

This article was downloaded by:[Uppsala University Library]
On: 25 September 2007
Access Details: [subscription number 768400929]
Publisher: Informa Healthcare
Informa Ltd Registered in England and Wales Registered Number: 1072954
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



International Journal of Disaster Medicine

Publication details, including instructions for authors and subscription information:
<http://www.informaworld.com/smpp/title~content=t713699767>

Impact of bereavement among relatives in Italy and Sweden after the Linate airplane disaster

Kerstin Bergh Johannesson^a; Stefano Stefanini^a; Tom Lundin^a; Roberto Anchisi^a
^a National Center for Disaster Psychiatry, Department of Neuroscience, University of Uppsala, Uppsala, Sweden

Online Publication Date: 01 January 2006

To cite this Article: Johannesson, Kerstin Bergh, Stefanini, Stefano, Lundin, Tom and Anchisi, Roberto (2006) 'Impact of bereavement among relatives in Italy and Sweden after the Linate airplane disaster', International Journal of Disaster Medicine, 4:3, 110 - 117

To link to this article: DOI: 10.1080/15031430600969034
URL: <http://dx.doi.org/10.1080/15031430600969034>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

ORIGINAL ARTICLE

Impact of bereavement among relatives in Italy and Sweden after the Linate airplane disaster

KERSTIN BERGH JOHANNESON, STEFANO STEFANINI, TOM LUNDIN & ROBERTO ANCHISI

National Center for Disaster Psychiatry, Department of Neuroscience, University of Uppsala, Uppsala, Sweden

Abstract

Objectives: Victims of major disasters are at risk for development of post-traumatic stress disorder (PTSD). The aim of this study was to compare two groups of bereaved relatives from Italy and Sweden, and to examine the role of psychosocial support and psychological reactions 18 months after traumatic bereavement. **Methods:** In all, 153 bereaved relatives of deceased victims in the Milano/Linate aeroplane crash were assessed by a questionnaire. Reactions of psychological distress were measured by the Impact of Event Scale-Revised (IES-R). **Results:** In the whole group, 53.2% showed symptoms indicating that they might meet the DSM-IV criteria for PTSD. The frequency was higher among the Italian relatives (58.7%) compared with the Swedish relatives (42.6%). Females showed more signs of post-traumatic reactions compared with males in the total population, as did spouses and parents within the Italian group. The general health status, measured by subjective evaluation, was significantly affected in both groups as a result of the disaster. A significant recovery after 18 months was reported, although not to the pre-accident level. The Swedish relatives had a pattern of using more psychotherapy compared with the Italians, among whom it was more common to use medication for both anxiety and sleeping problems. The need for psychotherapy and medication was related to higher scores on IES-R. **Conclusions:** (1) Traumatic losses deeply affect bereaved relatives. Health is affected and a large group of these relatives develop strong symptoms of post-traumatic stress. (2) Swedish bereaved relatives seem to be more apt to ask for professional help, e.g. psychotherapy, while in Italy it is more common to rely on family, friends and medication. (3) Acute organized psychosocial support in the aftermath can possibly facilitate for victims to handle a traumatic loss but it does not prevent the development of strong post-traumatic reactions. Future investigations may show how it is possible to optimize the help with more specific interventions of support and treatment.

Key words: Airplane disaster, bereavement, post-traumatic reactions, traumatic grief, general health, psychosocial support, Linate

Introduction

On 8 October 2001, a Scandinavian Airline System (SAS) MD-87 aircraft crashed into a small private Cessna plane on the runway at Milan's Linate airport before take-off (Figure 1). The weather was bad. Unsatisfactory technical conditions at the airport in combination with human mistakes from the control tower were later found to explain the cause of the disaster. The plane, with an estimated speed of 320 kilometers per hour (200 mph), ran into a baggage-handling hangar, where it exploded. No one in the aircrafts survived. A total of 118 people were killed (Figure 2 and Table I).

