Phase-based treatment for PTSD in refugees and depression as predictor of treatment outcome: a preliminary evaluation

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Foreword

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Abstract

Background: Refugees have an increased risk for developing PTSD with a comorbid major depression. According to the ISTSS Expert Consensus Treatment Guidelines for Complex PTSD, phase-based treatment can be applied to reduce posttraumatic stress disorder (PTSD) in populations with complex trauma. Nevertheless, little is known about phase-based PTSD treatment in refugees with PTSD and complex trauma, often with a comorbid depression. **Aim:** This study describes an evaluation of a phase-based treatment in refugees with complex trauma and PTSD. The second aim is to test if depression is a predictor of treatment outcome. **Method:** The Clinician Administered PTSD Scale (CAPS) was administered in a sample of 33 refugees with PTSD who participated in the phase-based treatment. From this sample, 25 refugees completed The Brief Symptom Inventory (BSI). The BSI was employed to assess depression. Treatment consisted of psycho-education, creative arts therapy, psychomotor therapy, Narrative Exposure Therapy (NET) and socio-therapy. **Results:** Analysis showed that PTSD symptoms were reduced after treatment. One-third of the participants demonstrated a reliable and clinically significant change. Depression was not significantly associated with treatment outcome and did not decrease after treatment. Demographic variables did not predict treatment outcome or depression scores. **Conclusion:** Because significant improvement was established, the phase-based treatment may be successfully applied to reduce PTSD symptoms in refugees with complex trauma and PTSD. A separate treatment for depression is suggested. Implications and recommendations for future research are discussed.

Introduction

Forced migration can be defined as an involuntary migration due to war, child abuse, persecution or genocide. Forced migration is currently an important challenge for the international community (Ainamani, Elbert, & Hecker, 2017). The United Nations High Commissioner for Refugees (UNHCR) reports that current forced migration has been higher than in the 1990s (UNCHR, 2017). Approximately 1.5 million refugees and asylum seekers fled their country because of forced migration (Cloitre et al., 2009; Gerritsen et al., 2006).

In comparison to the general population, refugees and asylum seekers have an increased risk for developing psychiatric disorders (Charlson et al., 2016). Common disorders are major depression and posttraumatic stress disorder (PTSD; Charlson et al., 2016). Nearly nine percent of refugees are diagnosed with PTSD and five percent with major depression (Fazel, Wheeler, & Danesh, 2005). PTSD is defined in the Diagnostic and Statistical manual of Mental disorders (DSM-5) as a trauma and stressor related disorder that encompasses symptom clusters of avoidance, hyperarousal, re-experiencing and numbing following one or more traumatic events (American Psychiatric Association (APA), 2013). Such events involve serious injury, or threat to one's life or bodily integrity (e.g., natural disasters, sexual abuse or violence).

The risk for PTSD is ten times higher for refugees in comparison to the general population (Kirmayer et al., 2011). It is rather rule than exception that traumatic events are experienced multiple times by refugees who report a history of trauma, which is referred to as complex trauma (when traumatic events are repetitive, prolonged or include interpersonal traumatic events (ter Heide, Kleber, & Mooren, 2014)). PTSD complaints coincides with high levels of social and functional impairments and increased economic costs (APA, 2013). Therefore it is important to offer the most accurate PTSD treatment.

The Multidisciplinary Guidelines for Anxiety Disorders (Van Balkom et al., 2013) suggest that PTSD can be treated with trauma focused cognitive behavioral therapy (TF-CBT) or Eye Movement Desensitization and Reprocessing (EMDR) with psycho-education and activation (Bisson et al., 2007; van Balkom et al., 2013).). The ISTSS Expert Consensus Treatment Guidelines for Complex PTSD in Adults propose a phase-based treatment for complex trauma (Cloitre et al., 2012). Similar, other expert groups such as the National Institute for Clinical Excellence (NICE, 2005) and Australian Centre for Mental Health (2007) recommend a phased-

based treatment rather than solely trauma-focused treatment, demonstrating a widespread and excellent consensus about best practice for complex trauma (Cloitre et al., 2012).

