Established in 1871
Swiss Medical Weekly
Formerly: Schweizerische Medizinische Wochenschrift
The European Journal of Medical Sciences

Original article | Published 20 October 2011, doi:10.4414/smw.2011.13284
Cite this as: Swiss Med Wkly. 2011;141:w13284

The impact of forensic investigations following assisted suicide on post-traumatic stress disorder

Birgit Wagner[a], *Valerie Boucsein*[b], *Andreas Maercker*[b]

[a] University Clinic for Psychotherapy and Psychosomatic Medicine, University Hospital Leipzig, Germany. The study was conducted while the first author was affiliated with the Department of Psychology, University of Zurich, Switzerland.
[b] Department of Psychology, University of Zurich, Switzerland

Summary

In Switzerland, all deaths through assisted suicide are reported as unnatural deaths and investigated by a forensic team (police, medical examiner, and state attorney). However, there is limited knowledge concerning the impact these forensic investigations have on the development of post-traumatic stress disorder, complicated grief, or depression in those who have lost a loved one. A cross-sectional survey of 85 family members or close friends who were present at an assisted suicide was conducted in December 2007. The Impact of Event Scale, Inventory of Complicated Grief, and Brief Symptom Inventory were used to assess mental health. The newly developed Forensic Investigation Experience Scale measured the emotional experience of the legal investigation at the death scene. The data suggest that the diagnosis of post-traumatic stress disorder is significantly related to having experienced the forensic investigation as emotionally difficult. Thus, the way the forensic investigation is conducted immediately after an unnatural death is evidently associated with the development of post-traumatic stress. It is recommended that a protocol be developed establishing a standardised response to cases of assisted suicide and that specific training be provided for the legal professionals involved.

Key words: *assisted suicide; euthanasia; legal investigation; forensic investigation; post-traumatic stress disorder; complicated grief; depression*

Introduction

Despite being a subject of ongoing political, legal, and moral debate, assisted suicide or euthanasia is legally allowed in only a few countries worldwide. In Switzerland, article 115 of the Swiss penal code tolerates assisted suicide as long as the assisting person has no vested interest in the death. However, euthanasia, in which the physician administers the lethal drug, is forbidden. Most assisted suicides in Switzerland are conducted with the assistance of non-profit organizations [1]. These right-to-die organizations offer personal guidance to members suffering from diseases with "poor outcome" or experiencing "unbearable suffering," who wish to die. The two largest right-to-die organisations in Switzerland are Exit Deutsche Schweiz and Dignitas. The procedure applied by Exit Deutsche Schweiz is as follows: An individual who decides to die must first undergo a medical examination. A physician then prescribes a lethal dose of barbiturates, and the drugs are stored at the Exit headquarters until the day of use. Usually, the suicide takes place at the patient's home. On the day the individual decides to die, an Exit volunteer collects the medication and takes it to the patient's home. There, he or she hands the patient the fluid to swallow. If the patient is incapable of swallowing the barbiturate, it can be self-administered by gastrostomy or intravenously [2]. Cases of assisted suicide are treated as unnatural deaths, and each case must be investigated by a forensic team (police, medical examiner, and state attorney) [3]. After the person has died, the Exit Deutsche Schweiz volunteer immediately has to notify the police, and prosecution follows if there are any doubts about the deceased's decision-making capacity [4]. Bosshard et al. [2] retrospectively analysed 748 cases of suicide assisted by Exit Deutsche Schweiz between 1990 and 2000. All assisted suicides that took place in the city of Zurich (N = 147) were duly reported to the Zurich authorities as unnatural deaths and investigated by the Institute of Legal Medicine (ILM). Post-mortem and toxicological investigations were carried out by the ILM in 5 of these cases.

