

# Trauma and Posttraumatic Stress Disorder in the Elderly: Findings From a German Community Study

Carsten Spitzer, M.D.; Sven Barnow, Ph.D.; Henry Völzke, M.D.;  
Ulrich John, Ph.D.; Harald J. Freyberger, M.D.; and Hans Joergen Grabe, M.D.

Received Sept. 3, 2007; accepted Nov. 7, 2007. From the Department of Psychiatry and Psychotherapy, Ernst-Moritz-Arndt-University, Greifswald/Stralsund (Drs. Spitzer, Freyberger, and Grabe); the Institute of Psychology, Ruprecht-Karls University, Heidelberg (Dr. Barnow); and the Institute for Community Medicine (Dr. Völzke) and the Institute of Epidemiology and Social Medicine (Dr. John), Ernst-Moritz-Arndt-University, Greifswald, Germany.

The work is part of the Community Medicine Research net (CMR) of the University of Greifswald, Germany, which is funded by the Federal Ministry of Education and Research (grant no. ZZ9603), the Ministry of Cultural Affairs, as well as the Social Ministry of the Federal State of Mecklenburg-West Pomerania. The CMR encompasses several research projects that are sharing data of the population-based Study of Health in Pomerania (SHIP; <http://ship.community-medicine.de>).

Drs. Spitzer, Barnow, Völzke, John, Freyberger, and Grabe have no personal affiliations or financial relationships with any commercial interest to disclose relative to the article.

Corresponding author and reprints: Carsten Spitzer, M.D., Institut und Poliklinik für Psychosomatische Medizin und Psychotherapie, Universitätsklinikum Hamburg-Eppendorf, Martinistr. 52; Gebäude O59, 20249 Hamburg, Deutschland (e-mail: [c.spitzer@uke.uni-hamburg.de](mailto:c.spitzer@uke.uni-hamburg.de)).

**Objective:** The present study assessed the risk of trauma exposure and subsequent posttraumatic stress disorder (PTSD) in an elderly community sample. Furthermore, gender differences and psychiatric comorbidity were analyzed.

**Method:** 3170 adults living in a German community were assessed by the PTSD module of the Structured Clinical Interview for DSM-IV and the Composite International Diagnostic-Screener. They were assigned to 3 age groups: young (44 years and younger; N = 997), middle-aged (45–64 years; N = 1322), and elderly (65 years and older; N = 851). Data for the present study were collected between December 2002 and December 2006.

**Results:** At least 1 trauma was reported by 54.6%, and the odds for trauma exposure were almost 4-fold in the elderly compared to the younger age groups (OR = 3.74; 95% CI = 3.13 to 4.47). Among those traumatized, the lifetime and 1-month prevalence rates of PTSD in the elderly were 3.1% and 1.5%, respectively, and did not differ from the rates of the young and middle-aged adults. Elderly men had a significantly increased risk for trauma exposure in general than elderly women ( $p = .012$ ), but there were no gender differences in PTSD prevalence rates. Elderly PTSD-positive participants had significantly higher odds for any psychiatric syndrome than those without PTSD (OR = 9.10; 95% CI = 2.64 to 31.28) with depression and anxiety being the most frequent conditions.

**Conclusion:** Our findings suggest that PTSD is certainly not rare in the elderly and that a lifetime diagnosis of PTSD is associated with symptoms of depression and anxiety. Assessment of trauma and PTSD should be integrated into routine examinations of the elderly to improve management and treatment provisions.

(*J Clin Psychiatry* 2008;69:693–700)

Since the introduction of posttraumatic stress disorder (PTSD) as a diagnosis in DSM-III,<sup>1</sup> there has been a growing clinical and scientific interest in this condition, and it has been recognized as a major issue in public health.<sup>2–4</sup> Posttraumatic stress disorder is characterized by a constellation of distressing and/or impairing symptoms that occur after experiencing, witnessing, or being confronted with a traumatic event that includes an actual or perceived threat to the self or others.<sup>5</sup> It involves repeated and intrusive memories related to the trauma, avoidance of trauma-related stimuli, and hyperarousal. The symptoms are required to last for at least 1 month and to cause marked distress or impairment in social, occupational, or other important areas of functioning.<sup>5</sup> Stressful events that qualify as trauma include torture, rape, child abuse, severe and nearly fatal accidents, combat experience, assaultive violence, and disaster.<sup>3,5</sup>

Epidemiologic studies in adult community populations have consistently found that a substantial percentage had experienced at least 1 traumatic event in their lifetime.<sup>6–14</sup> Lifetime prevalence rates for trauma exposure ranged between 20% and 90% across studies, depending on the definition and assessment of traumatic events and the country where the study was conducted.<sup>7,10</sup> For example, the vast majority of the adult populations of Mexico (77%) and the United States (55%–90%) reported trauma exposure.<sup>7,12,14</sup> In contrast, the lifetime prevalence of traumatic experiences was 40% in Chile<sup>13</sup> and 20% in

### TAKE-HOME POINTS

- ◆ Clinicians are advised to routinely screen for traumatic experiences and posttraumatic stress disorder (PTSD) in their elderly patients.
- ◆ PTSD often co-occurs with other mental disorders, particularly depression and anxiety.
- ◆ Unrecognized PTSD might hamper treatment response in late-life depression.