The recommended phase-based treatment consists of three phases. The first phase (Phase I) is intended for stabilization. In this phase, the emphasis is on reducing symptoms, increasing safety and improvement of social and emotional competencies (Ford et al., 2005). The aim of the second phase (Phase II) is trauma processing whereby reappraisal of the traumatic memories is attempted. TF-CBT and EMDR are recommend by PTSD guidelines for trauma processing and also to reduce anxiety and the sense of current treat. In refugees substantial evidence has been found for Narrative Exposure Therapy (NET) and can be applied in the second phase (De la Rie & Jongedijk, 2014). NET is a short-term trauma-focused therapy that aims reducing symptoms of PTSD. The reduction of symptoms is accomplished by means of imaginary exposure when traumatic memories are retrieved. The life story will be discussed chronologically and in doing so attempts to re-organize the traumatic memories in a coherent narrative (Morina et al., 2012). The third phase (Phase III) is the final phase in which treatment achievements are strengthened. The purpose of this phase is to effectuate a more convenient re-integration into society (Ford et al., 2005).

The use of an evidence-based exposure therapy is recommended for Phase II. Research has shown that NET is an effective treatment for refugees (Halvorsen & Stenmark, 2010; Lambert & Alhassoon, 2015; Neuner, Klaschik, Karunakara, & Elbert, 2004). In comparison to TF-CBT and EMDR, NET was one of the most effective treatments in reducing PTSD symptoms in refugees (Lambert & Alhassoon, 2015; Neuner et al., 2004). Participants showed a decrease of the total PTSD severity after NET. The majority no longer met the criteria for PTSD. Notably, depression has also been found to decrease after completion of the NET (Halvorsen & Stenmark, 2010; Lambert & Alhassoon, 2015).

About 71% of refugees have a comorbid major depression with PTSD (Fazel et al., 2005). According to the DSM-5, major depression refers to depressed mood most of the day and losing interest in normal activities and relationships. Symptoms are present every day for at least two weeks (APA, 2013). It is associated with high suicide rates and increased functional impairment (APA, 2013). The phase-based treatment focuses merely on the reduction of PTSD symptoms, despite that depression is a common comorbid disorder with PTSD (Buhmann, 2014; Fazel, et al., 2005; Keller, Feeny, & Zoellner, 2014). PTSD patients with comorbid depression have a greater

symptom severity and deprived functioning in comparison to patients with PTSD only (Bedard-Gilligan et al., 2015; Momartin, Silove, Manicavasagar, & Steel, 2004). Research has demonstrated that refugees with PTSD and a comorbid depression benefit less from treatment (ter Heide, 2015; Silove, 2005). Depression was found to be a negative predictor for the treatment outcome of refugees (Forbes et al., 2003; Silove, 2005; ter Heide, 2015). Severe depression resulted in less improved social functioning and an increase in PTSD symptoms (Silove, 2005; ter Heide, 2015). Taking all this into account it is important to increase the knowledge about the impact of comorbid depression on the effects of PTSD treatment.

This study aims to expand the current knowledge on phase-based treatment for PTSD in refugees with complex trauma and often with a comorbid depression. This is particularly relevant, since little is known about the phase-based treatment in refugees with PTSD and complex trauma (Cloitre et al., 2012). The three phases will be evaluated in this study, using fixed psychotherapeutic strategies within each phase. Psycho-education, socio-therapy, NET and nonverbal therapies will be provided in the phase-based treatment. Since depression is a common comorbid disorder with PTSD, this study will include depression as a predictor of treatment outcome. Such examination is important because it enhances the knowledge about potential refinements of the phase-based treatment.

These aims lead to two main research questions and hypotheses. The first concerns whether phase-based treatment coincides with a reduction in PTSD symptoms in refugees. According to the ISTSS treatment guidelines (Cloitre et al., 2012), it is expected that PTSD symptoms will also decrease in refugees with PTSD and complex trauma after phase-based treatment.

The second question concerns whether depression predicts treatment outcome. Previous research has demonstrated that depression is regarded as a negative predictor for the treatment outcome in refugees (Silove, 2005; ter Heide, 2015). More severe depression results in decreased social functioning and increased PTSD (Forbes et al., 2003; Silove, 2005; ter Heide, 2015). In accordance with the previous findings, we predict that refugees with a more severe comorbid depression at the beginning of the treatment, will show a smaller reduction of PTSD complaints over the course of treatment.