The forensic investigation of a death scene can involve up to about nine officials. Investigations of assisted suicide imply a complex patchwork of interactions between medical examiner, police, and state attorney. Although good practice can often be found, there are also anecdotes of insensitive and disrespectful practice. Deaths by assisted suicide enter the public arena, and police investigations and legal proceedings may prolong the grieving process and increase psychological impairment among the bereaved. The DSM-IV defines an event as traumatic if it includes the experience of or confrontation with actual or threatened death [5], as is the case for relatives and friends who witness an assisted suicide. The attendant police investigations and legal proceedings may further increase the psychological stress to which these bereaved individuals are exposed. Assisted

suicide can be considered an unnatural death, and unnatural death has shown to be a risk factor for bereaved family members to develop posttraumatic stress disorder and depression [6]. Moreover, bereaved relatives and friends may experience ambivalent feelings about the decision process and the way the loved one chose to die, which in turn impact the grieving process. Involvement in legal investigations constitutes a significant emotional stress for most people; consequently, bereaved relatives and friends who have just witnessed the unnatural death of a significant other may suffer even more. The additional stress of forensic investigations may therefore be associated with increased symptom levels of post-traumatic stress disorder (PTSD) or complicated grief (CG) in bereaved family members or friends who were present at the death scene.

Wagner and colleagues reported that about 13% of family members and friends who had witnessed an assisted suicide met the criteria for full PTSD, and 6.5% met the criteria for sub-threshold PTSD [7]. The prevalence of depression was 16%; that of anxiety was 6%. 4.9% of participants met the diagnostic criteria for CG. To date, however, very little is known about the impact that forensic investigations have on the mental health of the bereaved. Indeed, their mental health needs are often diametrically opposed to requirements of legal proceedings following death by assisted suicide: The bereaved person needs social acknowledgement and emotional support, whereas the justice system requires a set of procedures to be implemented to verify that the death was legal. The aim of this study was to evaluate the relationship between forensic investigations and mental health, specifically PTSD. Further, we descriptively analysed the behaviour of the participating officials as perceived by a relative.

Methods

Study design and sample

In November 2007 we conducted a cross-sectional study with the right-to-die organization Exit Deutsche Schweiz. Exit's records of all deaths by assisted suicide include information on those present at the death. We identified 146 people who had died with the support of the organisation between October 2005 and September 2006. Of this group, 21 had died with no family members or friends as witness. In 14 cases, the addresses of the witnesses were not recorded. A total of 229 relatives and friends were recorded as being present at the death of the remaining 111 deceased persons. We attempted to contact these witnesses by postal mail, asking them to complete and return an anonymous, written questionnaire. Participation in the study was anonymous. Participants were invited to send their addresses if they wished to be informed about the study results; however, none of the participants requested further information. Completion of the questionnaire took approximately 45 minutes. The study coordinator could be contacted if there were any questions. The study was conducted following the ethical standards of the German and Swiss psychological associations. Formal approval of the project was not necessary as strict standards of voluntariness, confidentiality, and respondent protection were observed. Correct postal addresses were available for only 167 witnesses. Of the 167 immediate family members (partner, parent, child, or sibling) and friends who were eligible for the study, 4 refused to participate, 78 did not respond, and 85 (51%) returned the questionnaire.

Measurement of outcomes

Besides demographic items, the questionnaire contained standard self- reporting measures to assess the prevalence of symptoms of PTSD, CG, and depression in respondents. The demographic variables assessed included respondents' age, gender, educational level, marital status, and employment status. Further, we assessed variables regarding the deceased person (e.g., age at death, duration of disease, length of membership in Exit); see table 1. The majority of participants (47.1%; n = 40) were grieving the death of a parent; 32.9% (n = 28) had lost a spouse/partner; 2.4% (n = 2) a child; and 17.6% (n = 16) a sibling or close friend. For a more detailed description, see Wagner et al. [7].

Symptoms of PTSD were evaluated using the German version of the *Impact of Event Scale–Revised,* [8, 9], *(IES-R)*, which has been shown to have satisfactory psychometric characteristics.The 22-item IES-R is widely used to assess symptom levels of PTSD. In this study, we specifically assessed the extent to which respondents were distressed by witnessing the death of their loved one and related symptoms of intrusion, avoidance, and arousal experienced in the past week on a 4-point Likert scale (0, 1, 3, 5). An IES cutoff score [10] of 35.0 for the combined avoidance and intrusion subscales has been proposed for nonclinical populations. Internal consistency in our sample was $\alpha = 0.85$ for intrusion, $\alpha = 0.81$ for avoidance, and $\alpha = 0.87$ for hyperarousal.

