

Treatment of PTSD and comorbid symptoms in adult and elderly refugees: does age matter?

M.A.M.L. Louwers

February 2015

Student number: 3601013
Supervisor Utrecht University: Prof. Dr. R.J. Kleber
Supervisor Stichting Centrum '45: Dr. S.M. de la Rie
Master's program: Clinical and health psychology
Faculty of Social Sciences

Stichting **Centrum '45**



Universiteit Utrecht

Abstract

Is there a difference in the reduction of PTSD symptoms and comorbid symptoms before and after treatment of traumatized adult and elderly refugees? To research this subject, data of ninety-one adults (aged 18 – 49) and thirty-three elderly (aged 50 – 63) were drawn from the electronic patient record of Centrum '45, a specialized center for traumatized refugees and asylum seekers. In the overall sample, small decreases in PTSD, anxiety and depression symptoms were found with an effect size of approximately 0.12. No age effects were found in treatment progression and symptom severity. Unexpectedly we found symptom severity before treatment predicted treatment progression. The present study has brought us a step forward in gaining knowledge of PTSD in elderly refugees. However, research on this subject is limited and clearly further research is required. Further research should focus on a more general PTSD population and also include elderly with a higher mean age.

This thesis is written in a collaboration of Utrecht University and Stichting Centrum '45. In this context J. Lely (PhD.) is currently working on her promotion project, in which she studies the treatment of elderly with PTSD. In the period from February till August 2014 I worked as an intern at Centrum '45 for supporting J. Lely in her promotion, and writing my thesis as a addition on this subject of research.

I would like to thank my supervisor Dr. R.J. Kleber for his guidance and feedback in writing this thesis. I have appreciated his valuable advice and directions but also the oppertunities to form this thesis to my own wishes.

Other important persons are my supervisors at Centrum '45, J. Lely (PhD.) and Dr. S.M. de la Rie, whom I would like to thank for their feedback. I would like to give my special thanks to Jeannette Lely, for giving me the opportunity to learn so much about doing research, for her *gezellige* coffee moments and her unceasing enthusiasm.

During the process of writing this thesis I had a lot of help of people who are very dear to me. In the first place I would like to thank my partner in crime, Lloyd Fasting, for his everlasting support and critical commentaries on my work. Additionnaly, I give thanks to my loving parents and sisters for always being there for me when needed.

Introduction

Many of us experience a stressful event at least once and some of us even more. According to an epidemiological research 69% of the population experiences a stressful event once in their lifetime (Norris, 1992). Not everyone who experiences a stressful event will experience it as traumatic (Hiskey, Luckie, Davis & Brewin, 2008). Approximately 8% to 54% experiences long-term distress or even develops posttraumatic stress disorder (PTSD) afterwards (Au, Dickstein, Comer, Salters-Pedneault & Litz, 2013). In this light it is not surprising PTSD has received a great deal of attention in psychological literature. According to the recently published Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) PTSD is a mental disorder including symptoms in four clusters: (a) re-experiencing, (b) avoidance, (c) negative alterations in mood and cognitions and (d) alterations in arousal (American Psychiatric Association, 2013).

Not all PTSD patients show exactly the same clinical picture. There are many factors that influence the presentation and severity of PTSD symptoms. Whether someone eventually develops PTSD after trauma exposure depends on several factors. In the present literature there is a debate on whether old age is a risk factor for development of PTSD. As reported by a prevalence study of Glaesmer (2010), 64.3% of individuals aged 75 and older has experienced at least one traumatic event. Of course, not all elderly who were exposed to traumatic events develop eventually PTSD. In contrast, many researchers pose the PTSD prevalence rates among elderly as much lower than among adults (Weintraub & Ruskin, 1999).

The aim of the present study is twofold. The first aim is to examine the influence of age on the presentation and severity of PTSD symptoms and treatment progression among adult (18-49) and elderly (50+) PTSD patients. The second aim is to explore the influence of symptom severity on treatment progression.

Previous research on elderly

Research on PTSD has focused mainly on younger and middle-aged adults (Lunney, Schnurr & Cook, 2014). Since the registration of PTSD in the DSM-III in the 1980s knowledge about the presentation and treatment of PTSD symptoms has become more and more widespread. However, PTSD in elderly has received little attention in the past decades (Cook & Niederehe, 2007). Many researchers are reluctant to study elderly because they form a complex and challenging research population. The main reason is the existence of multiple confounding factors and high dropout rates. Also, elderly are often reluctant to participate in a long-term research project. Studies that did focus on PTSD in elderly were mainly case studies (Ladouceur, Léger, Dugas & Freeston, 2004; Ong & Carter, 2001; Russo, Hersen & van Hasselt, 2001; Ruzich, Looi & Robertson, 2004). Knowledge about PTSD among elderly in particular has remained in its emerging stages. Due to

heightened life standards, the post-World War II baby boom and increasing longevity, a greater proportion of the population in West Europe is formed by elderly (Böttche, Kuwert & Knaevelsrud, 2011; Frueh et al., 2006). Concern about how our health system is going to cope with the increasing demand of the elderly on the health care services is to be expected. Therefore, improving our knowledge on this subject is an issue of great relevance.

Normal aging is associated with deteriorating physical condition and decreasing executive functions such as attention and memory (Moore, 2008). One can imagine that aging in itself has its complications, let alone when it is accompanied by a mental disorder. One would expect cognitive rigidity (Schuitevoerder et al., 2013), diminishing social support networks (Ogle, Rubin & Siegler, 2013a) and physical problems associated with aging to affect mental health in a negative way. PTSD comes with cognitive impairment including attention, memory and other executive functions (Moore, 2008). These impairments are also common in normal aging, which is problematic for psychological research on this subject (Lapp, Agbokou & Ferreri, 2007). For that reason Lapp and colleagues (2007) recommend PTSD must be understood within the context of normal biological, psychological and social changes that are seen with aging.

Prevalence rates

An epidemiological study among 814 German elderly reported a present PTSD prevalence rate of 7.2% (Glaesmer, 2010). A review of Böttche and colleagues (2011) evaluated the current literature about PTSD in elderly. In general, all studies but one (Maercker et al., 2008) reported elderly show lower lifetime prevalence rates (2.5-3.9%) than younger and middle-aged adults (3.8-8.2%). The study of Maercker and colleagues (2008) explored prevalence rates in the general German population. The elderly in this study were mostly World War II survivors, which explains the high PTSD prevalence rate. A Dutch population-based study reported other rates; 0.9% of elderly showed current PTSD, compared to a lower percentage of 0.4% among adults (van Zelst, de Beurs, Beekman, Deeg & van Dyck, 2003). This sounds plausible, as data suggests 40% of PTSD patients do not achieve full remission (Glaesmer, Kaiser, Brachler, Freyberger & Kuwert, 2012). Therefore it seems logical that PTSD remains present into old age. Clearly, the current literature in which prevalence rates of PTSD in elderly are reported shows disparity. Most studies are epidemiological studies and these mostly assess the current prevalence rate after a calamity such as an earthquake or hurricane (Pietrzak, Southwick, Tracy, Galea & Norris, 2012; Kun, Tong, Liu, Pei & Luo, 2013), or they are focused on a specific group, such as holocaust survivors (Yehuda et al., 1997) or veterans (Owens, Baker, Kasckow, Ciesla & Mohamed, 2005). These studies often show very high prevalence rates, most probably due to the asselective nature of the research samples. Whether these rates can be generalized to other populations is questionable. Furthermore, any discrepancies can

occur because of the use of different measuring instruments and differing PTSD criteria. Because of this, prevalence rates differ across studies. Studies comparing life time prevalence rates between adults and elderly are biased by age. Naturally, as elderly have lived longer, there is an increasing chance of having experienced a stressful event. Some researchers imply that the relationship between age and low PTSD symptoms is a side-effect of methodological factors that come with aging, like earlier mortality among PTSD elderly or reluctance to participation in research (Cook & Niederehe, 2007). In conclusion, comparing life-time prevalence rates between adults and elderly is complex and one must be cautious when doing so.