Method

Design

The current study was a repeated-measures within-subjects study without a comparison group.

Participants

The total sample consisted of N = 85 participants, 67 males (mean age = 43.50, SD = 7.23) and 18 females (mean age = 44.00, SD = 7.23). The participants were outpatients at Centrum '45 in Diemen who met the following inclusion criteria: 1) meeting PTSD criteria of the fourth or fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, DSM-5), 2) had a refugee status, 3) had a basic proficiency in Dutch and 4) had sufficient social skills to participate in group therapy. Exclusion criteria for the phase-based treatment were 1) inability to speak Dutch 2) acute psychotic disorder, 3) high risk for suicide, 4) schizophrenia and 5) severe cognitive or developmental impairments. This study included 33 participants out of the total sample, who met the following criteria: 1) completed the phase-based treatment and 2) had a reliable pre-and posttest of the CAPS. From the sample mentioned above, 25 participants had a reliable pre- and posttest on the BSI. See Table 1 for demographics.

Instruments

Clinician-Administered PTSD Scale (CAPS)

The Clinician-Administered PTSD Scale for DSM-IV (CAPS-IV) and for DSM-5 (CAPS-5) were employed as a primary outcome measure (Blake et al., 1995; Weathers et al., 2013). The CAPS is a structured diagnostic interview designed to generate a categorical PTSD diagnosis (Blake et al., 1995). It is the most administered diagnostic interview for PTSD and the only PTSD interview that takes both symptom frequency and intensity in to account (Blake et al., 1995; Elhai, et al., 2005). It is available in different languages (Hunsley & Mash, 2008). The CAPS-IV has good psychometric properties (Weathers et al., 2001). The inter-rater reliability is high and it has a strong convergent validity (Foa & Tolin, 2000; Hovens et al., 1994; Weathers et al., 2001). This also applies to the psychometric properties of the CAPS-5 (Weathers et al., 2017)

Brief Symptom Inventory (BSI)

The Brief Symptom Inventory (BSI) is a self-report inventory that measures psychological symptomatology in adults (de Beurs & Zitman, 2005; Derogatis, 1975). It is a short form of the SCL-90 which administers the psychological symptomatology across nine primary symptom dimensions. The nine dimensions are somatization, psychoticism, cognitive problems, paranoid ideation, interpersonal sensitivity, hostility, phobic anxiety, depression and anxiety (de Beurs & Zitman, 2005; Derogatis, 1975). The BSI consists of 53-items that are rated on a 5-point Likert scale ranging from '0= not at all' to '4= extremely' (de Beurs & Zitman, 2005; Derogatis, 1975). Every dimension consists of 4 to 6 items in which a symptom is described. It also includes three indices to measure the severity of psychopathology: the average score on 53-items, the number of present symptoms and the severity of the present symptoms (de Beurs & Zitman, 2005; Derogatis, 1975; Drobnjak, 2014). The BSI is a widely employed and well-validated instrument (Fauerbach et al., 2005; de Beurs & Zitman, 2005; Derogatis, 1975; Drobnjak, 2014). It can be used in cross-sectional studies as well as in longitudinal studies, and it is suitable for pre- and post-measurements (Drobnjak, 2014). The American as well as the Dutch translation of the BSI have good psychometric properties (de Beurs & Zitman, 2005). The inter-rater reliability is high and it has strong convergent reliability (de Beurs & Zitman, 2005; Derogatis, 1975; Drobnjak, 2014). The subscale of interest in this study was the 6-item subscale assessing symptoms of depression (e.g., "Feeling no interest in things"). Cronbach's alpha for the depression subscale is .85, indicating a good internal consistency (de Beurs & Zitman, 2005; Derogatis, 1975).

Table 1. Pre-treatment demographic characteristics of the total sample, completers of the pre-and posttreatment assessment and completers with BSI pre-treatment assessment.

