Imagery Rehearsal Therapy for trauma-affected refugees – A case series

Ida Sophie Poschmann[1], Sabina Palic-Kapic[1,3], Hinuga Sandahl[1], Peter Berliner[2], and Jessica Carlsson[1]

[1]Competence Centre for Transcultural Psychiatry, Ballerup, Denmark
[2]University of Aarhus, Denmark and University of Greenland
[3]Current workplace: Dignity – Danish Institute Against Torture, Copenhagen, Denmark

Summary. Psychotherapy for nightmares and sleep disturbances in refugees suffering from post-traumatic stress disorder (PTSD) is an unexamined area. This case study examines efficacy, acceptability, and patient experiences with Imagery Rehearsal Therapy (IRT) in 8 refugees with Middle Eastern background and PTSD-related nightmares. The aims of the study were to examine: A. if changes before and after IRT can be detected on measures of sleep quality, PTSD, level of functioning, and quality of life, B. if IRT is acceptable to refugees with PTSD-related nightmares, and C. patients' individual and shared experiences through the three stages of IRT including changes in nightmare frequency on a sleep log. Qualitative (open questions) and quantitative methods (sleep-log, structured measures, drop-out, cancellation-, and no-show rates) were applied in order to create a thick description of the patients' experiences throughout their IRT treatment process. Despite relatively high drop-out, cancellations and no-show rates; findings indicate that IRT is acceptable for the patients included in this study. Furthermore, a reduction in nightmare frequency, improvement in sleep quality and daytime functioning was indicated for most patients. IRT seems to be a good non-trauma-focused alternative to trauma-focused therapy for trauma-affected refugees and might also be used as an add on to standard trauma-focused treatment.

Keywords: Imagery Rehearsal Therapy (IRT), trauma-affected refugees, post-traumatic stress disorder (PTSD), nightmare treatment, psychotherapy

1. Introduction

Trauma-affected refugees constitute a diverse group with different nationalities, cultural backgrounds and multiple trauma with diverse causes. Amongst 752 trauma-affected refugees with PTSD treated at the Competence Center for Transcultural Psychiatry (CTP), 99.1% reported trouble sleeping and 98.7% had recurrent nightmares (Sandahl, Vindbjerg & Carlsson, 2017). It is hypothesized that sleep disturbances contribute to the etiology of PTSD (Spoormaker & Montgomery, 2008), and if left untreated maintain, or even exacerbate PTSD, hinder improvement in first-line PTSD treatment (Germain, 2013) and remain residual symptoms after various PTSD treatments (Spoormaker & Montgomery, 2008). Therefore, effective treatments of sleep disturbances and nightmares could accelerate and enhance PTSD-recovery (Germain, 2013; Spoormaker & Montgomery, 2008; Casement & Swanson, 2012; Krakow et al., 2001).

There is preliminary evidence for the effectiveness of trauma-focused psychotherapy for PTSD in refugees resettled in high income countries (Nickerson et al., 2017; Nickerson, Bryant, Silove & Steel, 2011; Nosè et al. 2017) but several recent randomized trials indicate only limited reduction in PTSD following treatment (Nickerson et al., 2011) including trials from CTP – a treatment facility providing patients for the current study (Carlsson, Sonne, Vindbjerg & Lykke, 2018; Sonne, Carlsson, Bech, Elklit & Mortensen, 2016; Buhmann, Nordentoft, Ekstroem, Carlsson & Mortensen, 2015; Buhmann et al., 2015). These results might be due to broad inclusion in trials, the clinical methods applied or that patients seeking treatment at highly specialized centers such as CTP, have high levels of psychopathology, disability and chronicity and might fall into a loosely described and seemingly treatment-resistant group (Drozdek, 2015; Nickerson et al., 2011). Clinical experience and evidence from RCTs (Buhmann et al. 2015; Buhmann, 2014) tells of a considerable part of the patients who are incapable of engaging in exposure techniques. For instance, only 19% of the patients treated at CTP were able to partake in trauma-focused exposure therapy (Buhmann et al. 2015; Buhmann, 2014). This could be due to overdeveloped avoidance behaviors, cognitive deficits, continuous re-traumatization and/or major social or personal challenges.

These results sparked an interest in trying a new psychotherapeutic method targeting sleep disturbances and nightmares in trauma-affected refugees while minimizing exposure. In a review on treatment of sleep disturbances in adult trauma-affected refugees Sandahl et al. (2017) identified only 4 studies and concluded that it was currently not possible to recommend any specific treatment for sleep disturbances in refugees with PTSD. There is therefore a need for research examining specific psychotherapeutic interventions for nightmares and sleep disturbances such

Corresponding address:
Ida Poschmann, Competence Centre for Transcultural Psychiatry, Capital Region of Denmark, Maglevænget 2, Building 14, 2750 Ballerup, Denmark..
Email: ida.sophie.poschmann@regionh.dk

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as Imagery Rehearsal Therapy (IRT), that is recommended for PTSD patients with nightmares and sleep disturbances (Kunze, Arntz, Morina, Klindt & Lancee, 2017). Based on the findings in the current study Sandahl, Jennum, Baandrup, Mortensen & Carlsson (2021) conducted a randomized controlled trial on IRT as add-on treatment for trauma affected refugees.

