nejad et al., 2007; Murphy, Johnson, Chung et al., 2003). Interpersonal risk factors, such as kinship and social support, may also affect outcomes (Hibberd, Elwood, & Galovski, 2010). Close kinship, and in particular loss of a child, has been found to increase the risk of PGD after suicide (Mitchell, Kim, Prigerson, & Mortimer-Stephens, 2004), natural disasters (Johannesson et al., 2009; Kristensen, Weisæth, & Heir, 2010), and mass violence (Neria et al., 2007). Low perceived social support has been associated with depression after disaster-related bereavement (Fullerton et al., 1999), and social isolation has been related to difficulties in adjustment after the sudden and violent loss of child (Dyregrov et al., 2003). Finally, situational risk factors or factors related to the circumstances of the loss are likely to affect the course of bereavement. The significance of several of these factors is discussed in more detail below.

Blaming others or being blamed for the death

The perception of responsibility or blame for the death is often considered important for the adjustment to loss (Rando, 1996). Mental distress is assumed to be more elevated after losses caused by human-caused disasters, either technological accidents or mass violence (Norris et al., 2002). While natural disasters are perceived as unavoidable, human-caused disasters strike more suddenly, without forewarning, and there is often someone to blame, which may influence the psychological reactions of the bereaved (Weisæth, 2006). A study of parents who lost sons in an avalanche during a military operation showed that those who perceived the death as preventable displayed excessive anger and bitterness related to the loss (Kristensen et al., in press). Blaming others for the death of a loved one can increase the duration and severity of depression and PGD (Brent et al., 2009; Melham et al., 2007) while feeling blamed for the death has also been associated with higher PGD scores (Melham et al., 2007).

Magnitude of losses

Large-scale accidents and disasters involving multiple deaths often receive more attention from the media, authorities, and the public health care system than “ordinary” deaths. The publicity may lead to increased sympathy and support, but can also be followed by an involuntarily “disaster identity” (Raphael, 1986). Research comparing the psychological effect of disaster losses and single, violent losses is scarce, but Rubonis & Bickman (1991) shed some light on this research question when they found that the number of human casualties in a disaster was associated with higher estimates of morbidity. They assumed that a higher death rate could be an indication that more survivors experienced a threat to their own lives, and that this could explain the higher rates of psychopathology.

Self-blame and guilt

Experiencing guilt or self-blame is a common reaction after sudden and violent losses (Lehman et al., 1987). Bereaved disaster survivors may experience the feeling of not having done enough to save those who died, or of guilt related to their own survival (Weisæth, 1989). Hull, Alexander, & Klein (2002) found, for example, that 70% of survivors reported acute guilt after the Piper Alpha platform disaster in 1988 and that more than one third had survivor guilt 10 years after the disaster. Guilt, or the feeling that they might have done something to prevent the death, has been shown to correlate with PTSD, depression, and PGD among disaster bereaved (Kuo et al., 2003) and in adolescents bereaved by suicide (Melham et al., 2004).

Life threat

Experiencing a threat to one’s own life and the loss of a loved one often co-occur among the disaster bereaved as well as civilians exposed to warfare (Kristensen et al., 2009; Mollica et al., 1999). The association between life threat and mental distress is a key feature of psychotraumatology, particularly when considering the PTSD diagnosis (Neria, Nandi, & Galea, 2008). A recent study of Norwegians who lost a close relative during the 2004 tsunami showed that those who were directly exposed to the tsunami disaster and had experienced severe threat to their own life had a much higher prevalence of PTSD compared to those who were not directly exposed to the disaster, 34% vs. 5% (Kristensen et al., 2009).

On the other hand, experiencing a life threat has not been shown to increase the risk of PGD in the bereaved (Kristensen et al., 2010; Morina et al., 2009); this underlines the distinction between PTSD and PGD.

Witnessing the death or finding the deceased

Approximately 5% of violent deaths are witnessed by their loved ones (Rynearson, 2010). In DSM-IV witnessing death is one of the event criteria specified in the PTSD diagnosis (American Psychiatric Association, 1994) and witnessing death has consistently been linked to PTSD after violent losses (Brent et al., 1992; Hull et al., 2002; Melham et al., 2008). But finding the deceased or being at the scene of the death, for example seeing the victim or the remainder (e.g., blood on the wall after a suicide by firearms) has also been associated with PTSD symptoms (Brent et al., 1992; Melham et al., 2004). However, these factors have not been found to increase the risk of PGD, which again underlines the distinction between PTSD and PGD (Melham et al., 2007).

Waiting for confirmation of death/confirmed dead vs. presumed dead

Waiting for confirmation of death is particularly stressful for the next-of-kin, and can delay or prolong the grieving process (Kristensen et al., 2010). Another consequence of violent losses, particularly during war, acts of terrorism, and natural disasters, are that bodies are not recovered. Clinical reports have noted that not recovering the body can lead to unresolved grief and feelings of helplessness, depression, somatisation, and relationship conflicts (Boss, 2002). Empirical studies are, however, scarce. A recent study of women whose husbands were either confirmed dead (n=56) or were listed as missing (n=56) after the war in Bosnia and Herzegovina showed that the group with unconfirmed losses had higher levels of traumatic grief (measured with the UCLA Grief Inventory) and severe depression (measured with General Health Questionnaire) even when current stressors were accounted for (Powell, Butollo, & Hagl, 2010).

Multiple losses

Losing several family members simultaneously is common, especially in disasters. Multiple losses may deprive the bereaved of their natural support system and can leave relatives feeling

overwhelmed or stuck in their grief, a phenomenon commonly referred to as bereavement overload (Neimeyer & Holland, 2004). The number of losses of household family members has been shown to predict emotional distress and depression among those bereaved by disasters (Souza et al., 2007; Montezari et al., 2005). However, in a study of orphans and widows bereaved by the 1994 Rwandan genocide, the number of reported losses did not increase the risk of PGD; the authors suggest that the attachment to the deceased may be more important than the total number of losses (Schaal, Jacob, Dusingizemungu, & Elbert, 2010).

Resilience and protective factors

Developmental researchers have for many years documented resilience among children growing up under adverse socioeconomic conditions (e.g., Rutter, 1987). More recently there has been increased interest in resilience both after disasters and loss (e.g., Bonanno, 2004). Resilience to loss is defined as bereaved persons showing a stable pattern of low distress over time and has been distinguished from maladaptive grief or the more traditional trajectory of recovery (Bonanno, 2004). The percentage of individuals showing a resilient trajectory after natural, expected deaths is substantial (Bonanno et al., 2002). The available data on resilience after sudden and violent losses is limited. Still, one study indicates that while the level of resilience is clearly reduced compared to losses following natural deaths, it may still be quite significant. Bonanno et al. (2006) showed that approximately 30% of those who both lost a loved one and witnessed the 9/11 attacks on the World Trade Center were considered resilient, that is, defined as having either no PTSD symptoms or only one symptom, during the six months following the attacks. Approximately the same pattern emerged even when the researchers narrowed the definition of resilience to also include absence of depression.