Germany.<sup>10</sup> Independent of the trauma rates, men have consistently been found to have a higher risk for trauma exposure than women.<sup>8,12-14</sup>

While some earlier community studies found relatively low lifetime prevalence rates of PTSD (based on DSM-III criteria) ranging between 1.0% and 1.3%,<sup>9,11</sup> more recent surveys using DSM-III-R and DSM-IV criteria have reported higher rates, with lifetime prevalence rates of up to 12%.<sup>12-14</sup> This increase in prevalence rates can partially be attributed to an extension of the stressor criterion, which defines the potentially traumatic events.<sup>15,16</sup> DSM-IV broadened the range of qualifying experiences and included a subjective component requiring that the "person's response involved intense fear, helplessness, or horror."<sup>5</sup> Furthermore, divergent findings across surveys can also be explained by differences in the methodology and in the socioeconomic background of the study populations. For example, the National Comorbidity Survey<sup>12</sup> found a PTSD lifetime prevalence of 7.8% in the total sample, whereas a very similar investigation in Chile reported a lifetime prevalence of 4.4%.<sup>13</sup> Despite these differences, most epidemiologic studies have consistently found that the PTSD prevalence rate for women is about twice as high as that for men (reviewed by Olf and co-workers<sup>17</sup> and Gavranidou and Rosner<sup>18</sup>).

Another consistent finding across clinical and community studies is that PTSD commonly co-occurs with other mental disorders.<sup>19-21</sup> Between 60% and almost 90% of PTSD-positive individuals from the general population have experienced other psychiatric disorders, and a substantial percentage have 3 or more psychiatric diagnoses.<sup>6,8,11-13</sup> PTSD is particularly likely to be comorbid with affective disorders (namely depression), other anxiety disorders, somatization, and substance abuse.<sup>19-21</sup>

Although the above mentioned epidemiologic studies<sup>6-14</sup> have explicitly focused on the adult community population, the majority did exclude the elderly, i.e., persons aged 65 years or older.<sup>6,7,10,12</sup> Only very few investigations included the elderly and found lifetime prevalence rates between 0.6% and 2.1%.<sup>8,9,13,22</sup> As compared to younger individuals, the elderly had a lower risk of PTSD in cases of trauma exposure.<sup>8,9</sup> With respect to gender differences in trauma and PTSD rates among the elderly, studies have yielded inconclusive results. Additionally, the types of traumatic events experienced by the elderly have not yet been reported. Furthermore, methodological

problems may distort previous findings. For example, in the Canadian Community Health Survey cycle 1.2<sup>22</sup> participants were assigned to the PTSD group in case they reported having been diagnosed with PTSD by a health care professional, i.e., the PTSD diagnosis was not arrived at by a structured face-to-face interview. Moreover, because cognitive functioning might be impaired among older subjects, it is important to control for this potential confounder, which was not done in the cited studies.<sup>8,9,13,22</sup>

Taking these considerations into account, our community-based study addressed the following hypotheses: (1) the risk of trauma exposure and subsequent PTSD (lifetime and 1-month prevalence) is decreased among the elderly compared to younger adults (aged 44 years and younger) and compared to middle-aged subjects (aged between 45 and 64 years); (2) as with trauma and PTSD in general, there are gender differences in prevalence rates of traumatic events and PTSD in the elderly age group; and (3) the comorbidity pattern observed in individuals with PTSD can be replicated for the elderly, too.

## METHOD

### Procedure and Subjects

Participants were recruited as part of the Study of Health in Pomerania (SHIP), which is an ongoing population-based health examination survey in northeastern Germany involving the 3 cities of Greifswald, Stralsund, and Anklam and 29 surrounding communities. A sample from the adult population was drawn from population registries. Data collection of the baseline study (SHIP-0) was performed between December 1997 and December 2000. Inclusion criteria were German citizenship, residency in West Pomerania, and age between 20 and 79 years. The SHIP-0 study population comprised 4310 participants providing informed written consent. The study was approved by the local Ethics Committee. The objectives and design of SHIP are published elsewhere.<sup>23</sup> In brief, data were collected in 2 medical centers specifically established for this study. One center was located in the University of Greifswald Hospital, and the other one was located in the municipal hospital of Stralsund. Participants were offered free transportation to the examination centers and back home, a meal, and 15 Euros (approximately 21 U.S. dollars) as incentives. The data collection comprised 4 parts: a health- and risk factor-related self-report

**Table 1. Sociodemographic Characteristics of the 3 Adult Age Groups<sup>a</sup> Assessed by the PTSD Module of the SCID and by the CID-S**