Presentation and severity of PTSD symptoms

In literature there seems to be controversy about the presentation and severity of PTSD symptoms in elderly. There is an ongoing and interesting debate whether traumatic exposure has a protective effect by building up resilience (inoculation effect) or whether it predisposes one to negative reactions (residual stress model) (Lapp et al., 2007). The inoculation hypothesis poses that elderly are more resistant to severe PTSD symptoms due to development of resilience to stress over the course of their lives (Thompson, Norris & Hanacek, 1993). The priorly experienced stressful events work as a protection to stress reactions to prospective stressful events. The residual stress model refers to the effect that former traumatic exposure leads to a vulnerability for stress. The residual stress can evoke negative reactions in a subsequent event (Cook & Niederehe, 2007). Evidence is found for a combination of these two theories. Most elderly who were traumatized in early-life report a fluctuation of symptoms; remission of symptoms can be followed by symptom exacerbations (Averill & Beck, 2000). A recent event or stressing life conditions (such as institutionalization) can evoke previously structured PTSD (Meihuizen and Soeteman, 2014). Although, symptom severity to a recent stressor is often lower for elderly compared to adults (Norris, 1992). Davidson, Kudler, Saunder and Smith (1990) reported lower symptom severity among older veterans compared to younger veterans. Older veterans did, however, show more physical problems. Elderly often express their mental problems in a somatic way, which has its implications for recognizing PTSD symptom severity (Davidson et al., 1990). Many studies claim elderly with PTSD show a less severe clinical picture in contrast to younger PTSD patients (Lapp et al., 2007). Aged holocaust survivors showed moderate or mild severity rather than extreme severity (Yehuda et al., 1997). Norris (1992) found in an epidemiological study of 1000 participants, that elderly showed lower levels of stress to stressful events compared to adults.

Of course, not just age itself predicts symptom severity. It is also influenced by the amount of traumas experienced. According to the dose-response model the impact of traumatic exposure on symptom severity depends on the magnitude of the traumatic event (Kaysen, Rosen, Bowman &

Resick, 2010). Research has found evidence for this model: exposure to multiple traumatic events, in contrast to a single traumatic event, exerts a greater negative impact to PTSD symptom severity, (Ogle et al., 2013b). Loneragan (2014) pointed out that having experienced multiple traumas is also associated with longer treatment and less treatment progression. Kolassa and colleagues (2010) supported this and the dose-response model by reporting that higher trauma exposure is associated with higher current symptom severity and lower probability of remission. This research showed that the number of traumas experienced influences recovery of PTSD and that the probability of recovery of PTSD is lower with high symptom severity. This could have its implications for predicting treatment progression. Common sense predicts that high symptom severity would lead to less treatment progression, which is supported by Blanchard and colleagues (1997) who found that a high initial PTSD score was the best predictor for meeting a PTSD diagnosis after treatment. Research in this area is however limited. Therefore this study will explore whether symptom severity before treatment exerts influence on treatment progression. This is possibly moderated by age and could be stronger for older individuals than for younger adults.

Research suggests that although elderly experience the same PTSD symptoms as adults, presentation of cluster-symptoms differ (Averill & Beck, 2000). Elderly demonstrate relatively high arousal and low re-experiencing symptoms (Cook & Niederehe, 2007). Mcfarlane (2000) noted that re-experiencing symptoms decrease over time, while avoidance symptoms increase. A review of seven articles reported a weak tendency for higher hyperarousal symptoms and lower re-experiencing symptoms for elderly (Böttche et al., 2011). Altogether, as PTSD patients age their avoidance and arousal symptoms remain present or increase, whereas re-experiencing symptoms decrease. Whether this difference can be influenced by treatment has not been clarified yet.

In conclusion, literature concerning PTSD symptom severity shows elderly present a less severe clinical picture compared to adults. This study will examine whether there are differences in the PTSD symptom presentation between adults and elderly and whether these differences are retained after treatment. Thereby, the amount of experienced traumas could influence symptom severity. Furthermore, it is expected that symptom severity influences treatment progression. Whether this effect is moderated by age will be explored.

Treatment

Research over the past decades has extended our knowledge of PTSD treatment in adult patients considerably and has stimulated new therapeutic approaches with robust support for their efficacy (Keane, Marshall & Taft, 2006). However, again, research has focused mainly on adult PTSD populations. Elderly appear to be excluded from most research samples, which implies elderly are seen as a different category. Strange enough this does not lead to more research on this group in

particular and it is apparently assumed most research findings can be generalized to elderly.

When treating elderly, one should bear in mind they are less familiar with psychological care. This is reflected in the fact that only 5.1% of elderly with anxiety disorders are being treated with psychological treatment (Hendriks, Oude Voshaar, Keijsers, Hoogduin & van Balkom, 2008). Elderly are not used to talk about psychological problems due to perceived stigma. Moreover, elderly have to cope with physical and cognitive decline. This is expressed in problems with short term memory, concentration problems and fatigue (Moore, 2008). Therefore Vink (2014) advises to pay much attention to psycho-education before giving treatment and to adjust the pace of therapy to the patients. This advice illustrates that treating elderly has a different and special approach, in comparison to treating younger and middle-aged adults.

Generally PTSD is treated with cognitive behavioral therapy (CBT) or Eye Movement Desensitization Reprocessing (EMDR), which are both considered as evidence based psychotherapies for the general PTSD population (Hofmann, Asnaani, Vonk, Sawyer & Fang, 2012; Lenze et al., 2001). These therapies are trauma-focused, which means they center on processing traumatic material (Dinnen, Simiola & Cook, 2012). Since a few years EMDR is upcoming and well researched, particularly among adults. Meiheizen and Soeteman (2012) stated EMDR is well applicable to elderly, on condition that the psychotherapist gives an extensive explanation about the treatment and adapts the working memory task to the executive abilities of the patient. Crumlish and O' Rourke (2010) reported in their review about treatment for refugees that ‘no treatment was firmly reported, but there was evidence for narrative exposure therapy and CBT’. CBT consists normally of an exposure component and a cognitive component. Caution must be taken with the application of intensive imaginary exposure treatments to elderly because this could increase arousal levels which could be harmful for the patients' health (Owens et al., 2005). Moreover, Owens and colleagues (2005) assert CBT may not be appropriate for elderly with cognitive impairments. The cognitive aspect of the treatment may be too abstract or complicated for patients reaching old age.

Narrative Exposure Therapy (NET) includes emotional exposure to memories of trauma and reorganizing these memories into chronological narrative (Robjant & Fazel, 2010). This therapy was special designed for PTSD and has since been used to treat especially refugees and asylum seekers. Bichescu and colleagues (2007) researched the use of NET on elderly with PTSD. They found that 56% of the PTSD patients did not meet the PTSD criteria after NET any more, in contrast to 11% of the waitlist group. The effect size had a very large value of 3.15. This value might be biased by the small sample size of nine participants.

Wetherell and colleagues (2013) devoted their study to a treatment program specially designed for anxiety disorders and compared the differences in treatment progression between

adults and elderly. Elderly took longer to respond to treatment and often relapsed after 18 months. Thereby the treatment progression was significantly lower for elderly than for adults. In short, they found elderly did respond to treatment, although not as much as adults. Remarkably, relaxation therapy (RT) showed a larger effect size (0.90) than CBT (0.33) and CBT without RT (0.00) (Wetherell et al., 2013). This is surprising, as RT is often used as control condition in treatment studies. A review of assessment and therapy among elderly showed minimal treatment progression (Owens et al., 2005). Patients received either trauma-focused individual therapy or group therapy. In addition, Thorp and colleagues (2009) conducted a meta-analysis and reported psychosocial treatment has a relative large effect on depressive symptoms and even a larger effect on anxiety symptoms. In a recent published review thirteen case-studies, four controlled studies and four non-controlled studies were evaluated on treatment outcome in elderly PTSD patients (Dinnen et al., 2015). A number of these studies concluded that exposure-based or EMDR therapy, compared to control condition, did reduce PTSD symptoms and comorbid depression and anxiety symptoms. Only few patients experienced full remission.