Protective factors can be defined as variables that when present, increases the likelihood of good outcome (Stroebe et al., 2006). Murphy et al., (1999) found that self-esteem and self-efficacy predicted lower mental distress in bereaved parents after the violent loss of their young adolescent child. Similar results were found in a study of those bereaved by disaster (Murphy, 1984). Also, finding meaning in the loss, for example through religion/spiritual beliefs has been related to lower mental distress and grief after violent losses (Murphy, Johnson, & Lohan, 2003 ; Schaal et al., 2010). The role of social support has shown non-conclusive results in the general bereavement literature (e.g., Stroebe, Stroebe, Abakoumkin, & Schut, 1996). Still, some studies suggest that social support may exert a

protective effect on mental health adversities after sudden and violent losses (Sprang & McNeil, 1998; Reed, 1993).

Psychosocial interventions after sudden and violent losses

Early interventions

In the acute phase, a primary aim is to help bereaved families grasp the reality of their loss and to facilitate acceptance (Weisæth, 2006). There has been a general tendency among both laypersons and professionals to protect bereaved families and individuals after violent deaths, for example by painting a more comforting picture of the death (“died during sleep” or “most likely no pain”). An alternative strategy is called confrontational support, when bereaved families are confronted with the brutal reality of death in a caring and supportive manner (Winje & Ulvik, 1995). This strategy can be implemented during various phases after sudden and violent losses, such as when the message of death is conveyed, along with information on the circumstances and cause of death, when the family may visit the site of death, and when the family is invited to view the deceased.

An example of confrontational support is the program conducted after 16 soldiers died in an avalanche in northern Norway in 1986. As part of the collective follow-up after the disaster, the bereaved parents attended a memorial service, viewed their dead sons, saw the disaster area where their sons had died, and met with their sons’ military leaders, survivors, and comrades in order to receive first-hand information. Although the deaths had a profound effect on the parents and they partly blamed military leaders for their sons’ deaths, still, they valued this support, and did not regret participating (Kristensen & Franco, 2011).

Several non-psychotherapeutic interventions or rituals conducted in the early phases may be important for longer-term adjustment. The notification of death can potentially influence mental health and grief, but few studies have empirically examined this (Stewart, 1999). One study of close relatives bereaved by homicide found that being satisfied with the notification was related to less mental distress (Thompson, Norris, and Ruback, 1998). Another common ritual or intervention, the viewing of the body, is considered important in confronting the reality of the loss and bidding a final farewell (Paul, 2002; Worden, 2009). There may be uncertainty among professionals as to whether bereaved relatives should view the body in the aftermath of a sudden and violent death. However, given the choice, few seem to regret viewing the deceased (Chapple & Ziebland, 2010), and the decision not to view is

more often regretted (Sing & Raphael, 1981; Winje & Ulvik, 1995). In some cases, viewing the body may increase anxiety and distress in the short term, but lessen distress in long term (Hodgkinson, Joseph, Yule, & Williams, 1993).

One frequently reported complaint of the next-of-kin is missing information and unanswered questions related to the loss (Merlevede et al., 2004). Obtaining information and facts about what happened, for example, the cause of death, can be important in bereaved relatives' effort to try to make sense of the death, but has not been shown to promote better adjustment (Winje, 1998). This may be part of a normal adjustment phase. However, the persistent need for information after factual information has been provided—ruminations revolving around the deceased's feelings just before death, or the deceased's suffering, etc.—has been associated with poorer adjustment in the long term (Lehman et al., 1987; Winje, 1998).

As for other dramatic life events, rituals often have significant meaning after sudden and violent deaths. One such ritual is visiting the site where death occurred, which is frequently observed after traffic accidents (Clark & Franzman, 2006). Recent research has showed that visiting the site of death may also be important for bereaved families after disasters. For example, 87% of bereaved Norwegians had visited the site of death after the 2004 tsunami disaster (Kristensen, Tønnessen, Weisæth, & Heir, in press). The visitors reported that the primary effect was a better understanding of what had happened to their loved ones. The feeling of closeness to the deceased and the experience of togetherness with family and other bereaved families were also considered important. Visiting the site of death was associated with greater acceptance of the loss and a lower level of avoidance behavior (Kristensen et al., in press). The memorial service is another ritual that may facilitate a confirmation of the reality of the death and release feelings of grief after disasters and large-scale accidents (Danbolt & Stifoss-Hansen, 2007).

There is no empirical evidence for the effect of providing psychological interventions for the bereaved as a routine (Stroebe et al., 2006). Early interventions after trauma and loss, such as Critical Incident Stress Debriefing (CISD), have been the subject of much controversy due to a lack of documented benefit or even speculation of harm (McNally, Bryant, & Ehlers, 2003). Some even stress that debriefing is contra-indicated for those who are recently and traumatically bereaved (Raphael & Wooding, 2004). When grief counselling is directed towards members of high-risk groups, such as people who have experienced sudden and violent losses, only modest effects have been found (Currier, Neimeyer, & Berman, 2008).

Also, a recent meta-analysis showed that interventions aimed to prevent PGD do not appear to be effective (Wittouck, Van Autreve, De Jaegere, Portzky, & Van Heeringen, 2011).

Longer-term interventions

Overall, grief counselling or therapy seems to be most effective when the bereaved show clear symptoms of PGD or other mental health problems secondary to loss (Currier, et al., 2008). A recent meta-analysis confirmed that treatment interventions effectively reduce symptoms of prolonged grief disorder (Wittouck, et al., 2011). Both cognitive-behavioral interventions (Boelen, de Keijser, van den Hout, & van den Bout, 2008) and more grief-specific treatment models of PGD, which have included elements from the Dual Process Model of coping with bereavement (Stroebe & Schut, 1999) and exposure techniques (Shear, 2006), have shown promising results for those bereaved after violent and natural deaths (Shear, Franck, Houck, & Reynolds, 2005).

The effect or benefit of longer-term interventions after sudden and violent losses has been described in several studies, for example, in trauma- and grief-focused groups of adolescents after community violence (Salloum, Avery, & McClain, 2001) and war (Layne et al., 2008), collective family-based interventions after technological and natural disasters (Dyregrov, Straume, & Sari, 2009), and group intervention for bereaved parents (Murphy et al., 2002) and for homicide survivors (Rynearson, Favell, & Saindon, 2002). These studies have not always examined outcomes systematically, and the results are mixed: some studies show reduction in mental distress while others do not. For example, in a study of bereaved parents who had lost their young adolescent child in accidents, homicide, or suicide, Murphy et al., (2002) found that mothers who were more distressed at baseline benefited most from a 10-week group intervention. Fathers, on the other hand, showed no effect from the treatment.