CG was assessed with the *Complicated Grief Module-SF,* CGM [11].The original CGM comprises 30 items assessing symptoms of complicated grief, such as failure to adapt and intrusions. The German version of the CGM transforms the original questions into statements and uses a 7-point Likert-type severity scale [12]. The duration criterion is 14 months since loss. Our shortened version of the CGM comprised seven items: three on intrusion symptoms, two on avoidance symptoms, and two on failure to adapt [13]. We applied a 4-point scale (1 = no/never to 4 = always). Internal consistency in this sample was $\alpha = 0.90$. As Horowitz et al. (1997) proposed, CG was diagnosed if at least 3 out of 7 symptoms were greater than or equal to 3. In addition, the trigger and duration criteria had to be fulfilled [11].

The depression subscale of the short form of the SCL-90 (Brief Symptom Inventory, BSI [14]) was used to assess symptoms of depression. The BSI depression subscale lists six symptoms (e.g., feeling hopeless about the future), each of which was rated on a 5-point Likert scale (0 = not at all, 4 = extremely). Internal consistency in this sample was $\alpha = .90$.

In addition, participants evaluated their experience of the forensic investigation and indicated any difficulties they had experienced with the forensic team (including the state attorney, medical examiner, and police). To this end, a five-item scale – the Forensic Investigation Experience Scale (FIES) – was specially developed, based on difficulties re-

ported by Exit Deutsche Schweiz as occurring repeatedly. Responses were given on a 4-point Likert scale (1 = strongly agree to 4 = strongly disagree). The items assessed the perceived emotional experience of the event (e.g., "I experienced the behaviour of the forensic team as emotionally difficult" or "I was disturbed by the large number of officials"); perceived lack of sensitivity (e.g., "I wish the investigative team had handled the situation more sensitively"); and the treatment of the body of the deceased (e.g., "I found the examination of the body disproportionate.") Internal consistency in this sample was $\alpha = 0.85$. Higher scores on this scale indicated lower perceptions of emotional difficulties with the behaviour of the forensic team.

Results

87% (n = 74) of participants reported that their dealings with the investigation team were unproblematic. 6% (n = 5) of participants reported difficulties due to possible irregularities in the assisted suicide process. These irregularities included the lack of the deceased person's signature on the death protocol or the presence of an empty bottle of wine, which may have influenced the deceased's decision-making. Three participants (3.5%) reported difficulties because the police arrived armed. 3.5% (n = 3) did not answer the question. As previously reported in Wagner et al. (in press), 13% of participants met the criteria for full PTSD (cut-off ≥35) and 6.5% met the criteria for sub-threshold PTSD (cut-off ≥25). As shown in table 2, *t* tests indicated that participants with a diagnosis of PTSD were significantly more likely than participants without PTSD to have experienced emotional difficulties with the forensic investigation of the death. The two groups did not differ significantly in terms of the age of the participant, the age of the deceased, or the duration of membership of the right-to-die organization. The FIES total score correlated significantly with the diagnoses of PTSD, depression, and CG, with coefficients of $r = –0.40$, $–0.28$, and $–0.27$, respectively (see table 3). Specifically, the diagnosis of PTSD correlated highly significantly with all five items. The diagnosis of depression correlated significantly with the item "*examination of the body [was] disproportionate,*" $r = –0.34$, and the diagnosis of CG correlated significantly with the item "*large number of officials*," $r = –0.27$. When the variables gender, age, relationship with the deceased, and experience of the forensic investigation were entered in the final model, only the experience of the forensic investigation, OR = 0.69, $p < 0.01$, remained as a significant predictor of a PTSD diagnosis. Finally, we explored the perceived behaviour of the officials participating in the forensic investigation by asking respondents to rate the officials' behavior on five attributes (see table 5). 70% of participants experienced the forensic

Table 1: Characteristics of study participants and deceased persons (Ns = 85).