Sample characteristics	Total sample	Completers pre- and post-treatment assessment	Completers BSI pre- and post-treatment assessment
	$N = 85$	$N = 33$	$N = 25$
Gender (*N (%)*)			
Male	67 (79)	27 (82)	5 (20)
Female	18 (21)	6 (18)	20 (80)
Age (years) (*M* (SD))	43.60 (8.28)	46.00 (8.68)	46.05 (2.12)
Region of origin (*N (%)*)			
The Balkans	33 (39)	14 (42)	11 (44)
Middle East	41 (48)	14 (42)	11 (44)
Asia	3 (4)	2 (6)	1 (4)
Africa	8 (9)	3 (9)	2 (8)
Education (*N (%)*)			
No education/primary school	17 (20)	7 (21)	4 (16)
Secondary education	46 (54)	20 (61)	16 (64)
Higher education	20 (24)	6 (18)	5 (20)
Missing	2 (2)	0	0

Note. BSI = Brief Symptom Inventory.

Procedure

Assessment

Patients who met the inclusion criteria could participate in the phase-based treatment. The CAPS-IV or CAPS-5 and the BSI were administered by skilled professionals during Phase I and at the course of Phase III. In the course 2014 a transition took place from CAPS-IV to CAPS-5. All patients signed an informed consent in which they were informed that the collected data will be used for research purposes.

Phase-based treatment

The phase-based treatment consisted of three phases. Each phase had a duration of four months. The treatment program was offered one day a week for a period of one year. The phase-based treatment was provided by registered multidisciplinary healthcare therapists at Centrum '45 in Diemen. Same therapist were present within each phase. All participants had a fixed therapist during the NET in Phase II.

Phase I

During the first phase group based psycho-education about PTSD was offered. Furthermore, enhancing coping skills was part of this phase. The aim was to raise awareness of the disorder and to prepare the participants on trauma processing that took place during Phase II. Often homework was assigned to the participants so they could practice some skills at home. Different modules were applied which consisted of improving sleep hygiene, emotion-regulation and improving social skills. The participants took part in group therapy. The participants were encouraged to share their common experiences. In addition, art therapy and PMT were offered to the participants. The participants had the possibility to make use of one counseling hour a week with the clinician or psychiatrist.

Phase II

Sixteen weekly individual therapy sessions were offered to the participants. The aim of this phase was trauma processing. NET was applied as the main therapy during the individual sessions. The NET took place once a week. During the day participants also engaged in nonverbal therapies such as art therapy and PMT. One obligatory individual counseling hour a week was provided.

Phase III

The final phase focused on social orientation. The aim was to strengthen treatment achievements, strengthen relationships and effectuate re-integration into society. The social orientation took place once a week. Also, participants continued with PMT and had a weekly individual counseling hour.

Data analysis

IBM SPSS Statistics 23.0 was used to conduct statistical analyzes. Analyzes were performed with a significance level of *p* at <.05 (two-tailed).

The first hypothesis was tested using a paired sample t-test to determine the PTSD severity of the pre-treatment and post-treatment. In order to conduct a paired sample t-test, the CAPS-IV and CAPS-5 had to be recoded for equalization. A Pearson's correlation was performed to determine the relationship between CAPS-score pre-treatment and post-treatment.

A cut-off score of two standard deviations below the mean of the pre-treatment PTSD severity was used to determine the clinically significant change of the PTSD symptoms (Jacobson & Truax, 1991). Reliable change was assessed by the Reliable Change Index (RCI; Jacobson & Turax, 1991). An RCI greater than 1.96 indicates reliable change and was calculated using the test-retest reliability of the CAPS-VI (.90; Blake et al., 1995). According to Blake and colleagues (1995) the RCI was used as a reference to classify PTSD severity : clinically improved and reliably changed, clinically improved but not reliably changed, unchanged, clinically exacerbated but not reliably changed and clinically exacerbated and reliably changed.

Furthermore, the second hypothesis was tested using a linear regression analysis. The BSI depression subscale pretest total score was used as the independent variable and the CAPS pre- to posttreatment difference as dependent variable.