Conclusion

Sudden and violent deaths affect thousands of people worldwide every year, and these deaths are often followed by a difficult bereavement course. This review has revealed several gaps in the literature on grief and bereavement after sudden and violent losses, but some preliminary conclusions can still be made. While the majority of bereaved persons eventually will adjust even to such difficult losses, a significant number of bereaved persons will suffer from mental distress in the aftermath of their loss, and the trajectory of recovery seems to be slower after

violent losses than after losses from natural deaths. The prevalence of mental disorders varies, however, widely from study to study. The high variability in studies of mental disorders, for example among the disaster bereaved may result from examining different samples, the level of exposure to the disaster, the kinship or relationship to the deceased, and the time since death. The reliance on convenience samples commonly used in many disaster studies may, for example lead to greater estimates of pathology compared to community or population-based samples (Bonanno, Brewin, LaGreca, & Kaniasty, 2010). The majority of studies have focused on trauma-specific symptoms such as PTSD and depression, but more recently some studies have included measures of maladaptive grief or PGD. Studies of other outcomes are scarce.

The study of risk factors; personal, interpersonal, and situational, are important because they can reveal who are more vulnerable for suffering from mental health complaints after violent losses. Several situational risk factors such as witnessing death or finding the deceased, life threats, blaming others for the death, or being blamed etc., are all likely to influence how bereaved persons and families adapt to their loss. While PGD, PTSD, and PGD share some risk factors, these factors may also be differentially related to different outcomes; some are more associated with PTSD, others with PGD, underlining a distinction between these two disorders. This finding emphasises the need for measuring different outcomes when conducting research after sudden and violent losses (Van der Houwen, et al., 2010). However, little is known about the relative impact of different risk factors and of the potential interaction or additive effects of these factors (Stroebe et al., 2006). For example, it is reasonable to assume that the type of loss (e.g., loss of a child) and the degree of exposure to the death (e.g., witnessing the death) may interact and influence outcome. Analysis of risk factors alone may not be enough to understand why some people struggle and others cope well with their loss. A few studies suggest that resilience may be more common among persons who have experienced violent losses than what has been expected. Little is currently known about factors that may promote resilient outcomes, but multiple pathways to resilience after loss are possible often involving a complex interplay of risk and resilience factors (Bonanno, Westphal, & Mancini, 2011). It is also important to bear in mind that risk and resilience factors sometimes may be the same depending on other circumstances such as past history. Some research suggests, for example, that only prior stressors that resulted in PTSD tend to predict PTSD at subsequent exposure to trauma (Breslau, Peterson, & Schultz, 2008). Whether resilience to prior stressors such as loss also may predict resilience to subsequent loss is unknown. While several studies have indicated that previous losses can be a risk factor

for mental distress after new losses (e.g., Silverman, Johnson, & Prigerson, 2001), other studies suggest that previous losses may also operate as a buffer (Kristensen et al., 2010). Several mechanisms can account for the latter outcome. Prior experience of loss can, for example have a maturing or learning effect on some bereaved individuals enhancing their ability to cope with distressing emotions.

As this review shows, the special circumstances of sudden and violent losses may require different interventions than deaths following natural losses. Some interventions or rituals, such as viewing the deceased, information about the death, visiting the site of death etc. may be particularly important in the early phases after violent losses in order to help bereaved families and individuals grasp the reality of their loss and to facilitate acceptance. The term confrontational support may be a useful categorization of these interventions when bereaved families are confronted with the brutal reality of death in a caring and supportive manner (Winje & Ulvik, 1995). Other interventions, such as grief and trauma therapy, may be indicated if the grieving process is not progressing naturally. While different interventions following sudden and violent losses have been noted, few have measured the effect of them. Both ethical and practical issues may account for this. For example, the chaos and uncertainty that is characteristic of disasters makes it more difficult to test the effectiveness of early interventions for example by randomised controlled trials (Raphael & Maguire, 2009).

Recommendations for future research

This review reveals several limitations that should be the focus of future research. While research on violent losses generally is evolving, there are strikingly few studies examining the mental health consequences of military or war-related losses. There is also a need to explore more in detail how families are affected by sudden and violent losses. Research has so far mainly focused on individual reactions to loss and trauma. Some recent studies have demonstrated that sudden and violent losses can have a significant impact both at the individual and at the family level, with the possibility for mutual influence on the intensity and course of grief (Nickerson et al., 2010; Kristensen et al., in press). The use of multilevel analysis may be an appropriate method for approaching these issues.

Methodologically, the majority of studies after sudden and violent losses have used self-report questionnaires and only a few have used structured clinical interviews, which limit the possibility to make more precise estimations of prevalence of mental disorders. Future studies should also incorporate grief measures. Studies examining PGD are important due to

the recent findings documenting the unique contribution that PGD can have to failure to adapt to the loss (Bonanno et al., 2007). The lack of longitudinal follow-up studies limits our understanding of the trajectory of grief and the potential long-term mental health effects of violent losses. Also, while some studies have begun to explore mediating factors between violent losses and prolonged grief or PTSD (e.g., Currier et al., 2006; Mancini et al., 2011) the psychological mechanism underlying the impact of violent losses are poorly understood and should be explored further. Furthermore, there is a need for resilience studies examining factors that can protect the bereaved from a maladaptive bereavement process after violent losses.

Finally, there is a need for more studies of interventions or rituals that may affect adjustment to sudden and violent losses, including bereaved persons experiences with death notification, information related to the death, visits to the site of death, etc. Also, the effect of grief and trauma therapy, either individually and/or collectively, needs to be further examined. Questions such as the type and timing of intervention should be addressed.

Recommendations for clinicians

Most people will adjust well in time after the loss of a loved one with support from family and close friends. Still, it is important for clinicians to know that grief may follow a different course after sudden and violent losses compared to losses from natural deaths. The nature and circumstances of these deaths makes it more difficult for the bereaved to grasp the reality of the loss, and grief reactions may intensify when the shock, disbelief and denial gradually wear off. Especially when persons are missing and death is not confirmed a different time frame of grief can be expected.

Clinicians should be aware of the increased risk of mental health disorders and impaired functioning often found after sudden and violent losses. The Regular General Practitioners (RGP's) may be assigned a particular responsibility for screening bereaved persons for mental health difficulties. While grief traditionally has been associated with depression (Zisook & Shear, 2009), recent research has shown that there may be more to grief than MDD. PTSD is mainly associated with direct exposure to the death, but symptoms such as re-enactment of the death or reliving the death scene can occur without witnessing the death (Rynearson, 2001). The heightened risk for PGD found among the violently bereaved suggests that clinicians should be familiar with the core symptoms and how to screen for or diagnose the disorder. While PGD is still not formally accepted as a new diagnostic entity,

clinicians should be able to distinguish PGD both from normal, acute grief and from MDD and PTSD (Shear & Mulhare, 2008). Screening for other anxiety disorders, alcohol and substance abuse and suicidal ideation may also be indicated. Also, although more research is needed to ensure that evidence-based treatments are available, clinicians would benefit from being familiar both with early and longer term interventions that may be helpful for bereaved persons who struggle with coping with their loss. Both trauma and grief- focused interventions may be needed.