Two main organizations in Italy offered immediate psychosocial support. The Society of Airport Services (SEA) activated a group of psychologists from the Hospital San Raffaele in Milan, who,

together with the staff of the Italian Red Cross, psychologists and social workers of the Legal Institute of Medicine offered help and support. SAS – in collaboration with Alitalia – activated 'EOS', a non-profit organization which offered support and recognition to the Italian relatives of the victims. The practical and logistical elements of the psychosocial support in the first 24 hours were managed by the Italian Red Cross (CRI), which provided structure, means of transportation and collaboration with various active agencies (e.g. the National Fire Department and the staff of the City Council of Milan). The Italian Red Cross also continued to work in the next few days, assisting in the personal delivery of the death certificates to the relatives. The Italian Red Cross also contributed to the organization of a major religious memorial ceremony in the Cathedral of Milan 1 week after



Figure 1. The MD-87 aircraft from Scandinavian Airplane System (SAS) crashed into a small private Cessna plane, ran into a baggage handling hangar and exploded.

the disaster. Medical services were offered by specialists at the University of Milan, Department of Legal Medicine. At the SAS main office in Stockholm, the emergency response organization was activated. The whole staff of the SAS Executive Emergency group was gathered within 1 hour after the crash. At noon, about 100 members of the SAS support team were on their way from Stockholm and Copenhagen to Linate. A first group of relatives of the Swedish victims arrived in Milan the same night and a second group arrived the following morning. All relatives who wanted to go to Milan were offered the opportunity to do so. Physicians, psychologists, a priest and translators were brought in. During the night a hotel was activated to offer accommodation for the Scandinavian families. A psychologist from San Raffaele Hospital and a support team from the Italian Red Cross were located at the hotel to support these families. Medical needs were managed by the Scandinavian physicians and by Italian physicians from the University of Milan. Two days



Figure 2. A total of 118 people were killed in the disaster at Linate airport.

Table I. Victims of the Linate airplane disaster.

Country of origin	Victims
Italy	56
Sweden	21
Denmark	17
Norway	4
Finland	4
UK	1
USA	1
SAS crew	6
Ground staff (Italy)	4
Crew Cessna (Germany)	2
Passengers Cessna (Italy)	2
Total	118

after the disaster, the Scandinavian group of bereaved relatives was accompanied to the location of the disaster by the Italian Red Cross and the National Fire Department.

Through its offices in Sweden, Denmark, Norway, Finland, the USA and the UK, SAS has maintained contact with the families through the Family Assistance Support Team (FAST). The FAST group continued to have an active, outreaching approach towards the relatives through the first year. After one year they were still available on initiatives from the families. If necessary they assisted persons in need of crisis counselling and psychotherapy to get professional help. The Italian and Swedish groups of relatives seem to have had fairly equal access to support during the acute and intermediate phase as regards medical, practical/social and psychological needs. In the long-term phase the Swedish population seem to have had a more active psychological support from the air company organization. The SAS company agreed to support the economic costs of professional individual crisis therapy for the relatives who needed it. After one year, on the anniversary of the disaster, SAS offered the relatives (four members from each family) the opportunity to go to Milan for a memorial service. The company compensated for transportation, board and lodging. Self-help groups were established in both Italy and Scandinavia. On 17 October 2001, the committee '8 Ottobre Per Non Dimenticare' ('Do not forget the 8th of October') was constituted. The committee supply legal and economic advice and promote organization of gatherings for its members. The City Council of Milan supported the committee with an office and with financial support. On 23 February 2002, a Scandinavian association for relatives was founded, 'Skandinavisk förening för SK 686 8 oktober 2001' (Scandinavian Association for SK 686 October 8, 2001). The association arranges meetings for the bereaved relatives and facilitates economic and legal advice.

The aim of this study was to compare two groups of bereaved relatives from Italy and Sweden, and to

examine the role of psychosocial support and psychological reactions 18 months after the traumatic bereavement.

Materials and methods

Subjects and procedures

Italian and Swedish bereaved family members of 77 deceased victims of the Linate disaster were approached by mail 18 months after the plane crash. They had been informed of the study by the self-help organizations. A total of 247 questionnaires were distributed, 184 to Italian and 63 to Swedish close relatives. All the data were collected anonymously.