Imagery Rehearsal Therapy

IRT has been tested on different PTSD groups, such as veterans (Moore & Krakow, 2010; Nappi, Drummond, Thorp & Mcquaid, 2010), patients with diverse psychiatric diagnosis (van Schagen, Lancee, de Groot, Spoormaker & van den Bout, 2010) and sexual assault victims (Krakow et al., 2000; Krakow et al., 2001). IRT is the most empirically supported treatment for recurrent nightmares and overall shows promising results (Kunze et al., 2017; Sandahl et al. 2021).

IRT has two components and three stages. The first component in stage 1 is educational and the second component contains imagery in stage 2 and 3 (see figure 2). Trauma-focused exposure is sought minimized (Krakow & Zadra, 2010) containing only one element of exposure which is re-counting and re-scripting nightmares (Hagenaars & Arntz, 2012). There is a lack of knowledge about the mechanisms of change in IRT (Kunze et al., 2017; Rousseau & Belleville, 2018). Germain et al. (2004) argue that the exposure element in IRT is not used extensively enough to be the most potent therapeutic method. Rousseau & Belleville (2018) proposed in a systematic review of potential mechanisms of change underlying the efficacy of nightmare treatments; that the main mechanism can be conceptualized as emotional processing where the fear structure is activated and modified by incorporation of emotional, cognitive and physiological elements that are incompatible to it during both night and day. This is probably supported by other mechanisms: increased mastery, modification of beliefs, restoration of sleep functions, decreased arousal and prevention of avoidance, where all the above influence and support each other (Rousseau & Belleville, 2018).

Aims

We wanted to investigate if IRT could be modified and utilized for trauma-affected refugees minimizing trauma-focused exposure, hoping that a greater number of refugees would be capable and willing to engage in this psychotherapy. A case study of IRT was designed with the aim to examine:

A. if changes before and after IRT can be detected on standardized measures of sleep quality, PTSD, level of functioning, and quality of life.
B. if IRT is acceptable to the patients.
C. the patients' individual and shared experiences through the three stages of IRT including changes to nightmare frequency measured on a sleep log.

2. Method

2.1. Setting and procedures

CTP is a public mental health facility offering out-patient assessment and treatment for adult immigrants and refugees who suffer from a mental disorder, primarily PTSD. Patients were referred from all units of the healthcare system in the Capital Region of Denmark and assessed by a team of medical doctors/psychiatrists.

2.2. Participants

From November 2014 to March 2015, all Arabic speaking patients with PTSD who were about to start psychotherapy were offered participation in the study. Only Arabic speaking patients were included as this is the largest language group spoken by 40 – 50 % of CTP patients. Treatment was conducted in Arabic with an interpreter or in Danish without an interpreter if the patient spoke Danish. See table 1 for inclusion and exclusion criteria.

2.3. Ethics

The study was conducted in accordance with APA ethical standards, the rules of the Danish Data Protection Agency on thesis collaboration with university students and the ethical rules for Danish psychologists. The study was reported to the Danish Scientific Ethical Committee of the Capital Region of Denmark that concluded that the study did not require an approval (J.nr. H-3-2014-FSP62).

2.4. Outcomes

Aim A - pre- to post intervention changes on standardized measures. The Disturbing Dreams and Nightmare Severity Index (DDNSI) measures severity of problems with nightmares. The scale ranges from 0 to 37 where higher scores indicate more severe symptoms. The DDNSI was obtained through personal communication with Dr. Berry Krakow and was translated from English to Danish and Arabic, using forward translation and back-translation where only one of the translators was an official Arabic translator. Pittsburgh Sleep Quality Index (PSQI) is a widely used and well-validated test assessing sleep quality and sleep disturbances over a one-month time interval (Buysse, Reynolds, Monk, Berman & Kupfer, 1989) with a minimal clinical important difference of 2.5 scale points. PTSD symptoms were rated with the first 16 questions in Harvard Trauma Questionnaire (HTQ) (part IV). Severity of anxiety and depressive symptoms was assessed with Hopkins Symptom Checklist-25

Table 1. Inclusion and Exclusion criteria.

Inclusion criteria for patients	Exclusion criteria for patients
PTSD pursuant to the ICD-10 research criteria	Severe psychotic disorder (defined as patients with an ICD-10 diagnosis F2x and F30.1-F31.9).
Adults (age over 18)	Current abuse of drugs or alcohol (ICD10=F1x.24-F1x.26)
Danish or Arabic speaking patients with a middle eastern background	
Problems with nightmares and sleep disturbances: HTQ score on question 3 about nightmare and question 8 about sleep disturbances scored ≥ "a little"	
Signed informed consent	

Note. HTQ = Harvard Trauma Questionnaire

(HSCL-25). Both measures are widely used in refugee populations (Kleijn, Hovens & Rodenburg, 2001). Higher scores indicate more severe sleep disturbances, PTSD, anxiety, and depression.