Characteristic	Young (N = 997)		Middle-Aged (N = 1322)		Elderly (N = 851)		Statistics	
	N	%	N	%	N	%	$\chi^2$	p
Gender							12.32	.002
Female	551	55.3	698	52.8	402	47.2		
Male	446	44.7	624	47.2	449	52.8		
Marital status							627.14	≤ .001
Single	366	36.7	75	5.7	30	3.5		
Married	535	53.7	1031	78.0	567	66.6		
Separated, widowed, or divorced	96	9.6	216	16.3	254	29.8		
School education							971.39	≤ .001
< 10 years	69	6.9	498	37.7	650	76.4		
10–11 years	752	75.4	619	46.8	115	13.5		
> 11 years	176	17.7	205	15.5	86	10.1		

<sup>a</sup>Young group: age = 44 years and younger; middle-aged group: age = 45–64 years; elderly group: age = 65 years and older.

Abbreviations: CID-S = Composite International Diagnostic-Screener, PTSD = posttraumatic stress disorder,

SCID = Structured Clinical Interview for DSM-IV.

questionnaire, an oral health examination, a medical examination, and a computer-aided health-related interview. The latter was conducted by trained and certified interviewers, and there was a continuous quality monitoring.<sup>23</sup>

The present study was part of the first 5-year follow-up investigation (SHIP-I) performed between December 2002 and December 2006. A total of 3300 participants of the original study were followed up (83.5% of eligible subjects). Of the 3300 participants, 13 (0.4%) did not complete the interview, and another 117 (3.5%) had to be excluded due to cognitive impairment as defined by a Mini-Mental State Examination (MMSE) score of 23 or below. Thus, 3170 adults living in the community were analyzed in the present study. They were assigned to the following 3 age groups: young adults (44 years and younger), middle-aged subjects (between 45 and 64 years), and elderly adults (65 years and older). Table 1 presents a detailed description of the sociodemographic characteristics of these 3 subsamples. As expected, subjects excluded due to cognitive impairment or incomplete data were significantly older than those included ( $72.4 \pm 7.8$  years vs.  $53.7 \pm 15.1$  years;  $F = 197.0$ ;  $df = 3298, 1$ ;  $p \leq .001$ ), but there were no differences with respect to the gender distribution (46.2% vs. 52.1% females, respectively;  $\chi^2 = 1.76$ ,  $p = .185$ ).

### Instruments

The health-related interview of SHIP-I included the PTSD module of the Structured Clinical Interview for DSM-IV (SCID),<sup>24</sup> the MMSE,<sup>25</sup> and the Composite International Diagnostic-Screener (CID-S).<sup>26</sup> The PTSD module of the SCID<sup>24</sup> was used to assess trauma exposure and PTSD. It is a structured interview frequently administered by traumatic stress professionals.<sup>27</sup> Although the module usually begins with the standard screening question about the experience of a traumatic, life-threatening, or extremely upsetting event, we slightly modified this beginning by directly asking about the exposure to 1 of the fol-

lowing events included as traumas in DSM-IV: combat or war zone experience, physical assault, rape, childhood sexual abuse, natural disaster, serious or nearly fatal accident, imprisonment and/or torture, life-threatening illness, sudden and unexpected death of a loved one, as well as witnessing or learning about traumas to others (cf. also Table 3). When asking about the loss of a loved one, we specifically emphasized the suddenness and unexpectedness of his or her death. If a participant answers “no” to each of the trauma questions, the module is terminated. In case of trauma exposure, the interview continues to assess the DSM-IV PTSD symptoms including fear, helplessness, or horror as initial reaction to the trauma (criterion A2), 5 re-experiencing symptoms (criterion B), 7 avoidance symptoms (criterion C), and 5 arousal symptoms (criterion D). If participants did not pass the required diagnostic threshold (e.g., at least 1 re-experiencing symptom), the interview was terminated. In case participants met the DSM-IV PTSD criteria, the final questions asked about the beginning and the end of the symptoms and whether they were present within the last months prior to the interview to determine the 1-month prevalence.

Cognitive functioning was assessed by means of the MMSE.<sup>25</sup> Scores of 23 or below on the MMSE are considered to indicate cognitive impairment, and participants not exceeding this cut-off were excluded.

The CID-S was used to estimate the 12-month prevalence rates of mental disorders.<sup>26</sup> It comprises 12 items reflecting the so-called stem questions of the Composite International Diagnostic Interview. These stem questions ascertain whether the core symptoms of a syndrome have occurred; failure to endorse these questions (e.g., denying having experienced a panic attack within the last 12 months) leads to an automatic classification of not having the syndrome. The CID-S allows screening for somatoform, anxiety, affective, and substance use disorders. It has an overall sensitivity of 85.3%, ranging from 74.7% for alcohol use disorder to 100% for panic disorder.<sup>26</sup>

**Table 2. Comparison of Trauma Exposure Rates and Posttraumatic Stress Disorder (PTSD) Prevalence Between the 3 Adult Age Groups**

Variable	Young (N = 997)		Middle-Aged (N = 1322)		Elderly (N = 851)		Statistics	
	N	%	N	%	N	%	$\chi^2$	p
Trauma exposure	422	42.3	657	49.7	651	76.5	238.00	≤ .001
PTSD prevalence <sup>a</sup>								
Lifetime	17	4.0	25	3.8	20	3.1	0.83	.661
1-month	15	3.6	17	2.6	10	1.5	4.52	.104

<sup>a</sup>Percentages refer to those with a positive trauma history.