Overall, these results show a moderate treatment progression in elderly. In conclusion, elderly do respond to treatment, but only to a certain extent. In the available literature treatment outcomes of elderly are seldom compared to treatment outcomes in adult PTSD patients. Therefore it is unclear whether elderly do respond more or less to treatment than adults and whether age is an influencing factor. Hence the present study will focus on treatment progression in both elderly and adult PTSD patients. This will lead to a better understanding of whether a special treatment approach for elderly is required.

Comorbidity

Depression and anxiety might have a common genetic factor (Bonanno & Mancini, 2012). Research in the adult population has shown that around 60-90% of PTSD patients also have another comorbid mental disorder (Creamer, Burgess & McFarlane, 2001). Mainly depression is common in PTSD patients, 50-60% of PTSD patients have a comorbid depressive disorder and approximately 40% have a comorbid anxiety disorder (Creamer et al., 2001). It is also thought cognitions which are seen in depression might be a causal factor or precursor of PTSD (Breslau, 2002), this might be because cognitive alterations make an individual more vulnerable for developing PTSD. In a community-based sample after an earthquake it was found that in elderly, 70.3% of the PTSD patients was also suffering from an anxiety disorder and depression (Zhang, Shi, Wang & Liu, 2011). This is the only study found that reported a comorbidity rate for elderly. This rate does not deviate from the known comorbidity prevalence rates among adults. This is an indication that the current knowledge of comorbidity in adults can be generalized to elderly. No studies concerning the

different aspects of comorbid anxiety and depression in elderly were found.

The present study

Altogether, PTSD in elderly and their treatment remain uncharted territory. This study aims to answer the question whether there is a difference in the reduction of PTSD symptoms and comorbid symptoms before and after treatment of traumatized adult and elderly refugees. It is notable that research in elderly is seldom compared to adult outcomes on PTSD. The present study will compare PTSD symptom severity between adults and elderly. It is expected that all participants will benefit from treatment. Further, it is expected that elderly show less severe PTSD symptoms before treatment and show less treatment progression compared to adults. This study will also explore whether there is a pattern found in cluster PTSD symptoms. Former research found lower re-experiencing symptoms and average or higher avoidance and hyperarousal symptoms for elderly. In this study will be explored whether these differences are also found in this sample en whether this symptom pattern is retained after treatment. Moreover, the present study will explore whether symptom severity before treatment exerts influence on treatment progression. This effect could be moderated by age of the individual, with elderly showing less treatment progression in the case a higher symptom severity.

Methods

Participants

Data were drawn from the electronic patient record system of Centrum '45. Data were used from patients who were in treatment at Centrum '45 in the period from 2008 to 2014. Centrum '45 is a Dutch specialized institution for treating PTSD for specific groups, such as refugees and asylum seekers. Patients who met the diagnostic criteria for PTSD, depression or anxiety and completed diagnostic assessments before and after treatment were included in this study. PTSD, depression and anxiety diagnoses were based on the criteria of DSM-IV-TR (American Psychiatric Association, 2000) and determined at intake by a certified therapist. A total of 126 participants were included in the data-set, out of a total number which is not explicitly known to us. In 2011 1.693 patients were in treatment in Centrum '45 (Stichting Centrum '45, 2011). Therefore, the total number of patients in the period 2008 to 2014 can be estimated by 10.000. Participants were placed in one of the following two groups: adults (aged 18-49), and elderly (aged 50 and older). Socio-demographic characteristics of the participants are described in Table 1. Due to the type of data-requiring there was no dropout and no randomization of treatment.

Measures

Information regarding socio-demographic characteristics were collected during intake.

PTSD was measured using the Harvard Trauma Questionnaire (HTQ; Mollica, 1992). The HTQ is a self-report scale, which exists of three parts. Only the second part (2A) was used in this study. Part 2A consists of 16 items which describe PTSD symptoms. Each symptom is rated using a four-point Likert-type scale ranging from 1 (not at all) to 4 (extremely). For the participant's total score, all items were summed and divided by the amount of items which results in a score ranging from 1.00 to 4.00. A score below 2.00 indicates no PTSD, a score from 2.00 to 2.50 indicates subthreshold PTSD and a score above 2.50 indicates full PTSD. The psychometric qualities of the HTQ have been measured in a range of cultures. Mollica (1998) found an internal consistency rate of .96 in Indochinese refugees. Kleijn, Hovens and Rodenburg (2001) did an extensive research to the use of the translated versions of the HSCL-25 and the HTQ. Translations were available in English, Russian, Serbo-Croatian, Farsi and Arabic. Nearly all translations had a Cronbach's alpha above .80, which shows good internal consistency. They conclude the translated versions of the HTQ and HSCL-25 are adequate to use for diagnostic purposes.

The Hopkins Symptoms Checklist-25 (HSCL-25) was used to determine anxiety and depression symptoms. The HSCL was originally designed in the 1950s by Parloff, Kelman and Frank at Johns Hopkins University (Parloff, Kelman & Frank, 1954). The HSCL-25 is a symptom

Table 1.

Socio-demographic characteristics of the research population at pre-treatment, divided by age.

		Adults (n = 95)	Elderly (n = 31)	Total (n = 126)
Gender				
Male	n (%)	63 (67%)	22 (71%)	85 (68%)
Female	n (%)	31 (33%)	9 (29%)	40 (32%)
Age				
	M (SD)	36.57 (8.25)	55.09 (3.46)	41.25 (10.83)
	Range	17.82 - 49.9	50.2 - 63.54	17.82-63.54
Origin				
South-East Europe	n (%)	17 (18.1%)	9 (29%)	26 (20.8%)
Mid-East	n (%)	46 (48.9%)	18 (58.1%)	64 (51.2%)
Sub-Saharan Africa	n (%)	20 (22.3%)	-	20 (16 %)
Asia	n (%)	2 (2.1%)	1 (3.2%)	3 (2.4%)
Other	n (%)	9 (9.6%)	2 (6.5%)	11 (8.8%)
Number of experienced traumas				
	M (SD)	13.1 (4.65)	12.83 (4.40)	12.89 (4.46)
Therapy				
TF*	n (%)	29 (30.9%)	9 (29%)	38 (30.4%)
TF* + pharmacotherapy	n (%)	32 (34%)	10 (32.3%)	42 (33.6%)
TF* + group therapy	n (%)	5 (5.3%)	2 (6.5%)	7 (5.6%)
NET	n (%)	9 (9.6%)	5 (16.1%)	14 (11.2%)
EMDR	n (%)	5 (5.3%)	5 (16.1%)	10 (8%)
Other	n (%)	13 (10.4%)	-	13 (10.4%)

* Trauma focused individual therapy

inventory which has 25 items. It consists of two parts; part one has 10 items for measuring anxiety (example item: 'suddenly scared for no reason'), and part two consists of 15 items for measuring depression (example item: 'feeling low in energy'). Participants report on a four-point scale ranging from 'not at all' to 'extremely', rated 1 to 4, respectively. The score of the subscale is determined by taking the average score of the subscale. An average score above the cutoff value of 1.75 indicates

clinical distress (Hinton et al., 2004). Bean, Derluyn, Eurelings-Bontekoe, Broekart and Spinhoven (2007) tested the psychometric qualities of the HSCL-25 and found, despite of the heterogeneous adolescent refugee population, a good validity. In addition, a Cronbach's alpha of .95 was found for the total scale and a .92 for both depression and anxiety subscales (Jakobsen, Thoresen & Johansen 2011). Tinghög and Carstensen (2009) found an internal consistency of .94 for non-western immigrants and .96 for western Swedish non-immigrants. Concluding, the HSCL-25 shows good psychometric qualities and can reliably be used in a refugee population.