The ratings were administered three times, 1) at intake, and then 2) pre- and 3) post IRT. At 1) all ratings except for the DDNSI and PSQI were administered as a part of the routine CTP pre-treatment assessment (See figure 1 below for an overview of the study).

Aim B - acceptability: the following indicators of acceptability were monitored:

- Number of patients who accepted IRT over standard trauma treatment/treatment as usual (TAU).
- Reasons the patients gave for choosing IRT instead of TAU and vice versa.
- Number of patients who completed IRT.
- Number of treatment sessions attended.
- How often the patients practiced imagery exercises at home.

Furthermore, the patients were asked about treatment acceptability in a post-treatment qualitative interview. The post-treatment qualitative interview was developed to get a detailed subjective description of the patients' experience and were conducted after the end of IRT and took approximately one hour.

Aim C - patients' experiences with IRT: the post-treatment interview also focused on how the patients experienced stage 1, 2 and 3 of IRT, as well as improvement. All patients kept a sleep log throughout the study as a short-term retrospective log as recommended by Lancee, Spoormaker, Peterse, Van den Bout & Van den Bout (2008), monitoring number of nights with nightmares pr. week, total number of nightmares during the past week, number of hours slept well and number of (positive) dreams.

Phase 1: Treatment with medical doctor: weekly session during 6 weeks with psychoeducation and when needed psychopharmacological treatment.

Rating 1) baseline: Harvard Trauma Questionaire (HTQ), Hopkins Symptom Cheklist-25 (HSCL-25).

Phase 2:

Treatment with medical doctor

Monthly sessions for 4-6 months including psychoeducation and regulation of psychopharmacological treatment

IRT treatment with psychologist intern

Session 1:

Information about the project and signed informed consent. Inclusion of patients according to inclusion and exclusion criteria (Table 1).

Introducing the patient to psychotherapy, TAU and IRT.

Pre-IRT ratings 2): Harvard Trauma Questionaire (HTQ), Hopkins Symptom Cheklist-25 (HSCL-25), Disturbing Dreams and Nightmare Severity Index (DDNSI), Pittsburgh Sleep Quality Index (PSQI).

Sleep log

Session 2 till end of IRT (12 -17 sessions):

Sleep log for each session.

IRT phase 1, 2 and 3 (see figure 2 below).

Evaluation and termination of treatment, post-IRT ratings 3) (same measures as pre-IRT rating) and qualitative interview.

Figure 1: Flowchart of the study design
Description of the study design and it's two phases of medical treatment and psychotherapeutic treatment.

2.5. Procedure and treatment

The treatment at CTP was multimodal and included sessions with a medical doctor/psychiatrist, a psychologist and an initial session with a social worker to assess social problems requiring attention initiating coordination with relevant authorities. The duration of the sessions was 45 – 50 minutes and the duration of the treatment was 8-12 months.

The treatment offered by the medical doctor was manualized and included psychoeducation and when needed psychopharmacological treatment following a predefined algorithm https://www.psykiatri-regionh.dk/centre-og-social-tilbud/kompetencecentre/transkulturel-psykiatri/Behandling/Sider/manualer.aspx). The treatment consisted of six weekly sessions, after which psychotherapy was initiated and monthly sessions continued with the medical doctor.

IRT was conducted by the first author (Ida Poschmann), who was a clinical intern at CTP. She was receiving supervision by an authorized CTP psychologist biweekly and counseling by Annette van Schagen who is a clinical psychologist/researcher specialized in IRT. During the first psychotherapy session the patients received information about the pilot study and IRT and informed consent and ratings were obtained. IRT was implemented from the second psychotherapy session till end of treatment (see Figure 1).

2.6. IRT manual

The IRT manual was developed based on the IRT principles outlined by Krakow & Zadra (2010) for groups. The manual was adapted to the needs of the refugee patients to be administered individually during weekly sessions. This adaptation was made based on experience of high reluctance to accept group treatment, possibly due to mental illness being a taboo and to fear of stigmatization (Stade, Skammeritz, Hjortkjær & Carlsson, 2015). The general cancellation and no-show rate of around 24% at CTP (internal data) made group therapy challenging. The number of sessions was flexible to maximize the chances of successful treatment completion and a maximum of 17 sessions was set. It was expected that participants needed more time and guidance than other PTSD patient groups to achieve control over positive imagery exercises and negative intruding images. The individual treatment design led to the inclusion of more psychoeducation than in the original IRT by Krakow &