**Table 3. Traumatic Events Reported by Elderly Subjects (aged 65 years or older) in Relation to Gender**

Event	Total Elderly (N = 851)		Women (N = 402)		Men (N = 449)		Univariate Statistics		Model Adjusted for Age (reference: women)		
	N	%	N	%	N	%	$\chi^2$	p	OR	95% CI	p
Any trauma	651	76.5	292	72.6	359	80.0	6.32	.012	1.41	1.02 to 1.96	.039
Combat or war zone experience	338	39.7	136	33.8	202	45.0	11.03	.001	1.52	1.14 to 2.03	.005
Physical assault	131	15.4	31	7.7	100	22.3	34.53	.001	3.33	2.14 to 5.16	≤ .001
Rape	26	3.1	26	6.5	0	0	...	...	...	...	...
Childhood sexual abuse	6	0.7	5	1.2	1	0.2	3.16	.106 <sup>a</sup>	0.18	0.02 to 1.53	.115
Natural disaster	8	0.9	1	0.2	7	1.6	3.91	.072 <sup>a</sup>	6.32	0.77 to 51.73	.086
Serious/near fatal accident	93	10.9	32	8.0	61	13.6	6.90	.009	1.83	1.17 to 2.88	.009
Imprisonment/torture	155	18.2	13	3.2	142	31.6	114.78	.001	23.98	12.29 to 46.78	≤ .001
Life-threatening illness	130	15.3	46	11.5	84	18.7	8.65	.003	1.74	1.18 to 2.57	.005
Sudden, unexpected death of a loved one	355	41.7	184	45.8	171	38.1	5.15	.023	0.73	0.55 to 0.96	.022
Witnessing/learning about traumas	98	11.5	28	7.0	70	15.6	15.49	.001	2.41	1.51 to 3.83	≤ .001
PTSD prevalence <sup>b</sup>											
Lifetime	20	3.1	12	4.1	8	2.2	1.91	.167	0.52	0.21 to 1.30	.164
1-month	10	1.5	7	2.4	3	0.8	2.60	.107	0.36	0.09 to 1.42	.145

<sup>a</sup>Fisher exact test.

<sup>b</sup>Percentages refer to those with a positive trauma history.

Abbreviation: PTSD = posttraumatic stress disorder.

Symbol: ... = not applicable.

## Statistical Analysis

All analyses were computed using the Statistical Package for the Social Sciences (SPSS, version 14.0, SPSS, Inc., Chicago, Ill.). We applied analyses of variance for continuous variables and  $\chi^2$  test for categorical variables. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated by means of logistic regression when controlling for potential confounders was necessary. Significance level was set at  $p < .05$ .

## RESULTS

At least 1 traumatic experience had been experienced by 1730 participants (54.6%), and the mean  $\pm$  SD number of reported traumatic events was  $1.61 \pm 0.97$  (range, 1–7). As depicted in Table 2, the elderly participants showed significantly more trauma exposure than the 2 younger age groups. The risk of trauma exposure was almost 4-fold in the elderly as compared to the younger age groups (OR = 3.74; 95% CI = 3.13 to 4.47;  $p \leq .001$ ). Their mean  $\pm$  SD number of traumatic experiences ( $2.06 \pm 1.18$ ) was significantly higher than those of the middle-aged ( $1.31 \pm 0.64$ ) and young adults ( $1.34 \pm 0.75$ ;  $F = 130.29$ ;  $df = 1727,2$ ;  $p \leq .001$ ).

Among those traumatized (N = 1730), the lifetime and 1-month prevalence rates for PTSD were 3.6% (N = 62) and 2.4% (N = 42), respectively. There were no differences across the 3 age groups (cf. Table 2). However, controlling for the number of traumatic events and the educational level, the odds of a PTSD diagnosis (lifetime) were significantly lower in the elderly as compared to the younger age groups (OR = 0.33; 95% CI = 0.17 to 0.64;  $p \leq .001$ ).