Procedures

Participants in this study were patients of Centrum '45. All patients in Centrum '45 were asked to sign a statement which says they give permission for using their data for research. The data of patients who have given their permission for participation can be included in an asked data-set. As part of the standard assessment procedure participants were asked to fill out the HTQ and the HSCL-25. All participants were immigrants; participants were either refugees or asylum seekers. Assessments were taken in Dutch, English or were translated by an interpreter over the phone. The HTQ and HSCL-25 were, when needed, available in English, Farsi, Arabic, French or Serb-Croatian translations. As these assessments are part of the standard assessment procedure, neither the participants nor the interviewers were aware of the research question.

The participants were surveyed at two points in time: at intake (T1) and after treatment (T2). After intake the most suitable treatment was indicated for the patient. In Table 1 is described which therapies were given to which patients. Not all participants used the same amount of time for completing treatment, thus the exact time between T1 and T2 differed among participants. Treatment was delivered by certified therapists who were employees of Centrum '45.

Statistics

All analyses were done by the statistical program IBM SPSS 20 (2011). The overall-treatment effect was tested by a repeated measures ANOVA. Regression was used to analyze age-effects and influencing factors. The PTSD subscales re-experiencing, avoidance and arousal were analyzed by ANOVA. The decrease in symptom severity between T1 and T2 (d) was calculated by subtracting the PTSD symptom score on T2 from the PTSD symptom score on T1, resulting in a difference score (d). For all analyses, an alpha level of .05 was chosen.

Power calculations

A required sample size was calculated for a multiple regression with a medium effect size and two predictors with the statistical program G*Power (Faul, Erdfelder, Lang & Buchner, 2007). For a power of .95 a total sample size of 107 participants is required.

Results

Preliminary analysis

Before analyzing data, data were inspected. After data-inspection one outlier was found and removed. This participant scored below the PTSD sub threshold score and was therefore not a part of the target group. After excluding one participant, 118 participants showed full-blown PTSD and 7 participants showed sub threshold PTSD.

Before analyzing treatment and age effects, the influence of confounding factors were determined. Statistical analysis showed no differences in socio-demographic characteristics and kind of therapy on the PTSD outcome measure before treatment. This shows that before treatment, there were no existing differences on gender ($F(1, 124) = 2.915, p = .9$), origin ($F(1, 124) = 1.029, p = .312$), number of experienced traumas ($F(1, 124) = .305, p = .582$) or kind of therapy ($F(1, 124) = .024, p = .878$). This means that potential differences found on T1 are most probably not due to these factors. In this study kind of therapy is not a part of the main study. In this study the kind of given therapy (for example NET, EMDR or prolonged exposure) is not a subject in the main study. Because kind of therapy is a well-researched subject and we want to do justice to this subject, we analyzed the influence of kind of therapy on the treatment effect. This is also to rule out kind of therapy as a confounding factor. We found no differences in PTSD symptom decrease between different therapy groups, $F(1, 124) = .797, p = .794$.

The retrospective power was calculated with the statistical program G*Power (Faul, Erdfelder, Lang & Buchner, 2007). Parameters for the calculation were a found effect size of 0.12 and a sample size of 125 participants, which resulted in an achieved power of .88.

Treatment effects

In Table 2 cluster symptoms and total PTSD symptom scores are shown. As can be seen in Table 2, a total mean PTSD score of 3.18 was obtained at T1. This score reflects severe PTSD. Do all participants show a decrease in symptoms? The answer is yes. Participants did show lower PTSD and comorbid scores after treatment. As can be seen in Table 2, at T2 the mean PTSD score was 2.93, which still reflects moderate PTSD symptoms. As can be seen in Table 2, 94 out of 118 participants still met PTSD-criteria after treatment, which means only 20,33 % was in remission after treatment. The standard deviation at T2 reflects a greater range after treatment, which means there was more variation than at T1. Using a repeated measures ANOVA, a significant treatment effect was found for PTSD symptoms, Wilks' Lambda = .847, $F(1, 124) = 22.45, p < .000, \eta^2 = .153$. Anxiety symptoms also significantly reduced, Wilks' Lambda = .895, $F(1, 124) = 14.6, p < .000, \eta^2 = .105$. As also depression symptoms, Wilks' Lambda = .897, $F(1, 124) = 14.25, p < .000, \eta^2 = .103$. This is in accordance with our expectations. As can be seen, all effect sizes are small. The

mean decrease of symptoms after treatment is shown in Table 3. As shown in the third column, in the total group a mean decrease of minimal .23 (anxiety) and maximal .26 (PTSD) was obtained.

Table 2.

Mean PTSD symptoms measured by the HTQ before and after treatment, divided by age.

		Adults		Elderly		Total	
		T1	T2	T1	T2	T1	T2
HTQ							
<i>PTSD</i>							
Re-experience	M (SD)	3.27 (.62)	3.03 (.76)	3.46 (.50)	3.06 (.76)	3.32 (.59)	3.04 (.76)
Avoidance	M (SD)	2.95 (.52)	2.77 (.65)	3.10 (.49)	2.81 (.61)	2.99 (.52)	2.78 (.64)
Arousal	M (SD)	3.32 (.51)	3.01 (.69)	3.41 (.36)	3.05 (.68)	3.34 (.47)	3.02 (.68)
Total	M (SD)	3.15 (.43)	2.92 (.63)	3.29 (.30)	2.96 (.60)	3.18 (.41)	2.93 (.62)
Diagnoses	<i>N</i>	87	72	31	22	118	94

Table 3.

Mean decrease of PTSD, anxiety and depression symptoms, divided by age.

	Adults	Elderly	Total
	M (SD)	M (SD)	M (SD)
PTSD	.23 (.62)	.33 (.57)	.26 (.61)
Anxiety	.22 (.68)	.23 (.62)	.23 (.66)
Depression	.21 (.72)	.30 (.63)	.24 (.70)

Age effects

As reported in the former part, a significant decrease of symptoms was observed in the total sample. As will be recalled, it was expected that elderly benefit less from treatment than adults. Regression analysis was used to test whether age negatively influences the treatment effect. In this research no support for this hypothesis was found. There were no age differences found on PTSD symptom decrease, $R^2 = .003$, $F(1,123) = 3.70$, $p = .544$, nor on depression symptom decrease, $R^2 = .001$, $F(1, 123) = .083$, $p = .774$, or on anxiety symptom decrease, $R^2 = .001$, $F(1,123) = .097$, $p = .756$.

This are unexpected results. Figure 1 illustrates these results.

In the current sample the age of the eldest adults was close to the age of the youngest elderly. To test whether other results are found in a sample with bigger age differences, age groups were taken more extreme by forming groups with the twenty percent eldest elderly ($M = 55.96$, $SD = 3.07$) and the twenty percent youngest adults ($M = 26.08$, $SD = 3.65$). Even in this adapted sample with extreme age differences between groups, no age effects on treatment effect were found; for PTSD, $R^2 = .010$, $F(1,48) = .503$, $p = .481$; anxiety, $R^2 = .006$, $F(1,48) = .293$, $p = .591$ and depression, $R^2 = .004$, $F(1,48) = .196$, $p = .660$. Concluding can be said that contrary to what was expected, no age effects on effect of treatment were found, even when age groups were taken into extremes.