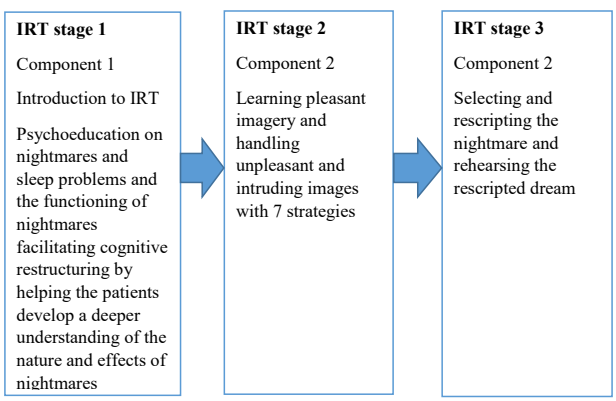

Figure 2: Flowchart of the IRT manual
Description of three stages of the Imagery Rehearsal Therapy (IRT) manual.

Zadra (2010) with inspiration from Krakow's self-help book, "Turning Nightmares into Dreams" (2002). The flowchart of the IRT manual is presented in Figure 2.

3. Results

3.1. Changes on outcome measures (Aim A)

The intake data is presented in Table 2 however, the focus of the study was changes between the second and third rating where IRT was implemented. The pre-to post-IRT scores indicate improvement on all ratings (see table 2). The mean post-treatment PSQI and HTQ scores were both above cut-off for sleep disorder and PTSD. Both showed a decrease compared with pre-treatment scores. Table 2.

3.2. Acceptability of IRT (Aim B)

15 patients were offered IRT. Eight patients accepted and seven declined participation. Patients who chose treatment with TAU presented various reasons for choosing TAU over IRT. A patient wanted to work on stress reduction and coping. Another wished for the therapeutic focus to be optimizing his daily life with his children. Another patient suffering from physical impairment stated that his problems with nightmares were of a different character. He further explained that he dreamt of gaining full physical functioning and woke up feeling disappointed. TAU was chosen by yet another patient since his main problem was increasing aggression and irritability and wished for a therapeutic frame that could accommodate working with feelings of injustice and unfairness in the world and was advised to choose TAU.

As can be seen in table 3, initially two females and six males accepted participation. Three dropped out during treatment. Two patients were withdrawn from the project. One underwent an acute social crisis unrelated to IRT, and had serious cognitive deficits, why she was assessed unfit to continue treatment with IRT and was offered to change to stabilizing interventions. The stabilizing interventions are less structured and do not require homework. Another had a history of depressive episodes with psychotic symptoms and unrelated to IRT became psychotic during treatment and discontinued treatment. A third patient wished to change the focus of treatment to anxiety treatment and therefore withdrew from the study. All eight participants who accepted IRT reported problems with nightmares and sleep disturbances as the primary reason for choosing IRT and two wished to avoiding focus on trauma history.

Table 2. Mean, baseline, pre-and post-scores on outcome measures (N = 5).

Measure (min-max)	Mean (SD) baseline	Mean (SD) pre IRT	Mean (SD) post IRT
DDNSI (0 - 37)	-	23.2 (6.8)	17.2 (5.4)
PSQI (0 -21)	-	16.2 (1.1)	12.2 (5.6)
HTQ (1 - 4)	3.3 (0.5)	3.2 (0.2)	3.0 (0.5)
HSCL-25 (1 – 4)	3.2 (0.6)	3.2 (0.2)	2.8 (0.6)

Note. DDNSI = Disturbing Dreams and Nightmare Severity Index, PSQI = Pittsburgh Sleep Quality Index, HTQ = Harvard Trauma Questionnaire, HSCL-25 = Hopkins symptom checklist-25

The duration of treatment for the completers varied between eleven and seventeen sessions (mean = 13 sessions). Cancellations and no-show rates varied from 18 to 50% with an average of 33%. Completer 2, 3 and 5 managed to develop and maintain a stable homework routine and completer 1 and 4 reported little homework practice. The five completers stated in the post-treatment qualitative interview that they found IRT to be an acceptable treatment since they did not need to recount specific trauma and that they learned to manage negative intruding images before recounting the nightmare content and rehearsing the re-scripted dream.

3.3. The completers experiences with IRT stages 1, 2 and 3 based on the qualitative interview (Aim C)

Stage 1 - Nightmares as a learned behavior. All completers stated that in IRT stage 1, they learned to be open to the idea that nightmares could be a learned behavior and that habit can play a role in maintaining the nightmares and behaviors related to sleep disturbances (e.g. sleep related anxiety, avoiding going to bed, distorted sleeping patterns and daily inactivity). They were all willing to examine how they themselves might engage in learned behaviors. The completers who had suffered from PTSD for decades seemed more inclined to attribute larger proportions of the cause of their nightmares to habit than those who had PTSD for less than 5 years.