Table 3 depicts that the most frequent trauma was sudden, unexpected death of a loved one (41.7%) followed by combat or war zone experience (39.7%) among the elderly. Of those with trauma exposure, the majority had experienced more than 1 trauma (N = 380; 58.4%) with a mean of 2.1 (SD = 1.2; range, 1–7). Female subjects reported significantly fewer traumatic events ( $1.7 \pm 1.0$ ) than men ( $2.3 \pm 1.3$ ;  $F = 46.80$ ;  $df = 649,1$ ;  $p \leq .001$ ). The frequency of the various trauma types differed between women and men (cf. Table 3). Because women were significantly younger than men ( $72.3 \pm 5.7$  years compared to  $73.2 \pm 5.8$  years;  $F = 4.74$ ;  $df = 848,1$ ;  $p = .03$ ), age was taken into account as a confounding variable when calculating odds ratios. As can be seen from Table 3, compared to women, male participants had a significantly

Table 4. Estimates of 12-Month Prevalence Rates of Mental Disorders Among the Elderly (aged 65 years or older) With and Without PTSD (lifetime)

Mental Disorder	PTSD (N = 20)		No PTSD (N = 831)		OR	95% CI	p
	N	%	N	%			
Any syndrome	17	85.0	319	38.4	9.10	2.64 to 31.28	≤ .001
Somatization	5	25.0	82	9.9	3.05	1.08 to 8.59	.035
Any anxiety syndrome	13	65.0	174	20.9	7.01	2.76 to 17.84	.001
Panic attack	7	35.0	69	8.3	5.95	2.30 to 15.40	.001
Generalized anxiety	9	45.0	97	11.7	6.19	2.50 to 15.32	.001
Social phobia	4	20.0	13	1.6	15.73	4.62 to 53.55	.001
Agoraphobia	2	10.0	11	1.3	8.28	1.71 to 40.11	.009
Specific phobia	3	15.0	38	4.6	3.68	1.03 to 13.11	.044
Affective syndromes	14	70.0	171	20.6	9.01	3.41 to 23.78	.001
Depression	14	70.0	167	20.1	9.28	3.51 to 24.51	.001
Mania	1	5.0	15	1.8	2.86	0.36 to 22.80	.320
Substance misuse	3	15.0	69	8.3	1.95	0.56 to 6.82	.296
Alcohol	...	...	1	0.1	...	...	...
Sedatives	3	15.0	68	8.2	1.98	0.57 to 6.93	.285

Abbreviation: PTSD = posttraumatic stress disorder.

Symbol: ... = not applicable.

increased risk for trauma exposure in general, combat, physical assault, accidents, imprisonment, illness, and witnessing of traumatic events. However, among those traumatized there were no gender differences with respect to lifetime or 1-month prevalence rates for PTSD. Even when additionally controlling for the number of traumatic events, results did not change, although a trend toward lower odds for lifetime and current PTSD was found among men compared to women (lifetime PTSD: OR = 0.40; 95% CI = 0.15 to 1.06;  $p = .064$ ; current PTSD: OR = 0.26; 95% CI = 0.06 to 1.08;  $p = .064$ ).

Estimation of 12-month prevalence rates of mental disorders by means of the CID-S revealed that the elderly subjects with a lifetime diagnosis of PTSD had a significantly higher odds ratio for having experienced any psychiatric syndrome than those without a PTSD diagnosis (OR = 9.10; 95% CI = 2.64 to 31.28;  $p \leq .001$ ; Table 4). Within the last year prior to the study, 85% of PTSD-positive participants endorsed at least 1 of the stem questions of the CID-S compared to 38.4% of the PTSD-negative individuals ( $\chi^2 = 17.76$ ,  $p = .001$ ). The mean  $\pm$  SD number of positively answered stem questions was  $2.80 \pm 2.19$  in those with a lifetime diagnosis of PTSD compared to  $0.73 \pm 1.20$  in PTSD-free subjects ( $F = 55.32$ ;  $df = 849,1$ ;  $p \leq .001$ ). Among PTSD-positive participants, depression was the most common syndrome (70%), followed by anxiety syndromes (65%). The odds for somatization, anxiety syndromes, and depression were significantly higher in those with PTSD than among those without PTSD, but these 2 groups did not differ with respect to mania or substance misuse syndromes.

## DISCUSSION

While there has been extensive research on traumatic stress and PTSD in recent years, our knowledge about

these conditions in the elderly is still very limited.<sup>28–31</sup> This is particularly true for prevalence studies on traumatic events and PTSD, which have predominantly been confined to young and middle-aged adults, i.e., those aged between 18 and 64 years.<sup>6,7,10,12</sup> Unexpectedly and in contrast to our hypothesis, the present community survey among cognitive, healthy, noninstitutionalized elderly revealed that lifetime trauma exposure was much more frequent among the older age group than among younger adults. With a lifetime and 1-month prevalence of 3.1% and 1.5%, respectively, PTSD is definitely not rare in the elderly. Consistent with prior research,<sup>6,7,10,12,17</sup> our findings also indicate that older men had a higher odds for trauma exposure compared to women, but there were no gender differences in PTSD frequency. Finally, estimates of comorbid psychiatric conditions suggest a close association of PTSD with symptoms of depression and anxiety, which has also been found by other investigators.<sup>6,8,11–13</sup>