Finally, post-hoc analyses were performed to examine if total scores of depression decreased after treatment. Previous research showed that after NET depression decreased significantly (Halvorsen & Stenmark, 2010; Lambert & Alhassoon, 2015). It was relevant to test this, regarding that NET was part of the current study. This was performed with a Wilcoxon Signed Rank Test considering that the sample was not normally distributed (Field, 2013). Also, multiple hierarchical regression was used to examine effects of age, gender, education and region of origin (independent variables) on treatment outcome and depression. Previous research demonstrated that different gender and lower education predicted better treatment outcomes (Ehlers et al., 2005; Stenmark, Guzey, Elbert, & Holen, 2014). Also age was found to be a predictor (Rizvi, Vogt, & Resick, 2009).

Results

Hypothesis 1: Decrease of PTSD symptoms after phase-based treatment

Consistent with the first hypothesis, the average level of PTSD severity before treatment (M = 62.82, SD = 8.36) was higher in comparison with PTSD severity at posttreatment (M = 48.28, SD = 2.36). Prior to conducting the analysis, the assumptions of normally distributed difference score were examined. The assumption was considered satisfied as the skew level was estimated at .36 (SE =.41) and kurtosis at -.47 (SE =.79), which are less than the maximum allowable values for a t-test (i.e., skew <|2.0| and kurtosis < |9.0|; Posten, 1989). A paired sample-t test showed a significant decrease in CAPS scores t (32) = 6.55 p <.001. A strong positive Spearman's rank correlation was found to be significant between CAPS pre-and posttreatment scores rs (33) = .39 p = .02.

Clinically significant change and RCI were computed to examine the change of PTSD severity of the participants. Twenty-one participants changed reliably. Twelve participants showed a clinically significant and reliable change. See Table 2 for more specific details of the combination of clinically significant change and the RCI.

Table 2. Combination of clinically significant change and Reliable Change Index on PTSD severity posttreatment.

Category	N (%)
clinically improved and reliably changed	12 (36)
clinically improved but not or reliably changed	2 (6)
unchanged	18 (55)
clinically exacerbated but not reliably changed	1 (3)
clinically exacerbated and reliably changed	0

Hypothesis 2: Depression as predictor of treatment outcome

A linear regression was conducted to calculate if depression was a predictor of treatment outcome. Results indicated that there was no multicollinearity (PTSD severity posttreatment, *Tolerance* = 1.00, *VIF*= 1.00). The assumption of independent errors was met, *Durbin-Watson* value = 1.70. The histogram and the normal P-P plot of standardized residuals indicated that errors were normally distributed in the data. Inconsistent with the second hypothesis, depression was not a significant predictor of treatment outcome F (1, 23) = 1.49, $p=.24$.

Post-hoc analyses

Wilcoxon Signed Rank Test

Because the data was skewed for one of the variables, a Wilcoxon Signed Rank Test was run to examine if depression scores decreased after treatment. The results indicated that the median posttest depression scores were not significantly lower than the median pretest depression scores after treatment $Z= -.81, p= .42$.

Multiple hierarchical regression

Regression analyses were performed conducting a multiple hierarchical regression. Dummy variables were made for the independent variables education (low education and high education) and region of origin (The Balkans, Africa and Asia). The first dependent variable tested was CAPS score pre- to posttreatment. Results indicated that there was no multicollinearity (age, *Tolerance* = .59, *VIF* = 1.69; gender, *Tolerance* = .98, *VIF* = 1.01; Asia, *Tolerance* = .78, *VIF* = 1.27; Africa, *Tolerance* = .86, *VIF* = 1.16; The Balkans, *Tolerance* = .72, *VIF* = 1.39; higher education *Tolerance* = .59, *VIF* = 1.70; lower education *Tolerance* = .51, *VIF* = 1.98). The assumption of independent errors was met, *Durbin-Watson* value = 1.44. The histogram and the normal P-P plot of standardized residuals indicated that errors were normally distributed in the data. As shown in Table 3, no significant treatment characteristics were determined. The second variable tested was the BSI score pre- to posttreatment. Results indicated that there was no multicollinearity (age, *Tolerance* = .67, *VIF* = 1.49; gender, *Tolerance* = .81, *VIF* = 1.22; Asia, *Tolerance* = .61, *VIF* = 1.63; Africa, *Tolerance* = .82, *VIF* = 1.21; The Balkans, *Tolerance* = .68, *VIF* = 1.48; higher education *Tolerance* = .38, *VIF* = 2.60; lower education *Tolerance* = .33, *VIF* = 3.00). The assumption of independent errors was met, *Durbin-Watson* value = 1.95. The

Phase-based treatment in refugees and depression as a predictor variable

histogram and the normal P-P plot of standardized residuals indicated that errors were normally distributed in the data. No significant treatment characteristics were found, see Table 3.