Stage 2 - Positive imagery. All completers reported negative feelings of sadness, hopelessness, and negative automatic thoughts upon ending the first positive imagery exercises. They explained that this was due to the discrepancy between the themes of positive imagery exercises and

Table 3. Participants' characteristics for the 5 completers and 3 non-completers of IRT.

Participant number	Gender	Country of origin	Use interpreter	Comorbid depression	Multiple trauma	Employment status	Time since trauma
Completer 1	Male	Iraq (Kurdistan)		X	X	Unemployed	>5 years
Completer 2	Male	Iraq		X	X	Unemployed	>5 years
Completer 3	Male	Iraq (Kurdistan)		X	X	Unemployed	>5 years
Completer 4	Male	Iraq		X	X	Employed	>5 years
Completer 5	Male	Syria	X	X	X	Under education	<5 years
Non-completer 6	Male	Syria		X	X	Unemployed	>5 years
Non-completer 7	Female	Lebanon	X	X	X	Unemployed	>5 years
Non-completer 8	Female	Iraq (Kurdistan)	X	X	X	Unemployed	>5 years

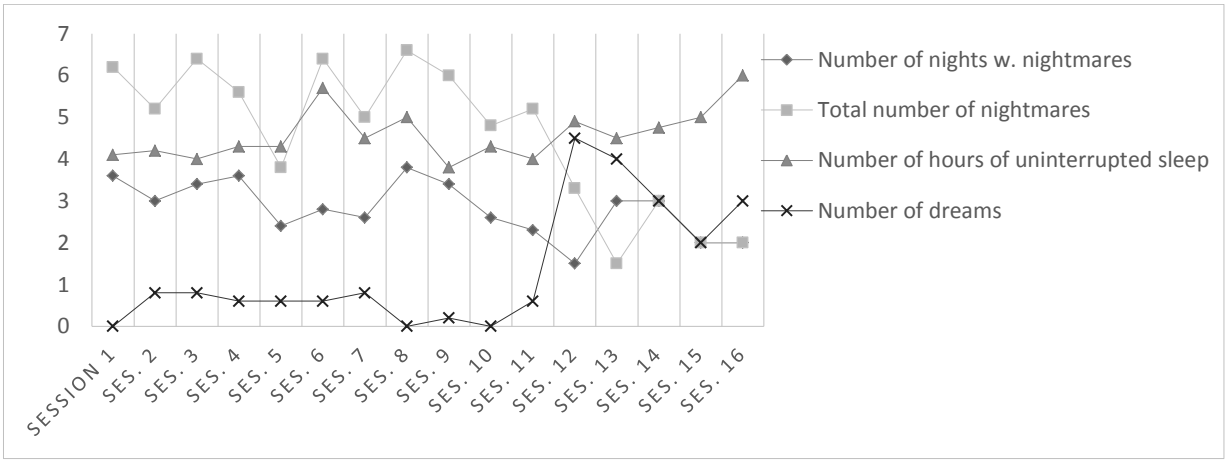

Figure 3: Mean sleep log graph for completers (n=5).
Combined data from the sleep logs of all the completers including the number of nights with nightmares, the total number of nightmares, the number of hours of uninterrupted sleep and the number of dreams.

the reality that they lived. However, they all changed their view and concluded that "it was better to be busy dreaming of positive scenarios than being busy with bad things" as completer 3 stated. After rehearsing the positive imagery exercise for a few weeks, all reported experiencing behavioral activation, i.e. living/carrying out scenarios they had imagined in their positive imagery exercises.

Stage 3 - Choosing a nightmare and changing it into a rescripted dream. All completers reported some difficulties during stage 3 that arose due to exposure to old trauma memories. Some found it hard to choose the nightmare; others found it harder to recount the nightmare in the session. All found rehearsal of the rescripted dream at home more difficult than the positive imagery exercises due to the connection with nightmares. However, mastering the positive imagery exercises gave the completers a hope that they could learn to manage negative intrusive images when rehearsing the rescripted dream.

The sleep log. A mean sleep log graph for all completers is presented in figure 3. It shows that the number of nights with nightmares and the total number of nightmares decreased, while the hours of uninterrupted sleep and the number of dreams increased during IRT.

3.4. Individual patterns of changes in the three IRT stages

Upon visual inspection of the individual sleep logs combined with the completers experiences, three different themes and patterns (A-C) of change during IRT appeared. Completer 1 and 4 shared pattern A, completer 2 and 3 shared pattern B, while completer 5 had pattern C. The patterns are described below as a case series. The three specific completers were selected because they had the clearest representations of the respective pattern, and not based on better or worse outcomes with IRT.