Measures

Questionnaires and scales were translated into Italian and Swedish. A special questionnaire was compiled for the study. The aim was to cover the following areas: socio-demographic background variables, pre- and post-accident somatic and mental health (estimated on a Likert scale 1–10, 10 being the best), the need for different types of medical and psychosocial support (acute and in the long-term phase), the use of drugs (antidepressants, anxiolytics and sleeping pills). A similar questionnaire was used after the Estonia ferry disaster (1). The Impact of Event Scale-Revised (IES-R) (2,3, T. Lundin personal communication) is a widely used, valid and reliable 22-item scale measuring subjective distress caused by intrusion, avoidance and hyperarousal, symptoms that are common in post-traumatic stress disorder (PTSD) according to DSM-IV. In this revised version, subjects were asked to indicate on a scale from 0 to 4 how disturbing symptoms were during the previous 7 days. A cut-off score of 33 and above on the combined subscales Intrusion + Avoidance was chosen to indicate a significant post-traumatic stress reaction. A score of 33 points indicates a score that lies above a possible mean of 30 (maximum 60) and reflects a considerable rated disturbance.

Statistics

SPSS for Windows, version 11.5 software (4) was used to input and analyse the data. Non-parametric

methods were needed owing to skewed distributions and heterogeneity of variance. χ^2 test was used to assess whether two or more samples each consisting of frequency data differed significantly from each other. Kruskal-Wallis test was used to compare three or more samples with different subjects. For multiple contrast using rank sums we utilized Dunn's test. The McNemar test measured significance of changes. The relationship between variables was assessed by means of Spearman's rank correlation coefficient. We used Wilcoxon's test for related data to analyse whether the ranks in one group are typically larger or smaller than the ranks in the other group. The significance level was set at $p < 0.05$.

Results

The response rate was 62% for the total group, 56% for the Italian group ($n=103$) and 84% for the Swedish group ($n=50$). The difference in response rate was not statistically significant. The 153 responders had an average age of 45 years (minimum 18, maximum 91). In the total group of responders 65% were women; 58% in the Swedish group and 68% in the Italian group. The difference was not statistically significant.

In both investigated populations there was a similar pattern of relationship with the deceased person: 27.2% were spouses, 22.2% were children, 29.4% were parents and 20.9% were siblings.

Post-traumatic reactions

The findings of the analysis indicate that 53.2% of the bereaved relatives were above the cut-off level – 58.7% of the Italian group and 42.6% of the Swedish group – indicating a high level of post-traumatic stress with strong symptoms of intrusion and avoidance at the time of the follow-up.

Table II shows an overview regarding the means of IES-R subscales at 18 months post-disaster. The two populations had similar results in IES-R except for in the IES subscale Hyperarousal.

In comparison of the median scores the tendency is a lower median in the Swedish population (Figures 3 and 4).

Table II. Mean values and standard deviations (SDs) of IES-R for Italian and Swedish bereaved relatives.

Subscale	Italy		Sweden		Total		<i>p</i> value
	Mean	SD	Mean	SD	Mean	SD	
Intrusion	19.06	5.81	18.40	6.37	18.85	5.98	NS
Avoidance	14.81	7.51	14.19	7.68	14.6	7.55	NS
Hyperarousal	14.92	7.20	11.45	7.94	13.78	7.60	0.01
Intrusion + Avoidance	33.77	11.41	32.72	12.75	33.42	11.85	NS
Total Intrusion + Avoidance + Hyperarousal	48.78	17.35	44.13	19.62	47.23	18.20	NS

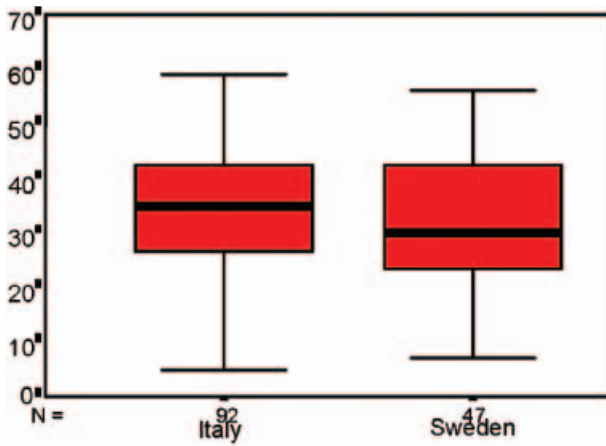


Figure 3. Nationality and IES-R median score for Intrusion + Avoidance.