Table 3. Regression analyses for age, region of origin and education as predictor variables on the CAPS pre- to posttreatment difference and BSI pre-to posttreatment difference.

Variable	Dependent variable = CAPS score pre- to posttreatment (N=33)					Dependent variable = BSI score pre- to posttreatment (N=25)			
	b (SE)	β	t	p		b (SE)	β	t	p
Age	-.48 (.37)	-.31	-1.28	.363		.39 (.03)	.34	1.21	.249
Gender	-4.02 (5.88)	-.12	-.68	.501		-1.07 (.57)	-.42	-1.88	.084
Region of origin*									
Asia	1.34 (11.53)	.02	.116	.542		1.44 (1.35)	.31	1.07	.307
Africa	1.00 (9.13)	.02	.110	.508		2.01 (.85)	.60	2.37	.350
The Balkans	5.52 (5.82)	.21	.947	.758		.24 (.58)	.17	.41	.686
Education**									
Higher education	8.36 (8.24)	.24	1.02	.596		.85 (.87)	.37	.98	.345
Lower education	2.79 (7.02)	.10	.397	.843		.80 (.82)	.39	.98	.345

Note. CAPS = Clinician-Administered PTSD Scale (CAPS), BSI = Brief Symptom Inventory. * Reference group = no education, ** reference group = Middle East.

Discussion

The aim of this study was to evaluate a phase-based treatment for PTSD in refugees with complex trauma often with a comorbid depression. Furthermore, this study investigated depression as a possible predictor of treatment outcome.

The current study demonstrated that a phase-based treatment for refugees with complex trauma coincided with a reduction in PTSD symptoms. Pre- to posttreatment comparison showed an overall decrease in reported PTSD symptoms. More than one-third of the participants demonstrated a clinically significant improvement on PTSD symptoms. Furthermore, 15 % of the patients did not meet the criteria for PTSD after treatment. A phase based treatment can contribute to improvement, as was expected based on the expert consensus of the ISTSS guidelines.

In contrast with previous research, depression did not predict treatment outcome. Prior research reported that depression was a negative predictor for the treatment outcome (Forbes et al., 2003; Silove, 2005; ter Heide, 2015). PTSD patients with comorbid depression had a greater symptom severity in comparison to patients with PTSD only (Bedard-Gilligan et al., 2015; Momartin et al., 2004; ter Heide, 2015; Silove, 2005). More severe depression resulted in less improved social functioning and a significant increase in PTSD symptoms (Silove, 2005; ter Heide, 2015). A recent study of Haagen, ter Heide, Mooren, Knipscheer and Kleber (2017) also demonstrated that comorbid depression in refugees with PTSD is a predictor of treatment outcome of EMDR as well as stabilization. However, they also stress that these results might not be generalizable to other modalities of PTSD treatments (Haagen et al., 2017).

A possible explanation for the absence of an effect of depression within this particular group of patients is the limited variety in depression scores. In general 71% of refugees with PTSD have a co-morbid depression (Fazel et al., 2005). In our sample approximately 80% of the participants had a high to very high score on depression before treatment. It is difficult to differentiate between participants and therefore it is not possible to draw absolute conclusions about the absence of depression as a predictor. A comparative group with no to moderate comorbid depression, but with similar PTSS complaints could highlight the possible effects of the presence of depression in future research.