3.4.1 Pattern A: high avoidance and little commitment to homework (completer 1)

IRT stages. Completer 1 had suffered from PTSD for decades and explained in the post-treatment qualitative interview that he found it challenging to discuss nightmares and their effect in stage 1, but the idea that nightmares can become a habit was interesting and useful. He had difficulties using the 7 strategies to manage negative intruding images when rehearsing the positive imagery exercises and he often stopped the positive imagery exercise rather than work-

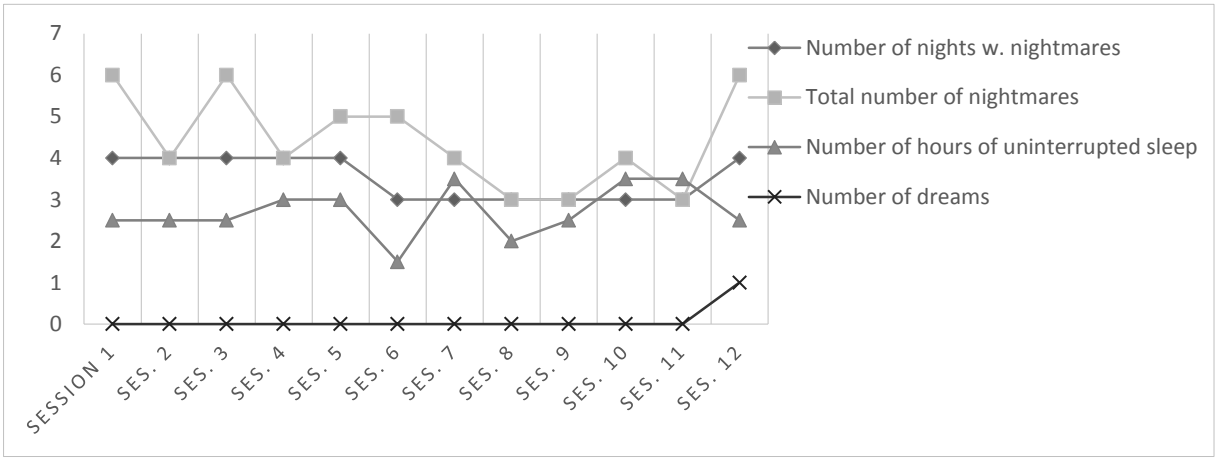

Figure 4: Sleep log graph for completer 1. Stage 1: session 1 to 3. Stage 2: session 4 to 9. Stage 3: session 10 to 12.
Data from the sleep log of completer 1 including the number of nights with nightmares, the total number of nightmares, the number of hours of uninterrupted sleep and the number of dreams and specifying what sessions constitute the three stages of Imagery Rehearsal Therapy.

ing through the negative intruding images. Thus, he did not acquire full mastery of negative intruding images and found it difficult to overcome negative intruding images while rehearsing the rescripted dream and wanted to stop rehearsing after two sessions.

Improvement through IRT. In the post-treatment qualitative interview completer 1 reported little overall improvement through IRT. He reported a slightly better but varying sleep quality and a slight increase in daytime functioning. He also reported fewer feelings of hopelessness and negative automatic thoughts, more positive thinking and positive activities in his everyday life, having been inspired from the positive imagery exercises and having resumed interest in old hobbies. He explained that "It is like I now have a cane to help me walk".

The sleep log for completer 1 (figure 4) showed a decrease in nightmare frequency in stage 2 maintained into stage 3. However, an increase in nightmare frequency happens prior to treatment termination. No dreams were reported until the last session, where the rehearsal of the rescripted dream was terminated, and positive imagery exercises resumed.

3.4.2 Pattern B: low avoidance and high commitment to homework (completer 3)

IRT stages. Completer 3 had suffered from PTSD for decades, and in the post-treatment qualitative interview he stated that the idea that nightmares can become a habit was interesting and applicable to him. With daily practice he quickly gained full mastery over positive imagery with the 7 strategies. He practiced and mastered the rescripted dream but did not dream the rescripted dream.

Improvement through IRT. In the post-treatment qualitative interview completer 3 reported a large reduction in nightmare frequency, and nightmare distress, as well as large improvement in sleep quality, along with increased energy and motivation, level of activity, self-soothing behaviors, and dream activity. He reported improvement in concentration, memory and coping with stressors. He also experienced fewer flashbacks, less aggression and irritability, better ability to modulate affect and an increase in hope for the future.

The sleep log for completer 3 (Figure 5) showed an increase in nightmare frequency in session four and then again in session six to 11 occurring simultaneously with urgent personal matters. In session 12 during, a major decrease in nightmare frequency occurred simultaneously with a big increase in dream activity concurrently with personal matters being resolved. In stage 3 during session 13 the nightmare was rescripted and the decrease in nightmare frequency and increase in dream activity were sustained over the following weeks stabilizing at three dreams per week in the final two sessions.

3.4.3 Pattern C: low avoidance and high commitment to homework combined with short time since trauma exposure (completer 5)

IRT stages. For completer 5 it had been less than 5 years since trauma. In the post-treatment qualitative interview, he stated that the idea that nightmares can become a habit was plausible but did not apply to him since he did not suffer from nightmares before trauma exposure. Completer 5 had previous experience with positive imagery from childhood and was comfortable from the very beginning when practicing positive imagery exercises and applying the 7 strategies. He experienced increased wellbeing from the positive imagery exercises, behavioral activation, and was successful in changing the nightmares into new dreams.