Recall that elderly were expected to show less severe PTSD symptom severity than adults before treatment. Contrary to what was expected, elderly did not show less severe PTSD symptoms before treatment. As so, age did not predict less PTSD symptom severity on T1, $R^2 = .011$, $F(1, 123) = 1.378$, $p = .243$. Neither did age predict less anxiety symptom severity on T1, $R^2 = .013$, $F(1,123) = 1.659$, $p = .200$ or less depression symptom severity on T1, $R^2 = .009$, $F(1,123) = 1.165$, $p = .283$. Thus, the hypothesis that elderly show less severe symptom severity before treatment than adults is not supported. In this case the groups were also taken more extreme to be sure age differences are really tested. Still no age differences were found in PTSD symptoms, $R^2 = .017$, $F(1, 48) = .848$, $p = .362$, nor on anxiety symptoms, $R^2 = .017$, $F(1, 48) = .849$, $p = .362$, or on depression, $R^2 = .029$, $F(1, 48) = 1.437$, $p = .237$.

Symptom severity

As will be recalled, the present study explored whether symptom severity before treatment exerts influence on treatment progression. And this is what we found: regression showed symptom severity before treatment did influence the treatment effect. Analysis showed more severe symptom severity at T1 predicted more symptom decrease. This was found with PTSD symptoms, $R^2 = .088$, $F(1, 123) = 11.81$, $p = .001$, $\beta = .296$. As also with anxiety symptoms, $R^2 = .132$, $F(1,123) = 18.474$, $p < .000$, $\beta = .364$. And with depression symptoms, $R^2 = .251$, $F(1,123) = 41.301$, $p < .000$, $\beta = .501$. In an earlier stage of analysis was found that elderly and adults do not significantly differ on symptom level, therefore testing a moderation effect of age does not provide additional information.

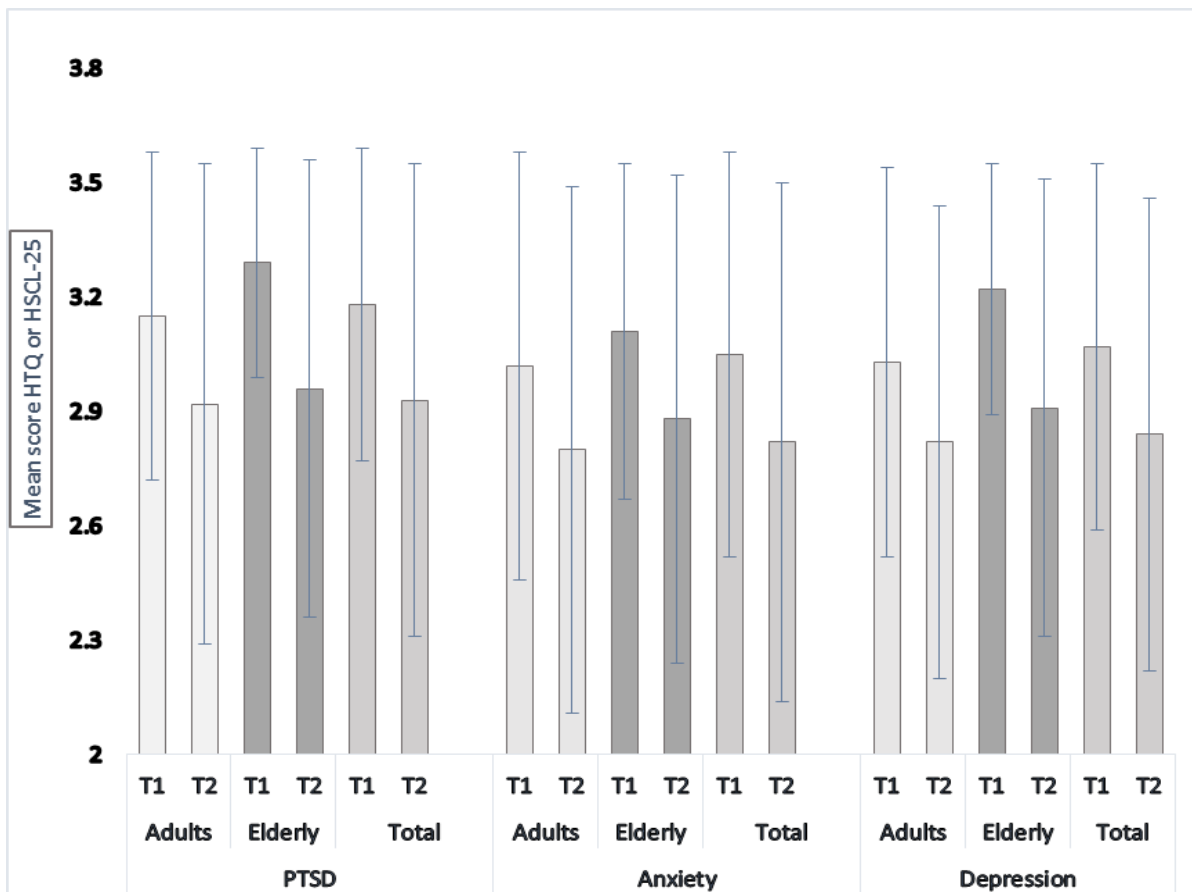


Figure 1.

PTSD symptom severity, measured by the HTQ and anxiety and depression symptom severity, measured by the HSCL-25, before and after treatment. Error bars represent standard deviations.

PTSD symptom presentation

It was expected that in contrast with adults, elderly showed low re-experiencing symptoms and equal or higher arousal and avoidance symptoms. Mean scores on the HSCL-25 are shown in Table 1. To test this hypothesis an ANOVA was used. Basic assumption testing showed assumption of normality was harmed for the subscales of the HTQ, re-experiencing, avoidance and arousal, respectively. Normality of distribution was tested by the Kolmogorov-Smirnov test. The re-experiencing score on T1, $D(123) = .0155, p < .000$ and the avoidance score on T1, $D(123) = .094, p = .01$, arousal score on T1, $D(123) = .120, p > .000$, were all significantly non-normal. Therefore, reciprocal transformations are applied (as described in Field, 2009, p. 155) to the scores on the subscales of the HTQ on T1. After transformation, no age differences were found in scores on the subscale re-experiencing, $F(1,122) = 1.866, p = .174$, nor on avoidance, $F(1, 122) = 1.791, p = .183$, or on arousal, $F(1, 122) = .154, p = .696$. It was questioned whether possible differences were retained after treatment. As in T1, basic assumptions of normality were also harmed at T2 for re-experiencing ($D(123) = .173, p < .000$, and arousal ($D(123) = .147, p < .000$. Avoidance (D

(123) = .072, $p = .058$) was normal distributed. These scores were also transformed with a reciprocal transformation. After transformation still no age differences in PTSD presentation were found; for re-experiencing symptoms: $F(1, 123) = .761, p = .677$, avoidance symptoms: $F(1, 124) = .986, p = .487$, arousal symptoms: $F(1, 123) = .810, p = .648$. In conclusion, it can be said that before and after treatment no differences were found in PTSD presentation between elderly and adults.

Discussion

Major findings

In this study we explore treatment effects in an elderly traumatized refugee population. To our knowledge this is the first study on this population. We observe small decreases in PTSD, anxiety and depression symptoms in the overall sample, although few patients fully remitted. No age differences are present in this matter, nor in symptom severity before treatment. Contrary to what was expected, high symptom severity before treatment predicts a larger treatment effect. Because age differences are non-significant, moderation is not applicable. Differences in PTSD cluster symptoms are explored; there are no differences found between elderly and adults, not before treatment nor after treatment. Factors like trauma load, gender and type of therapy do not influence symptom severity before treatment. Neither differences are found between the different kinds of therapy on treatment progression.