Post-traumatic reactions versus relationship, age and gender

Parents and spouses had higher mean scores in IES-R compared with children and siblings ($p < 0.05$). The differences are most of all explained within the Italian population. Within the Swedish group there were no differences between the groups of relatives. Also, age affected the results within the Italian group, especially in the subscales Intrusion and Hyperarousal. Higher age was positively correlated with higher scores. Male relatives in total had lower scores in the subscales Avoidance and Hyperarousal and the combined Intrusion + Avoidance (Table III). The impact of gender influenced the results more in the Italian group than in the Swedish group. Italian men had lower mean scores in Intrusion and Avoidance compared with Italian women. Swedish men had lower levels of Intrusion and Hyperarousal compared with Swedish women 18 months after the Linate plane crash.

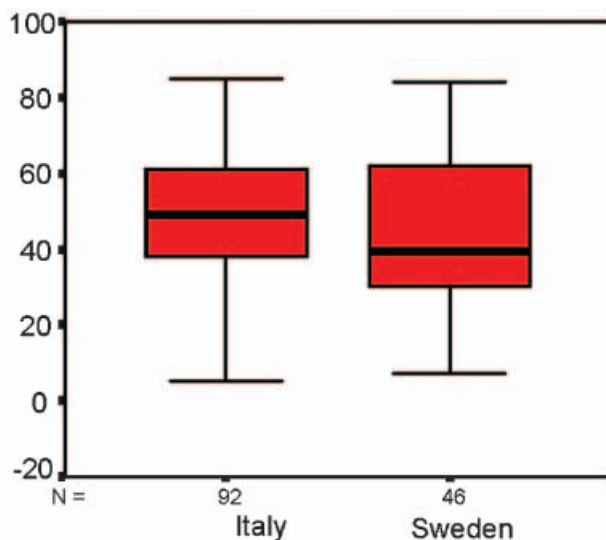


Figure 4. Nationality and IES-R median total scores.

Physical and mental health

The bereaved relatives indicated that their physical and mental health was seriously affected during the weeks after the accident compared to one year before the accident ($p < 0.005$) (Figure 5). The impact remained at 18 months compared to 1 year before ($p < 0.005$).

There was a clear tendency in evaluating an improvement of health at follow-up ($p < 0.05$), even if this did not mean a recovery to the originally estimated level. The tendency was the same in both groups.

Psychosocial support

There was a slight difference in the pattern as to how the two populations had used the psychosocial support organization ($p < 0.05$). It was most common in both populations to use individual crisis consultation for acute psychosocial support. The Italian group indicated to a higher degree 'no contact' or 'telephone contact'. Within the Swedish group it was somewhat more common to take part in 'group session and major gatherings'. Besides the organized acute support Italian bereaved relatives were more likely than Swedes to indicate, 'family/friends or employer' and 'family doctor' or 'no contact' ($p < 0.05$). The Swedish group indicated the need for psychotherapy to a higher degree.

At the time of the investigation the need for psychotherapy was more likely ($p < 0.05$) to be expressed by Swedish relatives (44.7%) compared with Italian relatives (24.0%). Italian relatives indicated to a higher degree 'no need for help' and 'other help'.

Long-term psychosocial support and post-traumatic stress reactions

The need for treatment such as psychotherapy and medication was found to be related to higher scores on Avoidance and combined scores of Intrusion + Avoidance, compared with need for help from employer or family and friends.

Medication

During the acute phase it was more common for Italian relatives to indicate the use of antidepressants and tranquillizers (45%) compared with the Swedish relatives (18.4%). At follow-up 18 months after the disaster the difference still remained ($p < 0.05$), even if the use of medication in total had decreased considerably (21% and 6.1%, respectively).