The sample's overall rate of trauma exposure was 54.6%, which is very close to the figures reported by Kessler and coworkers for the National Comorbidity Survey,<sup>12</sup> but much higher than the approximately 20% found in another German community survey.<sup>10</sup> Although Hapke and colleagues<sup>10</sup> applied DSM-IV PTSD criteria, they did not include sudden, unexpected death of a loved one as a traumatic event, which was the most common trauma in our and other studies,<sup>7,14</sup> thereby increasing the number of qualifying events and PTSD prevalence rates. Additionally, it must be taken into account that our sample has been recruited in an area of the former German Democratic Republic, which in fact certainly did not represent a democratic system. Instead, there was a high probability for people to be subjected to observation, prosecution, and even imprisonment.<sup>32</sup> While previous investigations<sup>8,33</sup> indicated that the past-year exposure to traumatic experiences was higher in younger than in older adults, we found

a significantly higher lifetime prevalence of trauma exposure in elderly participants (76.5%) compared to younger and middle-aged respondents (42.3% and 49.7%, respectively). This steep increase in trauma frequency among the elderly cannot only be explained by the trivial notion that older individuals have more years in which to experience trauma, but calls for another explanation: elderly subjects in the present study were born between 1918 and 1940. Therefore, virtually all of them can be assumed to have consciously experienced the traumatic effect of World War II, either as young adults or children.<sup>34</sup> Our line of reasoning is supported by the findings that combat or war zone experience was the most frequent trauma reported by men and the second most common traumatic event among women (cf. Table 3).

Although rates of trauma vary across age cohorts,<sup>33</sup> prior epidemiologic research<sup>6-14</sup> has failed to report its prevalence in relation to age. Thus, it is difficult to relate our results to previous findings, but in line with other researchers<sup>7</sup> we found that sudden, unexpected death of a loved one is the most common trauma reported by the elderly. Furthermore, physical assault was much more common among men, while sexual victimization (i.e., rape and childhood sexual abuse) was more frequent in women, which is consistent with the literature (reviewed by Breslau<sup>15</sup>).

We found a PTSD lifetime prevalence of 3.1% among the elderly, which is higher than rates previously reported ranging between 0.6% and 2.1%.<sup>9,13,22</sup> Using DSM-IV PTSD criteria (as done in our study) might explain the higher lifetime prevalence compared to rates found in earlier investigations applying DSM-III and DSM-III-R criteria,<sup>9,13</sup> because the extension of the stressor criterion in DSM-IV increases the number of events that can be used to diagnose PTSD.<sup>15,16</sup> Additionally, differences in the socioeconomic background of the study populations have to be taken into account, since lower socioeconomic status increases the risk for PTSD.<sup>3,13,14</sup>

The 6-month prevalence of PTSD among older community residents in The Netherlands was found to be 0.9%,<sup>35</sup> which is close to the 1-month prevalence of 1.5% in our study. Because The Netherlands and Germany can be considered very similar with respect to their socioeconomic situations and because van Zelst and coworkers<sup>35</sup> used similar methods to ours, their study and our findings strongly support the conclusion that current PTSD is a relevant mental disorder among the elderly. Correspondingly, posttraumatic stress was reported to be a frequent and significant problem in older adults in primary care<sup>36</sup> and among those elderly with a specific trauma history, e.g., holocaust survivors<sup>37-40</sup> or aging combat veterans.<sup>41-43</sup>

In line with prior research,<sup>6,7,10,12,17</sup> we found that elderly men had higher odds for trauma exposure compared to elderly women. However, there were no gender differences in both lifetime and 1-month PTSD prevalence,

which was slightly, but not significantly higher in female than in male participants. This is in contrast to the majority of the more recent community studies,<sup>7,12-14,17</sup> but consistent with the earlier Epidemiologic Catchment Area surveys.<sup>9,11</sup> Although several explanations have been proposed to account for the approximately 2-fold higher prevalence of PTSD in women than in men,<sup>17,18</sup> there is evidence that female gender is not an independent risk factor for PTSD when type of trauma and pre-existing mental disorders are controlled for.<sup>10</sup> Type of trauma appears to be more important than gender, because the conditional risk of PTSD varies considerably across traumatic events.<sup>10,12,44</sup> Thus, PTSD prevalence rates are partially determined by the trauma types experienced by a specific population, which again depend on its sociocultural, economic, and historical background. With respect to our elderly sample and as noted above, the experience of World War II is very likely to account for our findings. Survivors of World War II and the so-called war children in particular have suffered from a high degree of posttraumatic stress, some of them until today.<sup>34,45</sup>

Estimates of 12-month prevalence of psychiatric conditions indicated a high comorbidity of lifetime PTSD with depression, anxiety, and somatization, which corresponds to findings derived from both the general population<sup>6,8,11-13</sup> and elderly primary care samples.<sup>36,46</sup> Given the high comorbidity between depression and PTSD and because there is evidence that PTSD might hamper treatment response in late-life depression,<sup>46</sup> it is important to screen for trauma and PTSD in elderly depressed subjects.<sup>29,31</sup> Likewise, comorbid PTSD may be a complicating factor in the treatment of anxiety and somatoform disorders in the elderly, too. Future research is warranted to investigate these issues.