References

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th edn) (DSM-IV). Washington, DC: APA.
- Amick-McMullen, A., Kilpatrick, D. G., & Resnick, H. S. (1991). Homicide as a risk factor for PTSD among surviving family members. *Behavior Modification*, *15*, 545-559.
- Armour, M. P. (2006). Violent death: Understanding the context of traumatic and stigmatized grief. *Journal of Human Behavior in the Social Environment*, *14*, 53-90.
- Boelen, P. A., de Keijser, J., van den Hout, M. A., & van den Bout, J. (2007). Treatment of complicated grief: A comparison of cognitive-behavioral and supportive counselling. *Journal of Consulting and Clinical Psychology*, *75*, 277-284.
- Boelen, P. A., van de Schoot, R., van den Hout, M. A., de Keijser, J., & van den Bout, J. (2010). Prolonged grief disorder, depression and posttraumatic stress disorder are distinguishable syndromes. *Journal of Affective Disorders*, *125*, 374-378.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, *59*, 20-28.
- Bonanno, G. A., Brewin, C., R., Kaniasty, K., & La Greca, A. M. (2010). Weighing the costs of disaster: Consequences, risks and resilience in individuals, families, and communities. *Psychological Science in the Public Interest*, *11*, 1-49.
- Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2006). Psychological resilience after disaster: New York City in the aftermath of the September 11th terrorist attack. *Psychological Science*, *17*, 181-186.
- Bonanno, G. A., Neria, Y., Mancini, A., Coifman, K. G., Litz, B., & Insel, B. (2007). Is there more to complicated grief than depression and posttraumatic stress disorder? A test of incremental validity. *Journal of Abnormal Psychology*, *116*, 342-351
- Bonanno, G. A., Westphal, M., & Mancini, A. D. (2011). Resilience to loss and potential trauma. *Annual Review of Clinical Psychology*, *7*, 511-535.
- Bonanno, G. A., Wortman, C. B., Lehman, D. R., Tweed, R. G., Haring, M., Sonnega, J. et al. (2002). Resilience to loss and chronic grief: a prospective study from pre-loss to 18-months postloss. *Journal of Personality and Social Psychology*, *83*, 1150-1164.
- Boss, P. (2002). Ambiguous loss in families of the missing. *The Lancet*, *360* Suppl, 39-40.
- Brent, D., Melham, N., Donohoe, M. B., & Walker, M. (2009). The incidence and course of depression in bereaved youths 21 months after the loss of a parent to suicide,

- accident or sudden, natural death. *American Journal of Psychiatry*, 166, 786-794.
- Brent, D., Perper, J., Mowitz, G., Allman, C., Friend, A., Schweers, J. et al. (1992). Psychiatric effects of exposure to suicide among the friends and acquaintances of adolescent suicide victims. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 629-39.
- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 Detroit Area Survey of Trauma. *Archives of General Psychiatry*, 55, 626-632.
- Breslau, N. Peterson, E. L., & Schultz, L. R. (2008). A second look at prior trauma and the posttraumatic stress disorder effects of subsequent trauma: a prospective epidemiological study. *Archives of General Psychiatry*, 65, 431-437.
- Chapple, A. & Ziebland, S. (2010). Viewing the body after bereavement due to a traumatic death: qualitative study in the UK. *British Medical Journal*, 340:c2032
- Centre for Research on the Epidemiology of Disasters. (2008). Retrieved October 28, 2010, from <http://www.emdat.be/Database/DisasterList/list.php>.
- Clark, J. & Franzmann, M. (2006). Authority from grief, presence and place in the making of roadside memorials. *Death Studies*, 30, 579-599.
- Currier, J. M., Holland, J. M., Coleman, R. A., & Neimeyer, R. A. (2008). Bereavement following violent death: An assault on life and meaning. In R. Stevenson & G. Cox (Eds.), *Perspectives on Violence and Violent Death* (pp. 177-202). Amityville, NY: Baywood.
- Currier, J. M., Holland, J. M., & Neimeyer, R. A. (2006). Sense-making, grief and the experience of violent loss: toward a mediational model. *Death Studies*, 30, 403-428.
- Currier, J. M., Neimeyer, R. A., & Berman, J. S. (2008). The effectiveness of psychotherapeutic interventions for bereaved persons: a quantitative review. *Psychological Bulletin*, 134, 648-661.
- Danbolt, L. J. & Stifoss-Hanssen, H. (2007). Minnegudstjenester etter større ulykker (in Norwegian). *Tidsskrift for Norsk Lægeforening*, 127, 157-160.
- DeGroot, M. H., Keijser, J., & Neeleman, J. (2006). Grief shortly after suicide and natural death: a comparative study among spouses and first-degree relatives. *Suicide and Life-Threatening Behaviour*, 36, 418-431.
- Dyregrov, K., Nordanger, D., & Dyregrov, A. (2003). Predictors of psychosocial distress after suicide, SIDS, and accidents. *Death Studies*, 27, 143-165.
- Dyregrov, A., Straume, M., & Sari, S. (2009). Long-term collective assistance for the