Improvement during IRT. In the post-treatment qualitative interview completer 5 reported a reduction in both nightmare frequency and nightmare distress. "Knowledge of nightmares makes it easier to know that nothing happens and go back to sleep – it gives less distress". Completer 5 similarly reported improvement in daytime functioning and sleep quality. He also reported a major reduction in flashbacks, executing activities relating to themes of the positive imagery exercises and more hopes and dreams for the future.

The sleep log for completer 5 (Figure 6) showed a reduction in nightmare frequency. The first decrease in nightmare frequency occurred in stage 2 and a slight increase in nightmare frequency occurred during stage 3 until the last session where he reported no nightmares. A large increase in hours of uninterrupted sleep was reported during stage 2 and in stage 3 it decreased to the same rate as at intake. In stage 3 completer 5 reported the biggest increase in number of dreams.

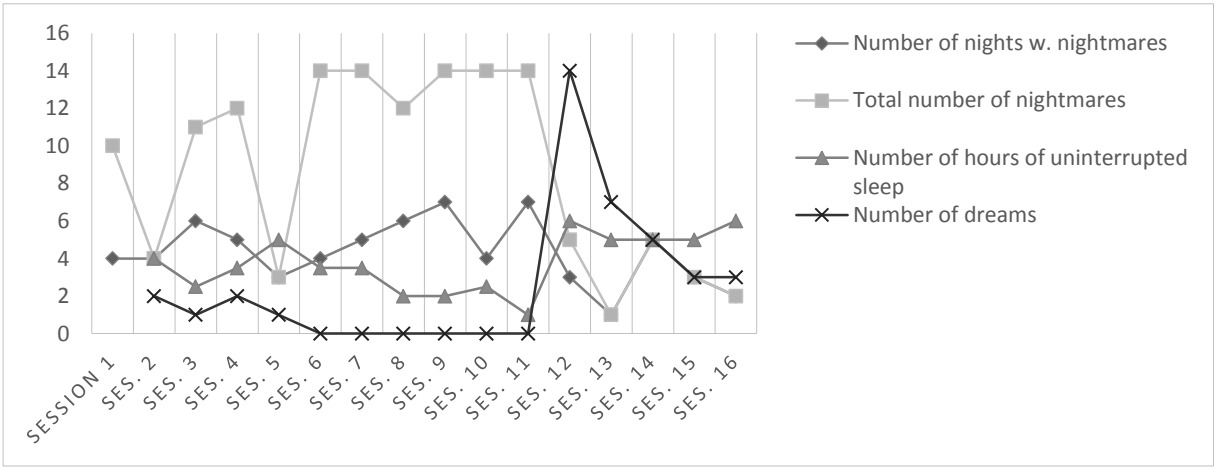

Figure 5: Sleep log graph for completer 3. Stage 1: session 1 to 4. Stage 2: session 5 to 12. Stage 3: session 13 to 16.
Data from the sleep log of completer 3 including the number of nights with nightmares, the total number of nightmares, the number of hours of uninterrupted sleep and the number of dreams and specifying what sessions constitute the three stages of Imagery Rehearsal Therapy.