About half of the respondents had used medication for sleeping disturbances right after the disaster, with a similarity between the two populations. The need for medication for sleep decreased but it was twice as common among Italian relatives (26%)

Table III. Mean values and standard deviations (SDs) in IES-R, for women, men and the total group.

Subscale	Women		Men		Total		p value
	Mean	SD	Mean	SD	Mean	SD	
Intrusion	20.2	5.7	16.75	5.95	18.85	5.98	0.05
Avoidance	15.91	7.39	12.29	7.33	14.6	7.55	0.05
Hyperarousal	15.14	7.40	11.31	7.41	13.78	7.60	0.05
Intrusion + Avoidance	36.05	11.18	28.88	11.69	33.42	11.85	0.05
Intrusion + Avoidance + Hyperarousal	51.25	17.04	40.16	18.13	47.23	18.20	0.05

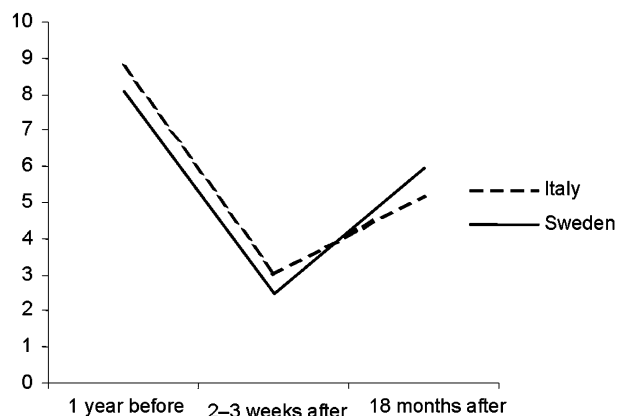


Figure 5. Subjective evaluation of health before and weeks after the disaster (in retrospect) and 18 months after the disaster.

compared with Swedish relatives (12.2%) to use medication for sleeping problems at follow-up 18 months after the disaster.

Non-responders

In total there were 92 non-responders – 81 Italians and 11 Swedes. Among Italian non-responders, 59% were female, compared with 27% in the Swedish group. In the male group 41% were Italian compared with 73% in the Swedish group. Among Italian non-responders, 28% were spouses, 14% children, 33% parents and 25% siblings.

Discussion

Unexpected losses of close family members are always traumatic (5). Losing a close relative following a traumatic event is one of the most difficult things a person can face and can increase the risk of developing PTSD (6). It is especially difficult to lose a child. Usually there is no possibility of mental preparation for handling the loss. It has been shown by many authors that people who experience a major disaster and acute stress reactions continue to experience stressful changes and have a significant risk for later development of PTSD (7–12). It takes years to process the traumatic grief after the loss of a close family member (13), but a good social network and adequate social support can facilitate the processing (14). Other factors can contribute to

the ability to handle a loss, such as resilience and other personal resources. Aeroplane accidents as a rule affect people during active age, people in the middle of their lives, many in the middle of their careers, or in some other aspects with most of their future in front of them. This can be a complicating factor for the bereaved individual as regards processing the loss.

Both society and individuals have a responsibility to support victims after major disasters. Major catastrophes can also offer important opportunities to examine the responses of individuals to a single extreme, well-defined stressor (15). In particular, major catastrophes present the opportunity to study the interaction between features of the traumatic event and the individuals in relation to the outcome of the event (16). Psychological reactions following airline disasters share many characteristics with reactions following other disasters, both human and natural. However, aircraft disasters and terrorist attacks against airplane companies belong to the most feared incidences in modern civilization (17,18). The psychological impact is enormous. Crew and passengers are almost always completely helpless regarding the ability to avoid the disaster. Studies concerning airplane disasters, such as those at Lockerbie (19) and Faro (20), reported high prevalence of PTSD in the years following the disaster. Six months after the airplane disaster in Bijlmermeer (21), 26% of the exposed responders had signs of PTSD. The condition was strongly correlated to loss and material damage. Kleber and Brom (22) estimated that in general approximately 20–30% of the victims develop PTSD after a disaster. After an airplane accident in Sweden (the air traffic accident in Gottröra in 1991), when an SAS aircraft carried out an emergency landing in a country field with 126 passengers, and all survived, 21% of the passengers still showed symptoms of a post-traumatic stress disturbance 3 years after the accident (23). Groups at high risk for later psychopathology include the bereaved, the severely injured, people with prior mental illness, low socioeconomic status, or multiple sources of stress, the elderly, children and adolescents, and those with limited or no social support system (18,24). Green et al. (13) found that loss of a household member was associated with major depression 18–26 months post-disaster and continued to predict major depression