- bereaved following a disaster: A Scandinavian approach. *Counselling and Psychotherapy Research*, 9, 33-41.
- Faberow, N. L., Gallagher-Thompson, D. Gilewski, M., & Thompson, L. (1992). Changes in grief and mental health of bereaved spouses of older suicides. *Journal of Gerontology*, 47, 357-366.
- Fullerton, C. S., Ursano, R. J., Kao, T. C., & Bharitya, V. R. (1999). Disaster-related bereavement: acute symptoms and subsequent depression. *Aviation, Space and Environmental Medicine*, 70, 902-909.
- Galea, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucuvalas, M., Gold, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England Journal of Medicine*, 346, 982-987.
- Ghaffari-Nejad, A., Ahmadi-Mousavi, M., Gandomkar, M., & Reihani-Kermani, H. (2007). The prevalence of complicated grief among Bam earthquake survivors in Iran. *Archives of Iranian Medicine*, 10, 525-528.
- Gintner, G. G. (2001). Sudden and violent loss: Clinical guidelines for the screening and treatment of survivors. In D. Sandhu (ed.). *Faces of violence: psychological correlates, concepts and intervention strategies* (pp. 355-76). New York: Nova Science Publishers.
- Ginzburg, K. Geron, Y, & Solomon, Z. (2002). Patterns of complicated grief among bereaved parents. *Omega: The Journal of Death and Dying*, 45, 119-132.
- Goenjian, A. K., Najarian, L. M., Pynoos, R. S., Steinberg, A. M., Manoukian, G, Tavosian, A. et al. (1994). Posttraumatic stress disorder in the elderly and younger adults after the 1988 earthquake in Armenia. *American Journal of Psychiatry*, 151, 895-901.
- Golden, A. M. & Dalgleish, T. (2010). Is prolonged grief distinct from bereavement-related posttraumatic stress? *Psychiatric Research*, 30, 336-341.
- Green, B. L., Grace, M. C., Lindy, J. D., Tichtener, J. L., & Lindy, J. G. (1983). Levels of functional impairment following a civilian disaster: The Beverly Hills Supper Club Fire. *Journal of Consulting and Clinical Psychology*, 5, 573-80.
- Green, B. L., Krupnick, J. L., Stockton, P., Goodman, L., Corcoran, C., & Petty, C. (2001). Psychological outcomes associated with traumatic loss in a sample of young women. *American Behavioral Scientist*, 44, 817-837.
- Green, B. L, Lindy, J. D., Grace, M. C., Gleser, G. C., Leonard, A. C., Korol, M. et al. (1990). Buffalo Creek survivors in the second decade: Stability of stress symptoms. *American Journal of Orthopsychiatry*, 60, 43-53.

- Hardison, H. G., Neimeyer, R. A., & Lichstein, K. L. (2005). Insomnia and complicated grief symptoms in bereaved college students. *Behavioral and Sleep Medicine*, 3, 99-111.
- Heir, T. & Weisæth, L. (2008). Acute disaster exposure and mental health complaints of Norwegian Tsunami survivors six months post disaster. *Psychiatry*, 71, 266-276.
- Hibbard, R., Elwood, L. S., & Galovski, T. E. (2010). Risk and protective factors for posttraumatic stress disorder, prolonged grief, and depression in survivors of the violent death of a loved one. *Journal of Loss and Trauma*, 15, 426-447.
- Hodgkinson, P. E., Joseph, S., Yule, W., & Williams, R. (1993). Viewing human remains following disaster: helpful or harmful? *Medicine, Science and Law*, 33, 197-202.
- Hull, A., Alexander DA, & Klein S. (2002). Survivors of the Piper Alpha platform disaster: a long term follow-up study. *British Journal of Psychiatry*, 181, 433-438.
- Hussain, A., Weisæth, L., & Heir, T. (2010). Psychiatric disorders and functional impairment among disaster victims after exposure to a natural disaster – a population based study. *Journal of Affective Disorders*, 128, 135-141.
- Johannesson, K. B., Lundin, T., Fröyd, T., Hultman, C. M., P, & Michel, P-O. (2011). Tsunami-exposed tourist survivors. Signs of recovery in a 3-year perspective. *Journal of Nervous and Mental Disease*, 199, 162-169.
- Johannesson, K. B., Lundin, T., Hultman, C. M., Lindam, A., Dyster-Aas, J., Arneberg, P. et al. (2009). The effect of traumatic bereavement on Tsunami-exposed survivors. *Journal of Traumatic Stress*, 22, 497-504.
- Kaltman, S. & Bonanno, G. A. (2003). Trauma and bereavement: examining the impact of sudden and violent deaths. *Journal of Anxiety Disorders*, 17, 131-47.
- Keesee, N. J., Currier J. M., & Neimeyer R. A. (2008). Predictors of grief following the death of one's child: the contribution of finding meaning. *Journal of Clinical Psychology*, 64, 1-19.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey Study. *Archives of General Psychiatry*, 52, 1048-1060.
- Kristensen, P. & Franco, M. H. P. (2011). Bereavement and disasters: Research and clinical intervention. In R. A. Neimeyer, D. L. Harris, H. Winokuer, G. F. Thornton (eds.). *Grief and bereavement in contemporary society: Bridging research and practice*. New York: Routledge.
- Kristensen, P., Heir, T., Herlofsen, P. H., Langsrud, Ø., & Weisæth, L. (in press). Parental mental health after the accidental death of a son during military service: 23-year

- follow-up study. *The Journal of Nervous and Mental Disease*.
- Kristensen, P., Tønnessen, A., Weisæth, L., & Heir, T. (in press). Visiting the site of death: Experiences of the bereaved after the 2004 South-east Asian tsunami. *Death Studies*.
- Kristensen, P., Weisæth, L., & Heir, T. (2009). Psychiatric disorders among disaster bereaved: An interview study of individuals directly or not directly exposed to the 2004 Tsunami. *Depression and Anxiety*, 26, 1127-33.
- Kristensen, P., Weisæth, L., & Heir, T. (2010). Predictors of complicated grief after a natural disaster: A population study 2 years after the 2004 South-east Asian Tsunami. *Death Studies*, 37, 134-150.
- Kuo, C. J., Tang, H. S., Tsay, C. J., Lin, S. K., Hu, W. H., Chen, C. C. (2003). Prevalence of psychiatric disorders among bereaved survivors of a disastrous earthquake in Taiwan. *Psychiatric Services*, 54, 249-251
- Layne, C. M., Saltzman, W. R., Poppleton, L., Burlingame, G. M., Pasalić, A., Duraković, E. et al. (2008). Effectiveness of a school based group psychotherapy program for war-exposed adolescents: a randomized controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 47, 1048-1062.
- Lehman, D. R., Wortman, C. B., & Williams, A. F. (1987). Long-term effects of losing a spouse or child in a motor vehicle crash. *Journal of Personality and Social Psychology*, 52, 218-231.
- Lindemann, E. (1944). Symptomatology and management of acute grief. *American Journal of Psychiatry*, 101, 141-148.
- Lundin, T. (1984). Morbidity following sudden and unexpected bereavement. *British Journal of Psychiatry*, 144, 84-88.
- Maguen, S., Neria, Y., Conoscenti, L. M., Litz, B. T. (2009). Depression and prolonged grief in the wake of disasters. In Y. Neria, S. Galea, & F. H. Norris (eds.). *Mental health and disasters* (pp. 116-130). Cambridge: University Press.
- Mancini, A. D., Prati, G., & Black, S. (2011). Self-worth mediates the effects of violent loss on PTSD symptoms. *Journal of Traumatic Stress*, 24, 116-20.
- McNally, R. J., Bryant, R. A., & Ehlers, A. (2003). Does early psychological intervention promote recovery from posttraumatic stress? *Psychological Science in the Public Interest*, 4, 45-79.
- Melham, N. M., Day, N., Shear, M. K., Day, R., Reynolds, C. F., & Brent, D. (2004).