Discussion of findings

As expected, there is a significant, but small treatment effect. Since the kind of given therapy does not make any difference in treatment effect, we can indicate them all as trauma focused therapy. In the present study trauma focused therapy is, to some extent, effective. Nevertheless, the fact that after treatment still most patients score above the cutoff score for a PTSD, anxiety and/or depression diagnosis suggests trauma focused therapy is not enough to fully recover from PTSD. After treatment patients are still experiencing symptoms with a degree of severity that highly affects their daily life. This phenomenon is also reflected in the current literature; seldom fully remitted participant data are shown. Dinnen and colleagues (2015) show in their review of thirteen studies of treatment effects in traumatized elderly, that in eleven studies a (small) reduction of PTSD symptoms was found, and in two studies there was no improvement. Effect sizes of treatment success in elderly also vary from 1.13 (Yoder et al., 2013), to 0.43 (Knaevelsrud et al., 2014), to 0.33 (Thorp et al., 2009). The present study shows an even smaller effect size of 0.12. Putting this in perspective, the reported effect sizes are found in mixed populations that not specifically focused on a refugee population. The discrepancy between effect sizes could be due to the fact that Centrum '45 is a specialized institution for a specialized target population (including refugees, asylum seekers and veterans). Refugees and asylum seekers are known for being a challenging population, because of their high no-shows, financial problems, lack of social support, and tumultuous daily psychosocial stressors (Alpass, Long, Blakey, 2004; Mens -Verhulst & Bekker, 2008), make treatment challenging. As is described in the introduction, Lonergan (2014) indicates that having experienced multiple traumas is associated with less treatment progression. Most participants in this study experienced on average more than ten traumas, which could also explain the minimal

treatment progression. Thereby, cultural differences between therapist and patient are of course also subject for misinterpretations and biases. Most patients visiting Centrum '45 have a severe clinical picture, as is also supported by our data. In conclusion, the complexity of this sample caused by the characteristics of its participants, can explain the small effect size found. The fact that we do find a treatment effect is promising for the whole PTSD population.

The most prominent aim of this study is to contrast treatment effects, PTSD presentation and symptom severity between adults and elderly with PTSD. In this study no expected significant age differences in treatment progression, initial symptom severity or PTSD symptom presentation are found. This is a remarkable result, since the absence of age effects is in contrast with earlier research in which the position is held that elderly are less treatable than adults because of cognitive impairments and rigidity (Thorp, Stein, Jeste, Patterson & Wetherell, 2012; Dinnen et al., 2015). This research does not support these findings. In the present study elderly do not show less severe symptoms before treatment in contrast to adults and elderly do not benefit more or less from treatment than adults. One must keep in mind that the studied sample included only elderly younger than 63 years old, but if we generalize these effects to a more heterogeneous elderly PTSD patient population, this is however, a promising result. The fact that elderly PTSD patients benefitted from treatment suggests that trauma focused treatment is also applicable for elderly and that treatment progression is independent of age.

In this study we also compare initial symptom severity between adults and elderly. The present study does not provide additional evidence for the inoculation hypothesis. As will be recalled, the inoculation hypothesis poses that elderly are more resistant to severe PTSD symptoms due to development of resilience to stress over the course of their lives (Thompson, Norris & Hanacek, 1993). Results show that symptom severity of elderly does not differ from the level of symptomatology of adults. This could be explained by a phenomenon Lapp and colleagues (2011) already described, stating that there is significant heterogeneity in both symptom presentation and cognitive functioning in elderly having PTSD. Therefore one must be careful to use the results coming from populations of elderly, and especially elderly refugees, to characterize aged individuals.

As will be recalled, former literature shows a pattern of PTSD cluster symptom presentation with lower re-experiencing symptoms and average or higher avoidance and hyperarousal symptoms. In this study no such patterns are found in PTSD cluster symptoms. The fact that this study is unable to note differences in re-experiencing, hyperarousal, and avoidance is an indication that there is no consistency in cluster symptom presentation. Although a few studies (Böttche et al., 2011; Cook & Niederehe, 2007; McFarlane, 2000) show differences in PTSD cluster presentation, other research shows no differences in PTSD cluster symptom presentation between adults and

PTSD elderly (Chung, Dennis, Easthope, Farmer & Werrett, 2005; Norris, Kaniasty, Conrad, Inman & Murphy, 2002). The present study contributes to the latter series of research. These mixed results show the disharmony in the current literature concerning this subject. Apparently, differences in cluster symptom patterns are small and do not show a clear-cut heading to a certain direction.

The following aim of this study is to explore whether symptom severity before treatment influences treatment progression in this mixed age refugee population. The following can be concluded: higher symptom severity before treatment predicts a larger reduction of symptoms after treatment, which is in contrast with the studies mentioned in the introduction (Blanchard et al., 1997; Kolassa et al., 2010). Blanchard and colleagues (1997) state that the more symptomatic an individual is, the less reduction of symptoms is shown. Our study does not support this conclusions. To the best of our knowledge, the present study is the first to find these results. An explanation could be that reducing the PTSD score is easier in the higher regions, and more difficult in the moderate regions, since a baseline level of symptoms is attained. This baseline level could be more resistant to treatment interventions. We can only speculate on this matter, and therefore it is clear that further research is needed to replicate or invalidate the findings.

Limitations & recommendations for future research

Despite of the strengths of the current study, limitations of the present study should be pointed out. Data were not randomly drawn and are therefore susceptible to confounding factors. Furthermore, the studied sample has quite specific characteristics and is as a consequence not fully representative for the PTSD patient population. The present study is focused on refugees and asylum seekers. Without doubt, the question is raised how these results are generalizable to a more general PTSD population. Future research should point out whether the non-found age effects are replicable in a sample with a greater heterogeneity of trauma cause (for example: veterans, victims of sexual assault, survivors of natural disaster). Also should be focused on the long-term results, as research has shown that elderly take longer to respond to treatment (Wetherell et al., 2013) and that relapse of symptoms is not unusual after discontinuation of treatment (Antony, Ledley & Heimberg, 2005). As noted before future research is also needed on the unexpected finding that initial symptom severity predicts treatment progression.

Moreover, the studied sample includes only ‘younger elderly’ (55 – 63 years old) and is therefore not strictly representative for the intended population. Dinnen and colleagues (2015) also emphasize in their discussion section that research focused on effective interventions for elderly with PTSD is limited and needs further investigation. Interventions given to participants in this study show to be effective, but only to a certain extent. Although elderly represent only a small percentage of the whole PTSD population in treatment, the general life expectancy is expanding,

and therefore exploring effective therapies for this group is needed. Participants in the present sample show minor improvement after treatment, which underscores the need for solid research on this subject.

Conclusions

In summary, the present study shows trauma focused therapy is just as effective for elderly as it is for adults. Treatment effects are quite small, but show a decrease in PTSD, anxiety and depression symptoms. Overall, these findings show that differences in treatment of adults and elderly with PTSD are non-existing and therefore therapy is profitable for traumatized elderly. The caution that is often taken when treating elderly refugees is unnecessary. To date, interest in the subject concerning PTSD in elderly and their treatment is growing. Although the present study has brought us a step forward in gaining knowledge of PTSD in elderly refugees, further understanding of this subject is clearly required.