Characteristics	**No. (%)**
Study participants	
Age, in years: mean (SD; range)	60.15 (13.42; 25–89)
Male	37 (43.5)
Female	48 (56.5)
Marital status	
Single	6 (7.1)
Married	47 (55.3)
Widowed	26 (30.6)
Divorced	6 (7.1)
Highest educational level	
Primary education	6 (7.1)
Secondary education	45 (52.9)
University degree	26 (30.6)
Doctoral degree	8 (9.4)
Deceased's relationship to respondent	
Father/mother	40 (47.1)
Partner	28 (32.9)
Child	2 (2.4)
Sibling/friend	15 (17.6)
Deceased persons	
Time since death, in months: mean (SD)	19.73 (3.83)
Age, in years: mean (SD)	77.36 (13.91)
Male	44 (51.8)
Female	41 (48.2)
Duration of disease, in years: mean (SD; range)	6.4 (7.9; 1.5 months–40 years)
Medical diagnosis	
Cancer	44 (52)
Non-fatal age-related diseases	31 (36.5)
Cardiac disease	12 (14.1)
Alzheimer/dementia	5 (5.9)
Mental disorder	3 (3.5)
Membership of exit	
Years of membership: mean (SD; range)	12.11 (8.86; 3 weeks–24 years)

team as respectful, 28% as sensitive, 45% as understanding, 10% as cold, and 43% as neutral/appropriate.

Discussion

This is the first study to examine the mental health impact of the forensic investigation routinely conducted after assisted suicide in Switzerland. Previous findings have shown that witnessing the assisted suicide of a significant person may have a strong impact on the bereaved, with severe symptoms of PTSD and depression at 14 to 24 months post-loss. Although the data point to a clear link between witnessing assisted suicide and PTSD, the question remained as to whether PTSD is directly and independently associated with the traumatic event of witnessing the death by assisted suicide, or whether PTSD is moderated by the way the participating officials handle the situation. The results of this study indicate that respondents who experienced the forensic investigation as emotionally distressing were more likely to suffer from PTSD. Indeed, respondents with a diagnosis of PTSD reported significantly higher difficulties on all items of the Forensic Investigation Experience Scale than did those with no diagnosis. These findings are in line with the findings of a study with crime victims [15], in which negative experiences with the justice system were found to be strongly linked to worsened symptoms of PTSD. However, the direction of causality in the present study is unclear: it is possible that

Table 2: Comparison of groups with and without PTSD diagnosis (t tests).

	With PTSD Diagnosis		**Without PTSD Diagnosis**		***t* test**
	M	SD	M	SD	P value
Age (years)	63.32	15.27	58.72	13.24	0.32
Age of the deceased	69.80	17.49	78.10	13.62	0.08
Exit membership (years)	9.28	10.47	12.19	8.64	0.48
Forensic investigation experience scale (total score)	10.14	4.77	15.31	3.81	0.02*
Behavior of forensic team emotionally difficult	2.00	1.1	3.09	.98	0.002**
Disturbed by large number of officials	1.80	1.03	2.62	1.08	0.02*
Examination of the body disproportionate	2.00	1.15	3.17	1.09	0.003**
Leaving the body uncovered was difficult	2.57	1.27	3.40	.96	0.04*
Wish team had handled situation more sensitively	2.10	1.28	3.09	1.08	0.01**

*p <0.05; **p <0.01.

Table 3: Correlations of diagnosis of PTSD, CG, and depression with FIES scores (total and individual items).

	M (SD)	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**
Mental health										
1. IES		1								
2. BSI-depression		0.25*	1							
3. Complicated grief		0.50**	0.34**	1						
4. Forensic investigation experience scale (total)	14.66 (4.28)	-0.40**	-0.28*	-0.27*	1					
5. Behavior of forensic team emotionally difficult	2.90 (1.07)	-0.35**	-0.14	-0.21	0.85**	1				
6. Disturbed by large number of officials	2.45 (1.12)	-0.25**	-0.21	-0.27*	0.75**	0.68**	1			
7. Examination of the body disproportionate	3.00 (1.15)	-0.34**	-0.34**	-0.16	0.80**	0.54**	0.56**	1		
8. Leaving the body uncovered was difficult	3.30 (1.02)	-0.25*	-0.03	-0.10	0.55**	0.18	0.10	0.44**	1	
9. Wish team had handled situation more sensitively	2.93 (1.14)	-0.29*	-0.20	-0.20	0.82**	0.78**	0.53**	0.48**	0.35	

Note. IES = Impact of Event Scale–avoidance scale; BSI-depression = Brief Symptom Inventory–depression scale;
*p <0.05; **p <0.01; N = 82 (two-tailed, significant).