- Predictors of complicated grief among adolescents exposed to a peer's suicide. *Journal of Loss and Trauma*, 9, 21-34.
- Melham, N. M., Moritz, G., Walker, M., Shear, M. K., & Brent, D. (2007). Phenomenology and correlates of complicated grief in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 493-499.
- Melham, N. M., Walker, M., Moritz, G., & Brent, D. (2008). Antecedents and sequelae of sudden parental death in offspring and surviving caregiver. *Archives of Pediatric and Adolescent Medicine*, 162, 403-410.
- Merlevede, E., Spooen, D., Henderick, H., Portzky, G., Buylaert, W., Jannes, C. et al. (2004). Perceptions, needs and mourning reactions of bereaved relatives confronted with a sudden unexpected death. *Resuscitation*, 61, 341-348.
- Miaybashi, S. & Yasuda, J. (2007). Effects of loss from suicide, accidents, acute illness and chronic illness on bereaved spouses and parents in Japan: Their general health, depressive mood, and grief reaction. *Psychiatry and Clinical Neuroscience*, 61, 502-508.
- Mitchell, A. M., Kim, Y., Prigerson, H. G., & Mortimer-Stephens, M. (2004). Complicated grief in survivors of suicide. *Crisis*, 25, 12-18.
- Mollica, R. F., McInnes, K., Sarajlic, N., Lavelle, J., Sarajlic, I., & Massagli, M. (1999). Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. *JAMA*, 282; 433-439.
- Momartin, S., Silove, D., Manicavasagar, V., & Stel, Z. (2004). Complicated grief in Bosnian refugees: association with posttraumatic stress disorder and depression. *Comprehensive Psychiatry*, 45, 475-482.
- Montazari, A., Baradaran, H., Omidvari, S., Azin, S., Ebadi, M., Garmaroudi, G. et al. (2005). Psychological distress among Bam earthquake survivors in Iran: a population-based study. *BMC Public Health*, 5, 4.
- Morina, N., Rudari, V., Bleichhardt, G., & Prigerson, H. G. (2010) Prolonged grief disorder, depression, and posttraumatic stress disorder among bereaved Kosovar civilian war survivors: A preliminary investigation. *International Journal of Social Psychiatry*, 56, 288-297.
- Murphy, S. A. (1984). Stress levels and health status of victims of natural disaster. *Research in Nursing and Health*, 7, 205-215.
- Murphy, S. A., Braun, T., Tillery, L., Cain, K. C., Johnson, L. C., & Beaton, R. D. (1999). PTSD among bereaved parents following the violent deaths of their 12 to 28 year-old

- children: A longitudinal prospective analysis. *Journal of Traumatic Stress, 12*, 273-291.
- Murphy, S. A., Das Gupta, A. D, Cain, K. C., Johnson, L. C., Lohan, J., Wu., L. et al. (1999). Changes in mental distress after the violent death of an adolescent or young child: A longitudinal prospective analysis. *Death Studies, 23*, 129-159.
- Murphy, S. A., Johnson, C., Cain, K. C., Das Gupta, A., Dimond, M., Lohan, J. et al. (2002). Broad-spectrum group treatment for parents bereaved by the violent death of their 12-28 year old children: a randomized controlled trial. *Death Studies, 22*, 209-235.
- Murphy, S. A., Johnson, L. C., Chung, I. J., & Beaton, R. D. (2003). The prevalence of PTSD following the violent death of a child and predictors of change over time. *Journal of Traumatic Stress, 16*, 17-26.
- Murphy, S. A., Johnson, C., & Lohan, J. (2003). Finding meaning in a child's violent death: A five year prospective analysis of parents' personal narratives and empirical data. *Death Studies, 27*, 381-404.
- Murphy, S. A., Johnson, L. C., Wu, L., Fan, J. J., & Lohan, J. (2003). Bereaved parents' outcomes 4 to 60 months after their children's deaths by accident, suicide, or homicide: a comparative study demonstrating differences. *Death Studies, 27*, 39-61.
- Murphy, S. A., Tapper, V. J., Johnson, L. C., & Lohan, J. (2003) Suicide ideation among parents bereaved by the violent deaths of their children. *Issues of Mental Health Nursing, 24*, 5-25.
- Neimeyer, R. A., & Holland, J. (2004). Bereavement overload. In N. Salkind (Ed.), *Encyclopedia of human development*. Thousand Oaks, CA: Sage.
- Neria, Y., Gross, R., Litz, B., Maguen, S., Insel, B., Seirmarco, G. et al. (2007). Prevalence and psychological correlates of complicated grief among bereaved adults 2.5-3.5 years after September 11th attacks. *Journal of Traumatic Stress, 20*, 251-62.
- Neria, Y., Nandi, A., & Galea, S. (2008). Post-traumatic stress disorder following disasters: a systematic review. *Psychological Medicine, 38*, 467-480.
- Neria, Y., Olfson, M., Gameroff, M. J., Wickramaratne, P., Gross, R., Pilowsky, D. J. et al. (2008). The mental health consequences of disaster-related loss: findings from primary care one year after the 9/11 terrorist attacks. *Psychiatry, 71*, 339-348.
- Nickerson, A., Bryant, R. A., Brooks, R., Steel, Z., Silove, D., & Chen, J. (2011). The family influence of loss and trauma on refugee mental health: a multilevel path analysis. *Journal of Traumatic Stress, 24*, 25-33.

- Norris, F. H. (1992). Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology, 60*, 409-418.
- Norris, F. H., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part 1. An empirical review of the empirical literature, 1981- 2001. *Psychiatry, 65*, 207-39.
- Norris, F. H. & Wind, L. H. (2009). The experience of disaster: Trauma, loss, adversities, and community effects. In Y. Neria, S. Galea, and F. H. Norris (eds.). *Mental health and disasters*. Cambridge: University Press.
- Papa, A., Neria, Y., & Litz, B. (2008). Traumatic bereavement in war veterans. *Psychiatric Annals, 38*, 686-691.
- Parkes, C. M. (1998). Coping with loss. Bereavement in adult life. *British Medical Journal, 316*, 856-859.
- Paul, R. J. (2002). Viewing the body and grief complications: The role of visual confirmation in grief reconciliation. In G. R. Cox, R. A. Bendiksen, and R. G. Stevenson (Eds.) *Complicated grieving and bereavement* (pp, 255-274). Amityville: Baywood.
- Pfeffer, C. R., Altemus, M., Heo, M., & Jiang, H. (2009). Salivary cortisol and psychopathology in adults bereaved by the September 11, 2001, terror attacks. *International Journal of Psychiatry in Medicine, 39*, 215-226.
- Pfefferbaum, B., Call, J. A., Lensgraf, S. J., Miller, P. D., Flynn, B. W., Doughty, D. E., Tucker, P. et al. (2001). Traumatic grief in a convenience sample seeking support after a terrorist incident. *Annals of Clinical Psychiatry, 13*, 19-24.
- Pivar, I.L. & Field, N. P. (2004). Unresolved grief in combat veterans with PTSD. *Journal of Anxiety Disorders, 18*, 745-755.
- Powell, S., Butollo, W., & Hagl, M. (2010). Missing or killed. The differential effect on mental health in women in Bosnia and Herzegovina of the confirmed or unconfirmed loss of their husbands. *European Psychologist, 15*, 185-192.
- Prigerson, H. G. (2004). Complicated grief. When the path of adjustment leads to a dead end. *Bereavement Care, 23*, 38-40.
- Prigerson, H. G., Bierhals, A. J., Kasl, S. V., Reynolds, C. F., Shear, M. K., Newsom, J. T. et al. (1996). Complicated grief as a distinct disorder from bereavement-related depression and anxiety: a replication study. *American Journal of Psychiatry, 153*, 1484-1486.
- Prigerson, H. G., Horowitz, M. J., Jacobs, S. C., Parkes, C. M., Aslan, M., Goodkin, K. et al.