14 years post-disaster. In a longitudinal study of widows, Vachon et al. (14) reported that among mediating influences, social support was the most important factor in explaining 1 month post bereavement distress.

People involved in major accidents or disasters will have significant emotional, practical and social needs, especially if there is a loss of a close family member or friend. One of these needs can be to visit the site of the event or see the body of the beloved one as a way to make the unreal become more real (23,25). Helping organizations and helpers must, especially in the immediate aftermath, anticipate these needs and offer a pro-active response towards the victims. Early intervention for trauma should be designed to increase social support (26). The need for information is often a dominant and fundamental urge. In these circumstances a combination of various interventions, support and counselling are required. Effects of early intervention have been discussed. Chemtob et al. (27) found that psychological debriefing decreased the signs of post-traumatic stress 6 months after a natural disaster. Several authors claim that availability of positive social support and the inclination to use it facilitates an individual's recovery (26).

In this study we found a strong impact of the bereavement, reflected in high scores in IES-R and in the subjective evaluation of how health was affected in the two populations, who otherwise were similar in age and in relationship to the deceased person. There was a tendency for somewhat lower IES scores in the Swedish group. This tendency of somewhat lower IES scores in the Swedish population might tentatively be influenced by the access to psychotherapy. Professional psychotherapy can possibly help people to deal with traumatic loss more actively, while medication offers symptom reduction but not trauma processing in itself.

Not surprisingly, we found that spouses and parents were the groups that scored highest on IES-R subscales when comparing different groups of relatives. This could possibly reflect the patterns of attachment – those of spouses and of parents toward children being strongest. Also here the tendency was stronger in the Italian population with a greater homogeneity within the Swedish population.

Possibly the difference also can reflect the fact that the Swedish group had a greater access to psychosocial support and psychotherapy during the first year, while in Italy this type of support was more rare. Another finding was that male gender scored lower on the IES scale, both on the Intrusion and Avoidance scale, and with a similar pattern in both populations. The percentage of women was higher in the Italian group than in the Swedish group, which also might explain the national difference. From other studies it has been shown that PTSD symptoms are more common among women, which

partly seems to be confirmed by the IES scores in this study.

Regarding subjective evaluation of health we found a similar pattern in both groups in the acute phase and also a similar pattern of some recovery in both populations, even if it did not return to the original level. However, it is important to underline that this is a subjective retrospective evaluation. Nevertheless, the pattern was very similar to that among relatives measured 13 months after the Estonia disaster. Holbrook et al. (28) reported similar findings of patients sustaining major physical injuries assessing their quality of life 18 months post trauma; 80% of these patients continued to have scores below a healthy norm. The findings might indicate that a physical injury could affect general well-being in a somewhat similar way as after loss of a loved one.

The groups had used similar types of help in the acute phase. In the long-term phase the two populations differed when compared regarding the type of support. It was much more common for relatives in the Swedish group to ask for psychotherapy compared with the Italian relatives. There was no relationship between type of acute support and stress symptoms at 18 months follow-up, which perhaps cannot be expected regarding the character of the trauma. This can in some way confirm the statement of Shalev (29) that single-session interventions are unlikely to make substantial differences in long-term adjustment. Traumatic loss takes time to realize and become reality and accordingly grief takes a long time to process. Single acute interventions may be necessary but are seldom enough.