Table 4: Logistic regression predicting diagnosis of PTSD.

Variable	**SE**	**Wald**	**OR**	**95% CI**
Gender	1.06	2.2	0.20	0.02-1.63
Age	0.04	0.46	1.03	0.94-1.13
Relationship to the deceased	0.94	0.13	0.70	0.11–4.44
Forensic Investigation experience scale	0.15	5.77	0.69**	0.51–.93

**p <0.01.

Table 5: Respondents' perception of the behaviour of the officials participating in the forensic investigation.

Respectful	Yes	70%
	No	30%
Sensitive	Yes	28%
	No	71%
Understanding	Yes	45%
	No	55%
Cold	Yes	10%
	No	90%
Neutral/appropriate	Yes	43%
	No	57%

respondents who had a more difficult experience with their loved one's death consequently had a more difficult experience of the forensic investigation.

Further, the behaviour of the forensic professionals and the police was described in surprisingly negative terms. Only 70% described this behaviour as respectful, 28% as sensitive, 45% as understanding, and 43% as neutral/appropriate. A large number of participants thus experienced a sense of disapproval from the investigation team. More generally, previous research has shown that many respondents experienced a lack of social acknowledgement of the end-of-life decision [16], mirroring the general critical public and media debate on assisted suicide in Switzerland. This lack of social acknowledgement of their unique situation seems to be an important factor impacting the mental health of this group of people.

The death of a close family member is one of the most difficult events to occur in any family. Therefore, forensic investigations of cases of death by assisted suicide should be appropriate and sensitive. However, the mental health needs of bereaved relatives are often diametrically opposed to the legal requirements. Nevertheless, several needs should be fulfilled. First, the needs of the bereaved individual who has lost a significant person in an unnatural way should be recognised. In this study, a number of participants reported that the situation was treated as a crime scene, exacerbating their feeling of having done something wrong, which further increased their ambivalence towards the decision taken by the deceased person. One participant wrote: "*The bereavement process was much more difficult than if I had lost my husband in a natural way. Suicide is unnatural. The fact that the police and the medical examiner arrived after his death underlined the feeling of having done something wrong.*"

Similar issues have been raised regarding the impact of the presence of legal professionals following sudden infant death. Many parents in this situation feel that they are part of a crime scene and experience accusations of child abuse or child neglect. However, in recent years, a number of multi-agency approaches have been developed [17, 18] to achieve a better balance between support for the parents and the requirements of the forensic investigation.

Limitations

Our study has several limitations. First, a prospective longitudinal study would provide better insights into time effects in the long-term symptoms of PTSD. Second, we were able to recruit only about half of the family members and friends of individuals who died during the study period. Consequently, we were unable to determine the prevalence of PTSD in non-participating family members and friends or indeed other differences between the participating and non-participating groups. It is possible that more family members who had negative experiences of the assisted suicide participated in the study, which may have biased the results. Given the small number of respondents, the results of the study remain exploratory. Third, the study was limited to the canton of Zurich. The rules and practices surrounding the investigation of assisted suicide are known to vary between cantons.

Conclusion

Every death by assisted suicide is a profound and often a difficult loss for family members. The subsequent investigations need to achieve an appropriate balance between the forensic and legal requirements and the family's need for support. The investigation team at the death scene is often the first and often only point of contact with the justice system. Therefore, the family should be treated with discretion, sensitivity, and respect throughout the investigation. Legal professionals and police should make their inquiries with an open, non-prejudiced mind. Bereaved family and friends should be protected from false or inappropriate accusations. To this end, a protocol should be developed that establishes a standard routine for a collaborative multi-agency response to cases of assisted suicide, specifying what is expected from the police, the state attorney, and the medical examiner. A change of attitude is also required among the police, who have traditionally treated assisted suicide like any other unexplained death. The scene of death should not be treated as a crime scene, with police arriving in the hours after the death to seize potential evidence; rather, legal professionals with specific training should investigate the scene with respect and understanding.