- (2009). Prolonged Grief Disorder: Psychometric Validation of criteria proposed for DSM-V and ICD-11. *PLOS Medicine*, 6, 1-12.
- Rando, T. A. (1996) Complications in mourning traumatic death. In KJ Doka (Ed), *Living with grief after sudden loss* (pp 139-160). Washington DC: Taylor and Francis.
- Raphael, B. (1986). *When disaster strikes. How individuals and communities cope with catastrophe*. New York: Basic Books.
- Raphael, B. (1997). The interaction of grief and trauma. In D. Black, M. Newman, J. Harris-Hendricks & G. Mezey (eds.). (pp. 31-43). *Psychological trauma. A developmental approach*. Bell & Bain Ltd.: Glasgow.
- Raphael, B. & Maguire, P. (2009). Disaster mental health research: Past, present, and future. In Y. Neria, S. Galea, F. H. Norris (eds.) (pp. 7-28). *Mental health and disasters*. New York: Cambridge University Press.
- Raphael, B. & Martinek, N. (2004). Assessing traumatic bereavement and posttraumatic stress disorder. In *Assessing psychological trauma and PTSD* (eds J. Wilson & T. Keane) (pp. 492-510). New York: Guilford Press.
- Raphael, B. & Wooding, S. (2004). Early mental health interventions for traumatic loss in adults. In B. T. Litz (ed.). *Early interventions after trauma and traumatic loss* (pp. 147-178). New York: Guilford Press.
- Reed, M. (1993). Predicting grief symptomatology among the suddenly bereaved. *Suicide and Life-threatening Behaviour*, 28, 285-300.
- Rubonis, A. V. & Bickman, L. (1991). Psychological impairment in the wake of disaster: the disaster-psychopathology relationship. *Psychological Bulletin*, 109, 384-399.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57, 316-331.
- Rynearson, E. K. (2001). *Retelling violent death*. MI: Ann Arbor.
- Rynearson, E. K. (2010). The clergy, the clinician and the narrative of violent death. *Pastoral Psychology*, 5, 179-189.
- Rynearson, E. K., Favell, & Saindon (2002). Group intervention for bereavement after violent death. *Psychiatric Services*, 53, 1340.
- Salloum, A., Avery, L., & McClain, R. P. (2001). Group psychotherapy for adolescent survivors of homicide victims. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1261-1267.
- Schaal, S., Jacob, N, Dusingizemungu, J-P., & Elbert, T. (2010). Rates and risks for

- prolonged grief disorder in a sample of orphaned and widowed genocide survivors. *BMC Psychiatry*, 10, 55.
- Shear, K. M. (2006). Adapting imaginal exposure to the treatment of complicated grief. In B. O. Rothbaum (ed.). *Pathological anxiety*. New York: Guilford Press.
- Shear, K. M., Franck, E., Houck, P. R., & Reynolds, C. F. 3rd. (2005). Treatment of complicated grief: a randomized controlled trial. *JAMA*, 293, 2601-2608.
- Shear, K. M., Jackson, C. T., Essock, S. M., Donahue, S. A., & Felton, C. J. (2006). Screening for complicated grief among Project Liberty service recipients 18 months after September 11, 2001. *Psychiatric Services*, 57, 1291-7.
- Shear, K. M. & Mulhare, E. Complicated grief. *Psychiatric Annals*, 39, 662-670.
- Shear, K. M., Simon, N., Wall, M., Zisook, S., Neimeyer, R., Duan, N. et al. (2011). Complicated grief and related bereavement issues for DSM-5. *Depression and Anxiety*, 28, 103-117.
- Silverman, G. K., Johnson, J. G., & Prigerson, H. G. (2001). Preliminary explorations of the effects of prior trauma and loss on risk for psychiatric disorders in recently widowed people. *Israel Journal of Psychiatry and Related Sciences*, 38, 202-15.
- Sing, B. & Raphael, B. (1981). Postdisaster morbidity of the bereaved. A possible role for preventive psychiatry? *The Journal of Nervous and Mental Disease*, 169, 203-212.
- Souza, R., Bernatsky, S., Reyes, R., & de Jong, K. (2007). Mental health status of vulnerable tsunami-affected communities: A survey in Ache Province, Indonesia. *Journal of Traumatic Stress*, 20, 263-269.
- Sprang, G. & McNeil, J. (1998). Post-homicide reactions: Grief, mourning and posttraumatic stress disorder following a drunk driving fatality. *Omega: Journal of death and Dying*, 30, 41-45.
- Stewart, A. E. (1999). Complicated bereavement and posttraumatic stress disorder following fatal car crashes: recommendations for death notification practice. *Death Studies*, 23, 289-321.
- Stroebe, M. S., Folkman, S., Hansson, R. O., & Schut, H. (2006). The prediction of bereavement outcome: development of an integrative risk factor framework. *Social Science in Medicine*, 63, 2440-2451.
- Stroebe, M. S. & Schut, H. (2001). Risk factors in bereavement outcome: A methodological