Within the Italian population it was more common to use medication for both anxiety and depressive disorders as well as for sleeping problems, a pattern that was similar both in the acute phase and 18 months later. This might reflect a difference in both cultural attitude and tradition between Italy and Sweden regarding how individuals deal with traumatic loss and how they ask for and give support after disasters. In contrast to Italy, Sweden has for many years developed a public organization for psychosocial disaster support. In Sweden there might also be a more developed system for access to professional psychotherapy in the long-term phase. In this case the SAS company's family support organization offered the possibility for active follow-up during the first year for the Scandinavian relatives and economically supported crisis therapy. In Italy it might be more common to rely on support from family, friends and family doctors.

The data indicate severe post-trauma symptoms in both groups, with a higher proportion than has been reported in earlier studies. One possible explanation might be that all investigated subjects in this study were bereaved close relatives, a group that is not investigated so often. Processing traumatic loss might

be more difficult and takes a longer time than other traumatic experiences. Another explanation could be that in this study we used the revised version of the IES-R, with measurement of the amount of distress regarding PTSD symptoms, unlike the earlier version, which measured the frequency of distress.

The response rate was far higher within the Swedish population than within the Italian population, which is similar to experiences from other research projects. High response rates might reflect a national character trait in Sweden. However, it can also mean a limitation in comparing the two populations, with a higher percentage of women within the Italian group who did not respond.

It is fairly unique to be able to compare two populations from different cultural backgrounds, which is a strength of this study. Methodologically, retrospective questions are always a weakness in a study, which means that caution is necessary in interpreting some of the results. Also, the very fact of differences in cultural backgrounds can explain some of the differences that were found in the study. Another limitation is that no particular grief or depression scale was used, which possibly could have differentiated somewhat more between response patterns.

Conclusions

Three conclusions can be drawn from this study. First, traumatic losses deeply affect bereaved relatives. Health is affected and a large group develop strong symptoms of post-traumatic stress. Second, Swedish bereaved relatives seem to be more apt to ask for professional help, e.g. psychotherapy, while in Italy it is more common to rely on family, friends and medication. Third, acute organized psychosocial support in the aftermath of a disaster can possibly facilitate victims in their handling of a traumatic loss but it does not prevent the development of strong post-traumatic reactions. Future investigations may show how it is possible to optimize the help with more specific interventions of support and treatment.

Acknowledgements

Special thanks to the Swedish National Board of Health and Welfare and the National Center for Disaster Psychiatry, University of Uppsala, for providing the opportunity to carry out this study. We thank Dr Lennart Jansson, University of Uppsala, and Dr Per-Olof Michel, National Center for Disaster Psychiatry, for valuable comments. We also wish to thank Prof. Paolo Moderato, University of Parma, Dr Paolo Pettinaroli, President of the Italian Committee '8 Ottobre Per Non Dimenticare' and Mrs Annette Forsman, President of the Swedish Committee 'Skandinavisk förening för SK686'. The study was

approved by the Uppsala University Hospital Ethics Committee. Participation was voluntary.