References

- Alpass, F., Long, N. & Blakey, J. (2004). Post-traumatic stress disorder, social support and cognitive status in community-based older veterans. *Australasian Journal of Aging, 23*, 97 – 99.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association (2013). Posttraumatic Stress Disorder. Retrieved from: <http://www.dsm5.org/Documents/PTSD%20Fact%20Sheet.pdf>
- Antony, M.M., Ledley, D.R. & Heimberg, R.G. (2005). Improving outcomes and preventing relapse in cognitive-behavioral therapy. New York, NY: The Guilford Press.
- Au, T.M., Dickstein, B.D., Comer, J.S., Salters-Pedneault, K. & Litz, B.T. (2013). Co-occurring posttraumatic stress and depression symptoms after sexual assault: A latent profile analysis *Journal of Affective Disorders, 149*, 209-216.
- Averill P.M., Beck J.G. (2000). Posttraumatic stress disorder in older adults: a conceptual review. *Journal of Anxiety Disorders, 14*, 133-156.
- Bean, T. Derluyn, I., Eurelings-Bontekoe, E., Broekaert, E. & Spinhoven, P. (2007). Validation of the multiple language versions of the Hopkins Symptom Checklist-37 for refugee adolescents. *Adolescence, 165*, 51-71.
- Bichescu, D., Neuner, F., Schauer, M. & Elbert, T. (2007). Narrative exposure therapy for political imprisonment-related chronic posttraumatic stress disorder and depression. *Behaviour Research and Therapy, 45*, 2212-2220.
- Blanchard, E.B., Hidding, E.J., Forneris, C.A., Taylor, A.E., Buckley, T.C., Loos, W.R. & Jaccard, J. (1997). Prediction of remission of acute posttraumatic stress disorder in motor vehicle accident victims, *Journal of Traumatic Stress, 10*, 215-233.
- Bonanno, G.A. & Mancini, A.D. (2012). Beyond resilience and PTSD: mapping the heterogeneity of responses to potential trauma. *Psychological trauma: theory, research, practice, and policy, 4*, 74-83.
- Böttche, M., Kuwert, P. & Knaevelsrud, C. (2012). Posttraumatic stress disorder in older adults: an overview of characteristics and treatment approaches. *International Journal of Geriatric Psychiatry, 27*, 230-239.
- Breslau, N. (2002). Epidemiologic studies of trauma, posttraumatic stress disorder, and other psychiatric disorders. *Canadian Journal of Psychiatry, 47*, 923-929.
- Chung MC, Dennis I, Easthope Y, Farmer S, Werrett J. 2005. Differentiating posttraumatic stress between elderly and younger residents. *Psychiatry, 68*, 164–173
- Cook, J.M., Niederehe, G. (2007). Trauma in older adults. In Handbook of PTSD; Science

and Practice, Friedman M.J., Keane T.M., Resick, P.A. Guilford Press: New York, NY.

Retrieved from: <https://books.google.nl>

- Creamer, M., Burgess, P. & McFarlane, A. C. (2001). Post-traumatic stress disorder: findings from the Australian National Survey of Mental Health and Well-being. *Psychological Medicine*, *31*, 1237-1247.
- Davidson, J.R.T., Kudler, H.S., Saunders, W.B. & Smith, R.D. (1990). Symptom and comorbidity patterns in World War II and Vietnam veterans with posttraumatic stress disorder. *Comprehensive Psychiatry*, *31*, 162–170.
- Engdahl, B., Dikel, T.N., Eberly, R. & Blank, A. (1998) Comorbidity and course of psychiatric disorders in a community sample of former prisoners of war. *American Journal of Psychiatry*, *155*, 1740–1745.
- Dinnen, S., Simiola, V. & Cook, J.M. (2015). Post-traumatic stress disorder in older adults: A systematic review of the psychotherapy treatment literature (Review). *Aging and Mental Health*, *19*, 144 – 150.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191.
- Field, A.P. (2009) *Discovering statistics using SPSS*. London, England: Sage Publications.
- Frueh, B. C., Grubaugh, A. L., Acierno, R., Jon D. Elhai, J. D., Gregory Cain, G., Magruder, K. M. (2006). Age Differences in Posttraumatic Stress Disorder, Psychiatric Disorders, and Healthcare Service Use Among Veterans in Veterans Affairs Primary Care Clinics. *American Journal of Geriatric Psychiatry*, *15*, 660-672.
- Glaesmer, H., Gunzelmann, T., Braehler, E., Forstmeier, S. & Maercker, A. (2010). Traumatic experiences and post-traumatic stress disorder among elderly Germans: results of a representative population-based survey. *International Psychogeriatrics*, *22*, 661–670.
- Glaesmer, H., Kaiser, M., Brachler, E., Freyberger, H.J. & Kuwert, P. (2012) Posttraumatic stress disorder and its comorbidity with depression and somatisation in the elderly- A German community-based study. *Aging & Mental Health*, *16*, 403-412.
- Hendriks, G.J., Oude Voshaar, R.C., Keijsers, G.P.J., Hoogduin, C.A.L. & van Balkom, A.J.L.M. (2008). Cognitive-behavioural therapy for late-life anxiety disorders: a systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, *117*, 403-411.
- Hinton, D.E., Pham, T., Tran, M., Safren, S.A., Otto, M.W. and Pollack, M.H. (2004). CBT for Vietnamese refugees with treatment-resistant PTSD and panic attacks: A pilot study. *Journal of Traumatic Stress*, *17*, 429-433.
- Hiskey, S., Luckie, M., Davies, S. & Brewin, C.R. (2008). The emergence of posttraumatic

- distress in later life: a review. *Journal of Geriatric Psychiatry and Neurology*, 21, 232-241.
- Hofmann, S.G., Asnaani, A., Vonk, I. J., Sawyer, A.T. & Fang, A. (2012). The efficacy of Cognitive Behavioral Therapy: A review of meta-analyses. *Cognitive Therapy and Research*, 36, 427-440.
- IBM Corporation. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corporation.
- Jakobsen, M., Thoresen, S. & Johansen, L.E.E (2011). The validity of screening for post-traumatic stress disorder and other mental health problems among asylum seekers from different countries. *Journal of Refugee Studies*, 24, 171-186.
- Kaysen, D., Rosen, G., Bowman, M. & Resick, P.A. (2010). Duration of exposure and the dose-response model of PTSD. *Journal of Interpersonal Violence*, 25, 63–74.
- Keane, T.M., Marshall, A.D. & Taft, C.T. (2006) Posttraumatic stress disorder: Etiology, epidemiology, and treatment outcome. *Annual Review of Clinical Psychology*, 2, 161-197.
- Knaevelsrud, C., Böttche, M., Pietrzak, R.H., Freyberger, H.J., Renneberg, B. & Kuwert, P. (2014). Integrative testimonial therapy: an internet-based, therapist-assisted therapy for German elderly survivors of the World War II with posttraumatic stress symptoms, *The Journal of Nervous and Mental Disease*, 202, 651 – 658.
- Kolassa, I.T., Ertl, V., Eckart, V., Kolassa, S., Onyut, L.P. & Elbert, T. (2010). Spontaneous remission from PTSD depends on the number of traumatic event types experienced. *Psychological Trauma: Theory, Research, Practice and Policy*, 2, 169-174.
- Kun, P., Tong, X., Liu, Y., Pei, X. & Luo, H. (2013). What are the determinants of post-traumatic stress disorder: age, gender, ethnicity or other? Evidence from 2008 Wenchuan earthquake. *Public Health*, 127, 644-652.
- Ladouceur, R., Léger, E., Dugas, M. & Freeston, M.H. (2004) Cognitive-behavioral treatment of Generalized Anxiety Disorder (GAD) for older adults. *International Psychogeriatrics*, 16, 195–207.
- Lapp, L.K., Agbokou, C. & Ferreri, F. (2007) PTSD in the elderly: the interaction between trauma and aging. *International Psychogeriatrics*, 23, 858–868.
- Lenze, E.J., Mulsant, B.H., Shear, M.K., Alexopoulos, G.S. Frank, E., & Reynolds C.F. (2001) Comorbidity of depression and anxiety disorders in later life. *Depression and Anxiety*, 14, 86–93.
- Lonergan, M. (2014) Cognitive behavioral therapy for PTSD: The role of complex PTSD on treatment outcome, *Journal of Aggression, Maltreatment & Trauma*, 23, 494-512.
- Lunney, C.A., Schnurr, P.P. & Cook, J.M. (2014). Comparison of clinician- and self-assessments of posttraumatic stress symptoms in older versus younger veterans. *Journal of Traumatic*

Stress, 27, 144-151.