Another possible explanation may be the complex relationship between PTSD and depression. The relationship between the two disorders is not entirely clear (Momartin et al.,

2004). In a study of Post, Feeny, Zoellner and Connell (2015) was found that PTSD and depression can be regarded as related, yet separate constructs. Post and colleagues (2015) conducted a research on the relationship between co-occurring PTSD and comorbid depression in response to trauma. Post-traumatic stress disorder and comorbid depression, in the presence of trauma exposure, may be best conceptualized as two separate constructs (Post et al., 2015). The results showed that the PTSD and depression had a better fit in the model as two distinct factors in comparison to the model in which the disorders were combined as one general traumatic stress factor (Post et al., 2015).

PTSD could be regarded as a symptom pre-dominator of secondary disorders such as co-morbid depression (Olatunji, Cisler, & Tolin, 2010). A symptom pre-dominator is the primary diagnosis that causes the greatest distress and impairments. It directly contributes to the possible onset of the secondary disorder. Therefore, it is highly unlikely that PTSD as a symptom-pre-dominator is influenced by the secondary disorder such as a comorbid depression (Olatunji et al., 2010). This could also be a possible explanation why PTSD and a co-morbid depression often are related and co-occur together and that PTSD elevates the risk of depression (Buhmann, 2014; Fazel, et al., 2005; Keller, Feeny, & Zoellner, 2014). If PTSD and depression can be considered as two distinct factors and PTSD is a pre-dominator in the current group of this study, it is unlikely that depression would be an important predictor for treatment outcome.

Post-hoc analyses showed that depression did not decrease after phase-based treatment. Previous research showed that depression decreased after NET (Halvorsen & Stenmark, 2010; Lambert & Alhassoon, 2015). However, in the recent Clinical Practice Guideline for the Treatment of PTSD in adults (APA, 2017) the NET received a conditional recommendation, despite the medium to large effect on the reduction of PTSD. According to the Clinical Practice Guideline for the Treatment of PTSD in adults (APA, 2017) the NET does not meet the criteria for at least moderate strength of evidence for other outcomes, such as reduction or prevention of comorbid depression (APA, 2017). This is in line with our finding regarding the limited effect of NET on depression. Therefore, an additional treatment for depression is suggested. According to the NICE guidelines (2005) a separate treatment for severe depression is recommended before trauma therapy. However, it is still unclear if a sequential approach is more effective (Haagen et al., 2017). Therefore, future research should evaluate the addition of a separate treatment for depression in the phase-based treatment.

Several limitations should be kept in mind when interpreting outcomes. The design of the current study does not allow strong conclusions about the treatment outcome of PTSD and depressive complaints, and depression as a predictor. An absence of a control group and a small sample size reduce the generalizability of the obtained results.

Notwithstanding these limitations, the results showed that improvement occurred in a sample of refugees with complex trauma and PTSD. Moreover, no participants showed clinically exacerbated PTSD symptoms. Furthermore, the absence of a correlation between depression and treatment outcome indicate that the phase-based treatment is also applicable in severely depressed refugees with PTSD, without devaluating its effectiveness.

Future research should address the limitations and elaborate on the observed findings. It is recommended for future studies to use a larger sample size to increase power and longitudinal research to address the long-term effects. An RCT is needed to draw stronger conclusions about the effectiveness of the phase-based treatment. Moreover, future research should examine the effect of additional treatment for depression within a phase-based treatment. A control group with additional depression therapy is suggested. Additionally, the effects of depression on other provided treatments should be evaluated. This should give more insights into how a greater reduction of PTSD and depression can be effectuated. Future research should provide more insights into the utilization of the CAPS in refugee populations. Whereas other instruments to assess PTSD has been examined and have shown to be applicable to different cultural groups (Wind et al., 2017), this has to be examined for the CAPS.

In conclusion, this study demonstrated that refugees with PTSD and complex trauma can benefit from phase-based treatment. Additionally, the findings showed that depression was not a predictor of treatment outcome, highlighting the complex relationship between PTSD and depression. These results are promising for the clinical practice and for refugees with co-morbid depression. This study provided evidence that refugees with PTSD and a comorbid depression can benefit from phase-based treatment. Finally, the results highlight the need for additional treatment strategies for refugees with a co-morbid depression. This includes the addition of a separate treatment for depression to the phase-based treatment. It should be tested if this is more effective than targeting PTSD and comorbid depression simultaneously. Current findings may be applicable to other treatment populations with complex trauma and co-morbid depression.

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