Funding / potential competing interests: No financial support and no other potential conflict of interest relevant to this article was reported.

Correspondence: *Birgit Wagner, PhD, University Clinic for Psychotherapy and Psychosomatic Medicine, University Hospital Leipzig, Semmelweisstrasse 10, D-04103 Leipzig, Germany, birgit.wagner@medizin.uni-leipzig.de*

References

1 Ziegler SJ, Bosshard G. Role of non-governmental organisations in physician assisted suicide. BMJ. 2007;334(7588):295.

2 Bosshard G, Jermini D, Eisenhart D, Bär W. Assisted suicide bordering on active euthanasia. Int J Legal Med. 2003;117(2):106–8.

3 Fischer S, Huber CA, Imhof L, Mahrer Imhof R, Furter M, Ziegler SJ, et al. Suicide assisted by two Swiss right-to-die organisations. J Med Ethics. 2008;34(11):810–4.

4 Bosshard G, Ulrich E, Bar W. 748 cases of suicide assisted by a Swiss right-to-die organisation. Swiss Med Wkly. 2003;133(21–22):310–7.

5 DSM-IV D. Statistical Manual of Mental Disorders. Washington: Copyright American Psychiatric Association 1994.

6 Kaltman S, Bonanno GA. Trauma and bereavement: Examining the impact of sudden and violent deaths. J Anxiety Dis. 2003;17(2):131–47.

7 Wagner B, Müller J, Maercker A. Death by request in Switzerland: PTSD and Complicated Grief after witnessing assisted-suicide. European Psychiatry 2011.

8 Weiss DS, Marmar CR. The impact of event scale-revised. Assessing psychological trauma and PTSD 1997:399–411.

9 Maercker A, Schützwohl M. Erfassung von psychischen Belastungsfolgen: Die Revision der Impact of Event-Skala (assessing effects of traumatic events: the Impact of Event Scale-Revised). Diagnostica. 1998;44:130–41.

10 Neal LA, Busuttil W, Rollins J, Herepath R, Turnbull G, Strike P. Convergent validity of measures of post-traumatic stress disorder in a mixed military and civilian population. J Trauma Stress. 1994;7(3).

11 Horowitz MJ, Siegel B, Holen A, Bonanno GA, Milbrath C, Stinson CH. Diagnostic criteria for complicated grief disorder. Am J Psychiatry. 1997;154(7):904–10.

12 Langner R, Maercker A. Complicated grief as a stress response disorder: evaluating diagnostic criteria in a German sample. J Psychosom Res. 2005;58(3):235–42.

13 Forstmeier S, Maercker A. Comparison of two diagnostic systems for Complicated Grief. J Affect Disord. 2007;99(1–3):203–11.

14 Derogatis LR. The Brief Symptom Inventory (BSI): Administration, Scoring & Procedures Manual-II: Clinical Psychometric Research Towson, MD; 1992.

15 Campbell R, Raja S. Secondary victimization of rape victims: insights from mental health professionals who treat survivors of violence. Violence Vict. 1999;14(3):261–75.

16 Wagner B, Keller V, Knaevelsrud C, Maercker A. Social Acknowledgement as a Predictor of Posttraumatic Stress and Complicated Grief after Witnessing Assisted Suicide. International Journal of Social Psychiatry accepted.

17 Sidebotham P, Blair PS, Evason-Coombe C, Edmond M, Heckstall-Smith E, Fleming P. Responding to unexpected infant deaths: experience in one English region. Arch Dis Child. 2010;95(4):291–5.

18 Fleming PJ, Blair PS, Sidebotham PD, Hayler T. Investigating sudden unexpected deaths in infancy and childhood and caring for bereaved families: an integrated multiagency approach. BMJ. 2004;328(7435):331–4.