- Maercker, A., Forstmeier, S., Wagner, B., Glaesmer, H., Brähler, E. (2008). Posttraumatische Belastungsstörungen in Deutschland. Ergebnisse einer gesamtdeutschen epidemiologischen Untersuchung. *Nervenarzt*, 79, 577–586.
- McFarlane, A.C. (2000). Posttraumatic Stress Disorder: A model of the longitudinal course and the role of risk factors. *Journal of Clinical Psychiatry*, 61, 15–20.
- Meihuizen, L. & Soeteman, W. (2014). EMDR, een inleiding. Retrieved from:
http://www.cursussencongressen.nl/public/file/Lucinda%20Meihuizen%20en%20Wietske%20Soeteman_congresdag.pdf
- Mens -Verhulst, J. & Bekker, M. (2008). In: Knipscheer, J & Kleber, R.J. (2008). Psychologie en de multiculturele samenleving. Amsterdam, The Netherlands: Boom Onderwijs.
- Moore, S.A. (2008) Cognitive abnormalities in posttraumatic stress disorder. *Current Opinion in Psychiatry*, 22, 19–24.
- Norris, F.H. (1992). Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology*, 60, 409-418.
- Norris, F.H., Kaniasty, K., Conrad, M.L., Inman, G.L., Murphy, A.D. (2002). Placing age differences in cultural context: a comparison of the effects of age on PTSD after disasters in the United States, Mexico, and Poland. *Journal of Clinical Geropsychology*, 8, 153–173.
- Ogle, C.M., Rubin, D.C. & Siegler, I.C. (2013a). Cumulative exposure to traumatic events in older adults. *Aging & Mental Health*, 18, 316–325.
- Ogle, C.M., Rubin, D.C. & Siegler I.C. (2013b). The Impact of the Developmental Timing of Trauma Exposure on PTSD Symptoms and Psychosocial Functioning Among Older Adults. *Developmental Psychology*, 49, 2191–2200.
- Ong, Y.L. & Carter, P. (2001) Grand rounds: 'I'll knock elsewhere' - the impact of past trauma in later life. *Psychiatric Bulletin*, 25, 435-436.
- Owens, G.P., Baker, D.G., Kasckow, J., Ciesla, J.A. & Mohamed, S. (2005). Review of assessment and treatment of PTSD among elderly American armed forces veteran. *International Journal of Geriatric Psychiatry*, 20, 1118–1130.
- Parloff, M.B., Kelman, H. C. & Frank, J.D. (1954). Comfort, effectiveness, and self-awareness as criteria of improvement in psychotherapy. *The American Journal of Psychiatry*, 111, 343 - 352.
- Pietrzak, R.H., Southwick, S. M., Tracy, M., Galea, S. & Norris, F.H. (2012). Posttraumatic stress disorder, depression, and perceived needs for psychological care in older persons affected by Hurricane Ike. *Journal of Affective Disorders*, 138, 96–103.

- Robjant, K. & Fazel, M. (2010). The emerging evidence for Narrative Exposure Therapy: A review. *Clinical Psychology Review, 30*, 1030–1039.
- Russo, S.A., Hersen, M. & van Hasselt, V. B. (2001). Treatment of Reactivated Post-Traumatic Stress Disorder: Imaginal Exposure in an Older Adult With multiple traumas. *Behavior Modification, 25*, 94-115.
- Ruzich, M.J., Leong Looi, J.C., & Robertson, M.D. (2004). Delayed Onset of Posttraumatic Stress Disorder Among Male Combat Veterans: A Case Series. *American Journal of Geriatric Psychiatry, 13*, 424-427.
- Schuitevoerder, S., Rosen, J.W., Twamley, E.W., Ayers, C. R., Sones, H., Lohr, J. B., Goetter, E.M., Fonzo, G.A., Holloway, K.J. & Thorpa, S.R. (2013). A meta-analysis of cognitive functioning in older adults with PTSD. *Journal of Anxiety Disorders, 27*, 550-558.
- Spinhoven, P., Penninx, B.W., van Hemert, A.M., de Rooij, M. & Elzinga, B.M. (2014). Comorbidity of PTSD in anxiety and depressive disorders: Prevalence and shared risk factors. *Child Abuse & Neglect, 38*, 1320-1330.
- Stichting Centrum 45 (2011). Maatschappelijk Jaarverslag 2011. Retrieved from: http://www.centrum45.nl/sites/default/files/jaarverslag_maatschappelijke_verantwoording_over_2011_stichting_centrum_45.pdf
- Thompson, M.P., Norris, F.H. & Hanacek, B. (1993). Age differences in the psychological consequences of hurricane Hugo. *Psychology and Aging, 8*, 606-616.
- Thorp, S.T., Ayers, C.A., Nuevo, R., Stoddard, J.T., Sorrell, J.A. & Wetherell, J.L. (2009) Meta-Analysis Comparing Different Behavioral Treatments for Late-Life Anxiety. *American Journal for Geriatric Psychiatry, 17*, 105-115.
- Thorp, S.R., Stein, M.B., Jeste, D.V., Patterson, T.L., & Wetherell, J.L. (2012). Prolonged exposure therapy for older veterans with posttraumatic stress disorder: A pilot study. *American Journal of Geriatric Psychiatry, 20*, 276 – 280.
- Tinghög, P. & Carstensen, J. (2009). Cross-cultural equivalence of HSCL-25 and WHO Wellbeing Index: findings from a population-based survey of immigrants and non-immigrants in Sweden. *Community Mental Health Journal, 46*, 65-76.
- Vink, M. (2014). PTSS en EMDR bij ouderen na een CVA. Retrieved from: <http://www.zonderzorg.nl/userfiles/files/Marja%20Vink%20PTSS%20en%20EMDR%20bij%20ouderen%20na%20CVA%204-4-2014.pdf>
- Weintraub, E. & Ruskin, P. E. (1999). Posttraumatic stress disorder in the elderly: A review. *Harvard Review of Psychiatry, 7*, 144-152.
- Wetherell, J.L., Petkus, A.J., Thorp, S.T., Stein, M.B., Chavira, D.A., Campbell-Sills, L., Craske, M.G., Sherbourne, C., Bystritsky, A., Sullivan, G. & Byrne, P.R. (2013). Age differences in

- treatment response to a collaborative care intervention for anxiety disorders. *The British Journal of Psychiatry*, 203, 65-72.
- Winokur, A., Winokur, D.F, Rickels, K. & Cox, D.S. (1984). Symptoms of emotional distress in a family planning service: stability over a four-week period. *The British Journal of Psychiatry*, 144, 395-399.
- Yehuda, R., Schmeidler, J., Siever, L.J., Binder-Brynes, K. & Elkin, A. (1997) Individual differences in Posttraumatic Stress Disorder symptom profiles in holocaust survivors in concentration camps or in hiding. *Journal of Traumatic Stress*, 10, 453-463.
- Yoder, M.S., Lozano, B., Center, K.B., Miller, A., Acierno, R., Tuerk, P.W. & Johnson, R.H. (2013). Effectiveness of Prolonged Exposure for PTSD in Older Veterans. *International Journal of Psychiatry in Medicine*, 45, 111-124.
- Zelst, W.H. van, Beurs, E. de, Beekman, A.T.F., Deeg, D.J.H. & Dyck, R. van. (2003) Prevalence and Risk Factors of Posttraumatic Stress Disorder in Older Adults. *Psychotherapy and Psychosomatics*, 72, 333–342.
- Zhang, Z., Zhanbiao, S., Wang, L. & Liu, M. (2011). Posttraumatic Stress Disorder, Anxiety and Depression among the Elderly: A Survey of the hard hit areas a year after the Wenchuan Earthquake. *Stress and Health*, 28, 61–68.