In closing, several methodological limitations merit discussion. First of all, the present study was part of the first 5-year follow-up investigation of an ongoing longitudinal study. Thus, the elderly subsample might not be truly representative of the older general population in Germany. Second, the PTSD-positive group was small, potentially compromising statistical power, e.g., the precision of risk estimates was low as reflected by large confidence intervals in some instances. In addition, although we directly asked about traumatic events at the beginning of the interview to enhance recall, we cannot rule out the possibility of recall bias, especially when considering that some of the traumatic events lay in the distant past from the perspective of our elderly study population. Finally, comorbidity findings must be viewed as preliminary as they were based on estimations derived from the CID-S.<sup>26</sup>

Despite these caveats, our study has some major strengths such as the inclusion of a larger sample of community-dwelling elderly, the exclusion of individuals

with cognitive impairment, and the assessment of traumatic events and PTSD with a psychometrically sound interview often used in PTSD research.<sup>27</sup> Our findings do contribute to our knowledge about traumatic experiences and PTSD in the elderly, which has been a largely neglected area of scientific interest.<sup>28–31</sup> The results of the present survey indicate that trauma exposure is very common among older adults in the community and that PTSD is a prevalent sequel of such exposure. Because there is growing evidence that PTSD is a highly impairing condition for the individual and poses enormous socioeconomic burden to society,<sup>2–4</sup> we strongly suggest integrating assessment of trauma and posttraumatic stress into routine examinations of the elderly to improve management and treatment provision. We are definitely in need of further studies on trauma and related distress in late life.

**Disclosure of off-label usage:** The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents that is outside U.S. Food and Drug Administration–approved labeling has been presented in this article.