- and empirical review. In M. S. Stroebe, R. O. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research* (ss. 349–371). Baltimore: United Book Press.
- Stroebe, M., Schut, H., & Stroebe, W. (2007). Health outcomes of bereavement. *The Lancet*, *370*, 1960-73.
- Stroebe, M. S. & Schut, H. (1999). The dual process model of coping with bereavement: Rationale and description. *Death Studies*, *23*, 197-224.
- Stroebe, W., Stroebe, M., Abakoumkin, G., & Schut, H. (1996). The role of loneliness and social support in adjustment to loss: a test of attachment versus stress theory. *Journal of Personality and Social Psychology*, *70*, 1241-1249.
- Sveen, C. A. & Walby, F. A. (2008). Suicide survivors' mental health and grief reactions: a systematic review of controlled studies. *Suicide and Life-threatening behaviour*, *38*, 13-29.
- Thompson, M. P., Norris, F. H., & Ruback, R. B. (1998). Comparative distress levels of inner city family members of homicide victims. *Journal of Traumatic Stress*, *11*, 223-242.
- Van der Houwen, K., Stroebe, M., Stroebe, W., Schut, H., van den Bout, J., & Wijngaards-De Meij, L. (2010). Risk factors for bereavement outcome: A multivariate approach. *Death Studies*, *34*, 195-220.
- Van Ameringen, M., Mancini, C., Patterson, B., & Boyle, M. H. (2008). Post-traumatic stress disorder in Canada. *CNS Neuroscience & Therapeutics*, *14*, 171-181.
- Weisæth, L. (1989). The stressors and the post-traumatic stress syndrome after an industrial disaster. *Acta Psychiatrica Scandinavica*, *suppl. 355*, 25-37.
- Weisæth, L. (2006). Collective traumatic stress: crises and catastrophes. In B. Arentz & R. Ekman (Eds.). *Stress in health and disease*. (pp. 71-90). Weinham: Wiley-VCH.
- Winjegaards de-Meij, Stroebe, M., Schut, H., Stroebe, W. van den Bout, J., van der Heijden, P. et al. (2005). Couples at risk following the death of their child: predictors of grief versus depression. *Journal of Consulting and Clinical Psychology*, *73*, 617-623.
- Winje, D. (1998). Cognitive coping: The significance of knowing what happened in the traumatic event. *Journal of Traumatic Stress*, *11*, 627-643.
- Winje, D. & Ulvik, A. (1995). Confrontation with reality: Crisis intervention services for traumatized families after a school bus accident in Norway. *Journal of Traumatic Stress*, *8*, 429-444.
- Wittouck, C., Van Autreve, S., De Jaegere, E., Portzky, G., & Van Heeringen, K. (2011). The

- prevention and treatment of complicated grief: A meta-analysis. *Clinical Psychology Review*, 31, 69-78.
- Worden, J. W. (2009). Grief counselling and grief therapy. *A handbook for the mental health practitioner* (4th edition). NY: Springer Publishing.
- Zinzow, H. M., Rheingold, A. A., Hawkins, A. O., Saunders, B. E., Kilpatrick, D. G. (2009). Losing a loved one to homicide: prevalence and mental health correlates in a national sample of young adults. *Journal of Traumatic Stress*, 22, 20-27.
- Zisook, S., Chentsova-Dutton, Y., & Shuchter, S. R. (1998). PTSD following bereavement. *Annals of Clinical Psychiatry*, 10, 157-163.
- Zisook, S. & Shear, K. (2009). Grief and bereavement: What psychiatrists need to know. *World Psychiatry*, 8, 67-74.

Table 1. Studies examining risk factors for mental health complaints among different bereaved populations after sudden and violent loss of a close family member or acquaintance.

	Specific risk factors	Authors	Population	Outcome
Personal risk factors	Female gender	Morina et al. (2009)	Civilian war survivors (n=60)	Women were more likely to have PGD than men
		Ghaffari-Nejad et al. (2007)	Earthquake survivors (n=400)	Women scored higher on PGD
	Pre-existing mental health difficulties	Murphy et al. (2003)	Parents, suicide, homicide, accident (n=173)	More women than men met criteria for PTSD
		Brent et al. (2009)	Children/young adults lost parents, suicide, accidents, or natural deaths (n=176)	Past history of depression increased depression risk in the 9 months following the death
Interpersonal risk factors	Close kinship	Melham et al. (2004)	Adolescents lost peer in suicide (n=146)	Past history of depression was associated with PGD and PTSD
		Kristensen et al. (2010)	Natural disaster victims (n=130)	Loss of a child or spouse increased PGD risk
		Johannesson et al. (2009)	Natural disaster victims (n=495)	Loss of a child increased PGD risk
	Lack of perceived social support and	Neria et al. (2007)	Victims of terrorist attacks (n=707)	Loss of adult child increased PGD risk
		Mitchell et al. (2004)	Suicide-bereaved adults (n=60)	Significant differences in grief scores between closely related and distantly related survivors
		Dyregrov et al. (2003)	Parents, suicide, accidents, SIDS (n=173)	Self-isolation predicted psychosocial distress

	social isolation	Fullerton et al. (1999)	Airline disaster survivors (n=71)	Low perceived social support predicted depression at two-months post-disaster
Situational risk factors	Blaming others/being blamed	Kristensen et al. (in press)	Parents, natural disaster (n=32)	Blaming others for the death was associated with excessive anger and bitterness
		Brent et al. (2009)	Children/young adults lost parents in suicide, accident, or natural death (n=176)	Blaming others for the death increased risk of depression
		Melham et al. (2007)	Children/adolescents lost parents in suicide, accidents, or sudden natural deaths (n=129)	Feeling that others were accountable for the death and/or feeling that others were blaming him or her for the death was associated with higher PGD scores.
		Melham et al. (2004)	Adolescents lost peer in suicide (n=146)	Feeling that one could have done something to prevent the death was associated with PGD, MDD, and PTSD
		Kuo et al. (2003)	Earthquake survivors (n=120)	Initial feelings of guilt increased PTSD risk
		Hull et al. (2002)	Survivors of oil platform disaster (n=33)	Survivor guilt was associated with higher levels of PTSD
	Life-threat	Kristensen et al. (2010, 2009)	Natural disaster victims (n=130)	Life threat increased risk for PTSD, but not PGD
		Morina et al. (2009)	Civilian war survivors (n=60)	Life threat was associated with elevated risk for PTSD and MDD, but

				not PGD
Witnessing death or finding the deceased	Melham et al. (2008, 2007) Hull et al. (2002) Brent et al. (1992)	Children/adolescents lost parents in suicide, accidents, or sudden natural deaths (n=140) Survivors of oil platform disaster (n=33) Adolescents lost peer in suicide (n=58)	Being at the scene when death occurred predicted new-onset PTSD, but not PGD Witnessing death was correlated with higher PTSD symptoms Subjects who either witnessed the suicide or found the body had more PTSD symptoms than those who did not	
Waiting for death confirmation/ confirmation of death vs. presumed dead	Kristensen et al. (2010) Powell et al. (2010)	Natural disaster victims (n=130) Civilian war survivors (n=112)	Time to death confirmation increased risk for PGD Those who had a husband listed as missing had much higher scores on grief and depression than those whose husband was confirmed dead	
Multiple losses	Schaal et al. (2010) Souza et al. (2007) Montezari et al. (2005)	Survivors of genocide (n=400) Natural disaster victims (n=262) Earthquake survivors (n=761)	The number of reported losses did not increase the PGD risk The number of disaster-related deaths was associated with emotional distress Loss of more family members was associated with more severe psychological distress	