References

- Bergh Johannesson K. Arbete vid Uppsalas Kriscentrum. [Psychosocial support at the Uppsala Crisis Center.] *Lakartidningen*. 1997;94:1198–202 (in Swedish).
- Weiss DS. The Impact of Event Scale-Revised. In: Wilson JP, Keane TM, editors. *Assessing psychological trauma and PTSD*. 2nd edn, New York: Guilford Press, 2004: 168–89.
- 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.
- Howitt D, Cramer D. *A guide to computing statistics with SPSS for Windows*. Dorset: Prentice Hall, 2001.
- Lundin T. Traumatic grief and its relation to PTSD. *Psychiatry*. 2004;1:2–4.
- Breslau N. Oral presentation at the International Society for Traumatic Stress Studies (ISTSS) Meeting, Toronto, November 2005.
- Koopman C, Classen C, Spiegel D. Multiple stressors following a disaster and dissociative symptoms. In: Ursano RJ, Fullerton CS, editors. *Posttraumatic stress disorder*. Washington: American Psychiatric Press, 1997.
- Marmar CR, Weiss DS, Metzler T. Peri traumatic dissociation and posttraumatic stress disorder. In: Marmar CR, Bremner JD, editors. *Trauma, memory, and dissociation*. Washington: American Psychiatric Press, 1998.
- Shalev AY, Freedman S, Peri T, Brandes D, Sahar T, Orr SP, et al. Prospective study of posttraumatic stress disorder and depression following trauma. *Am J Psychiatry*. 1998;155: 630–7.
- Fullerton SC, Ursano RJ, Kao T, Bharitya VR. Disaster-related bereavement: acute symptoms and subsequent depression. *Aviat Space Environ Med*. 1999;70:902–9.
- North CS, Kawasaki A, Spitznagel EL, Hong BA. The course of PTSD, major depression, substance abuse and somatization after a natural disaster. *J Nerv Ment Dis*. 2004;192: 823–9.
- Bryant RA. Predicting posttraumatic stress disorder from acute reactions. *J Trauma Dissociation*. 2005;6:5–15.
- Green BL, Lindy JD, Grace MC, Gleser GC, Leonard AC, Korol M, et al. Buffalo Creek survivors in the second decade: stability of stress symptoms. *Am J Orthopsychiatry*. 1990;60: 43–54.
- Vachon M, Rogers J, Lyall WA, Lancee WJ, Sheldon AR, Freeman SJ. Predictors and correlates of adaptation to conjugal bereavement. *Am J Psychiatry*. 1982;139:998–1002.
- Hull AM, Alexander DA, Klein S. Survivors of the Piper Alpha oil platform disaster: long-term follow-up study. *Br J Psychiatry*. 2002;181:433–8.
- Alexander DA. Psychiatric intervention after the Piper Alpha. *J R Soc Med*. 1991;84:8–11.
- Butcher JN, Dunn LA. Human responses and treatment needs in airline disasters. In: Gist R, Lubin B, editors. *Psychosocial aspects of disaster*. Oxford: John Wiley & Sons 1982;86–119.
- Gerson BPR, Carlier IVE. Plane crash crisis intervention: a preliminary report from the Bijlmermeer, Amsterdam. *Journal of Crisis Intervention and Suicide Prevention*. 1993;14:109–16.
- Brooks N, McKinlay W. Mental health consequences of the Lockerbie disaster. *J Trauma Stress*. 1992;5:527–43.
- van Duin MJ, Overdijk WIE, Wijkhuis LJJ. De Faro-ramp: overlevenden en nabestaanden aan het woord. [The Faro crash: inquiry among survivors and relatives.] Interim report, The Hague, Crisis Research Team, 1998.
- Carlier IVE, Gersons BPR. Stress reactions in disaster victims following the Bijlmermeer plane crash. *J Trauma Stress*. 1997;10:329–35.

22. Kleber RJ, Brom D. Coping with trauma: theory, prevention and treatment. Amsterdam: Swet & Zeitlinger, 1992.
23. Michel PO, Lundin T, Otto U. Psykotraumatologi. [Psychotraumatology.] Lund: Studentlitteratur 2001;112–43 (in Swedish).
24. Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for post-traumatic stress disorders in trauma-exposed adults. *J Consult Clin Psychol.* 2000;66:748–66.
25. Seynaeve GJR. European Policy Paper concerning different aspect of psycho-social support for people involved in major accidents and disaster. *Psycho-Social Support in Situation of Mass Emergency*, Brussels, 2001.
26. Litz BT, Gray MJ, Bryant RA, Adler AB. Early interventions for trauma: current status and future directions. *American Psychological Association, Clinical Psychology: Science and Practice.* 2002;9:112–34.
27. Chemtob CM, Thomas S, Law W, Cremniter D. Post disaster psychosocial intervention: a field study of the impact of debriefing on psychological distress. *Am J Psychiatry.* 1997;154:415–17.
28. Holbrook TL, Anderson JP, Sieber WJ, Browner D, Hoyt DB. Outcome after major trauma: 12 month and 18 month follow-up results from the Trauma Recovery Project. *J Trauma.* 1999;46:765–73.
29. Shalev AY. Stress management and debriefing: historical concepts and present patterns. In: Raphael B, Wilson JP, editors. *Psychological debriefing.* Cambridge: Cambridge University Press 2000;17–31.