## REFERENCES

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Third Edition. Washington, DC: American Psychiatric Association; 1980
- Lecrubier Y. Posttraumatic stress disorder in primary care: a hidden diagnosis. *J Clin Psychiatry* 2004;65(suppl 1):49–54
- Yehuda R. Posttraumatic stress disorder. *N Engl J Med* 2002;346:108–114
- Kessler RC. Posttraumatic stress disorder: the burden to the individual and to society. *J Clin Psychiatry* 2000;61(suppl 5):4–14
- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association; 1994
- Breslau N, Davis GC, Andreski P, et al. Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Arch Gen Psychiatry* 1991;48:216–222
- Breslau N, Kessler RC, Chilcoat HD, et al. Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiatry* 1998;55:626–632
- Creamer M, Burgess P, McFarlane AC. Posttraumatic stress disorder: findings from the Australian National Survey of Mental Health and Well-Being. *Psychol Med* 2001;31:1237–1247
- Davidson JR, Hughes D, Blazer DG, et al. Posttraumatic stress disorder in the community: an epidemiological study. *Psychol Med* 1991;21:713–721
- Hapke U, Schumann A, Rumpf HJ, et al. Posttraumatic stress disorder: the role of trauma, pre-existing psychiatric disorders, and gender. *Eur Arch Psychiatry Clin Neurosci* 2006;256:299–306
- Helzer JE, Robins LN, McEvoy L. Posttraumatic stress disorder in the general population: findings of the epidemiologic catchment area survey. *N Engl J Med* 1987;317:1630–1634
- Kessler RC, Sonnega A, Bromet E, et al. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995;52:1048–1060
- Zlotnick C, Johnson J, Kohn R, et al. Epidemiology of trauma, posttraumatic stress disorder (PTSD) and comorbid disorders in Chile. *Psychol Med* 2006;36:1523–1533
- Norris FH, Murphy AD, Baker CK, et al. Epidemiology of trauma and posttraumatic stress disorder in Mexico. *J Abnorm Psychol* 2003;112:646–656
- Breslau N. Epidemiologic studies of trauma, posttraumatic stress disorder, and other psychiatric disorders. *Can J Psychiatry* 2002;47:923–929
- Breslau N, Kessler RC. The stressor criterion in DSM-IV posttraumatic stress disorder: an empirical investigation. *Biol Psychiatry* 2001;50:699–704
- Ollif M, Langeland W, Draijer N, et al. Gender differences in posttraumatic stress disorder. *Psychol Bull* 2007;133:183–204
- Gavranidou M, Rosner R. The weaker sex? gender and posttraumatic stress disorder. *Depress Anxiety* 2003;17:130–139
- Brady KT. Posttraumatic stress disorder and comorbidity: recognizing the many faces of PTSD. *J Clin Psychiatry* 1997;58(suppl 9):12–15
- Brady KT, Killeen TK, Brewerton T, et al. Comorbidity of psychiatric disorders and posttraumatic stress disorder. *J Clin Psychiatry* 2000;61(suppl 7):22–32
- Keane TM, Kaloupek DG. Comorbid psychiatric disorders in PTSD: implications for research. *Ann N Y Acad Sci* 1997;821:24–34
- Sareen J, Cox BJ, Stein MB, et al. Physical and mental comorbidity, disability, and suicidal behavior associated with posttraumatic stress disorder in a large community sample. *Psychosom Med* 2007;69:242–248
- John U, Greiner B, Hensel E, et al. Study of Health In Pomerania (SHIP): a health examination survey in an east German region: objectives and design. *Soz Praventivmed* 2001;46:186–194
- First MB, Spitzer RL, Gibbon M, et al. Structured Clinical Interview for DSM-IV Axis I Disorders. Washington, DC: American Psychiatric Press; 1997
- Folstein MF, Folstein SE, McHugh PR. “Mini-mental state”: a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975;12:189–198
- Wittchen HU, Höfler M, Gander F, et al. Screening for mental disorders: performance of the Composite International Diagnostic-Screener (CID-S). *Int J Methods Psychiatr Res* 1999;8:59–70
- Elhai JD, Gray MJ, Kashdan TB, et al. Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects? a survey of traumatic stress professionals. *J Trauma Stress* 2005;18:541–545
- Averill PM, Beck JG. Posttraumatic stress disorder in older adults: a conceptual review. *J Anxiety Disord* 2000;14:133–156
- Busuttill V. Presentations and management of posttraumatic stress disorder and the elderly: a need for investigation. *Int J Geriatr Psychiatry* 2004;19:429–439
- Flint AJ. Epidemiology and comorbidity of anxiety disorders in the elderly. *Am J Psychiatry* 1994;151:640–649
- Weintraub D, Ruskin PE. Posttraumatic stress disorder in the elderly: a review. *Harv Rev Psychiatry* 1999;7:144–152
- Spitzer C, Ulrich I, Plock K, et al. Observed, pursued, disintegrated: mental disorders among victims of non-criminal repressions in the former GDR [in German]. *Psychiatr Prax* 2007;34:81–86
- Norris FH. Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *J Consult Clin Psychol* 1992;60:409–418
- Kuwert P, Spitzer C, Trader A, et al. Sixty years later: posttraumatic stress symptoms and current psychopathology in former German children of World War II. *Int Psychogeriatr* 2007;19:955–961
- van Zelst WH, de Beurs E, Beekman AT, et al. Prevalence and risk factors of posttraumatic stress disorder in older adults. *Psychother Psychosom* 2003;72:333–342
- Rauch SA, Morales KH, Zubritsky C, et al. Posttraumatic stress, depression, and health among older adults in primary care. *Am J Geriatr Psychiatry* 2006;14:316–324
- Brodaty H, Joffe C, Luscombe G, et al. Vulnerability to posttraumatic stress disorder and psychological morbidity in aged holocaust survivors. *Int J Geriatr Psychiatry* 2004;19:968–979
- Joffe C, Brodady H, Luscombe G, et al. The Sydney Holocaust study: posttraumatic stress disorder and other psychosocial morbidity in an aged community sample. *J Trauma Stress* 2003;16:39–47
- Trappler B, Cohen CI, Tulloo R. Impact of early lifetime trauma in later life: depression among Holocaust survivors 60 years after the liberation of Auschwitz. *Am J Geriatr Psychiatry* 2007;15:79–83
- Yehuda R, Kahana B, Schmeidler J, et al. Impact of cumulative lifetime trauma and recent stress on current posttraumatic stress disorder symptoms in holocaust survivors. *Am J Psychiatry* 1995;152:1815–1818
- Hierholzer R, Munson J, Peabody C, et al. Clinical presentation of PTSD in World War II combat veterans. *Hosp Community Psychiatry* 1992;43:816–820
- Spiro A 3rd, Schnurr PP, Aldwin CM. Combat-related posttraumatic

- stress disorder symptoms in older men. *Psychol Aging* 1994;9:17–26
43. Fontana A, Rosenheck R. Traumatic war stressors and psychiatric symptoms among World War II, Korean, and Vietnam War veterans. *Psychol Aging* 1994;9:27–33
44. Frans O, Rimmo PA, Aberg L, et al. Trauma exposure and posttraumatic stress disorder in the general population. *Acta Psychiatr Scand* 2005;111:291–299
45. Bramsen I, van der Ploeg HM. Fifty years later: the long-term psychological adjustment of ageing World War II survivors. *Acta Psychiatr Scand* 1999;100:350–358
46. Hegel MT, Unutzer J, Tang L, et al. Impact of comorbid panic and posttraumatic stress disorder on outcomes of collaborative care for late-life depression in primary care. *Am J Geriatr Psychiatry* 2005;13:48–58

---

For the CME Posttest for this article, see pages 871–872.

---