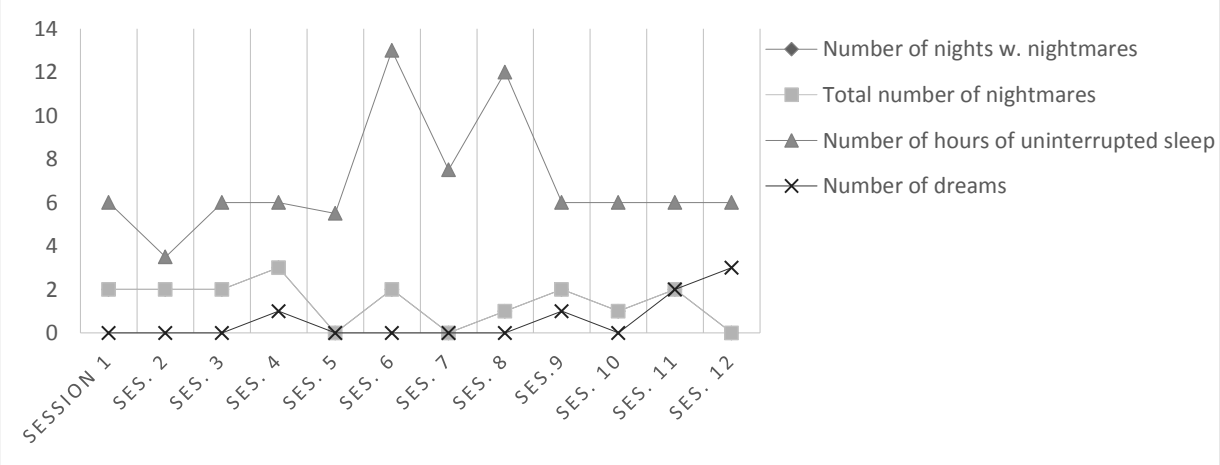

Figure 6: Sleep log graph for completer 5. Stage 1: session 1 to 4. Stage 2: session 5 to 7. Stage 3: session 8 to 12.
Data from the sleep log of completer 5 including the number of nights with nightmares, the total number of nightmares, the number of hours of uninterrupted sleep and the number of dreams and specifying what sessions constitute the three stages of Imagery Rehearsal Therapy. The line for number of nights with nightmares follows the line for total numbers of nightmares and does therefore not show.

4. Discussion

4.1. Changes in nightmares, sleep disturbances and PTSD

The biggest change in the pre and post IRT ratings were seen in DDNSI scores and to a lesser extent PSQI also showed improvement (see table 2). The changes to nightmare frequency and sleep disturbances was similar to the results from a group of sexual assault survivors (Krakow et al. 2001) and diverse psychiatric patients Van Schagen et al. (2015) treated with IRT. The patients in the current study report considerably higher pre-treatment scores on DDNSI compared to the pre-treatment scores reported by Sandahl et al. (2021) as well as a bigger reduction on the DDNSI post-treatment score indicating that the patients in the current study presented with bigger problems with nightmares and experienced bigger improvement in relation to nightmares. The reduction seen on PSQI is also bigger in the current study comparing to the results reported by Sandahl et al. (2021) and surpasses the minimal clinical difference on PSQI of 2.5 scale points. Scores on the HTQ showed a small reduction and since the reduction was not exclusive to questions 3 and 8 (nightmares and sleep disturbances) this could indicate that treatment of nightmares and sleep disturbances can facilitate a reduction in general PTSD symptoms for trauma-affected refugees. However, the reduction in general PTSD was smaller in our study than reported in other IRT-studies (Krakow et al. 2001) but generally resembles the changes found in RCT's conducted at CTP (studying IRT, other psychotherapies and effects of antidepressants in trauma-affected refugees).

4.2. Treatment acceptability

The study showed that there is an interest amongst the refugee patient group in treatment focused on reducing nightmares and improving sleep quality. However, there was a rather high dropout rate for IRT relative to TAU at CTP (where the drop-out rate in 2015 was 10.5%; internal data). This could be because the completers were not terminated from treatment due to high no-show or cancellation rates, which is the norm in standard treatment. Two out of three participants dropped out of IRT to change the focus of the treatment which would have been possible in standard trauma psychotherapy at CTP where the TAU manual is methodically flexible since it contains multiple methods (KAT, ACT, PE) where the clinician can more freely choose interventions and structure the implementation as they see fit. Low adherence and a small IRT completer rate of 39% was reported by Sandahl et al. (2021). The higher completer rate found in the current study might be due to the non-randomized design and the individual pre-treatment assessment of the patients' motivation for choosing IRT over TAU. IRT seems useful for a sub-group of refugee patients who 1) view nightmares and sleep disturbances as central for their current PTSD related suffering, 2) can engage in treatment including some elements of exposure (i.e. do not have over-developed avoidance) 3) and do not suffer from major cognitive deficits, since the patients must be able to keep focus on a limited psychotherapeutic topic of nightmares and sleep disturbances, take part in structured psychotherapy, and practice specific homework. Also, we hypothesize that IRT may be applicable more broadly if supplemented with other psychotherapeutic methods in a flexible manual. Some patients might benefit from receiving IRT after psychotherapy focusing on other symptoms or after trauma-focused therapy if they still suffer from nightmares and sleep disturbances.

4.3. IRT structure and benefits

Most completers in this study did not dream the rescripted dreams in stage 3 which is not uncommon according to Rousseau & Belleville (2018), and not all completers managed to overcome avoidance when rehearsing the rescripted dream. Still the completers seemed to benefit from a decrease in nightmare frequency through IRT. These completers could still have benefitted from the exposure implemented in stage 3 when recounting the nightmare. However, it is argued by Germain et al. (2004) that the exposure element in IRT is minimized and not used extensively enough for it to be the most potent therapeutic method and instead suggest increased mastery. The completers in this study express that they found other parts of IRT difficult apart from rescripting the nightmares, such as discussing the effect of

nightmares during stage 1 and using the sleep logs. This could indicate that they find IRT more difficult than other PTSD patient groups perhaps due to severity of symptoms, exposure to multiple and prolonged trauma and high levels of chronicity. It could also indicate that discussing nightmares without getting into the content of them could activate the fear structure and the mechanisms of action of avoidance prevention and/or cognitive and emotional processing. Lancee, Spoormaker, Krakow & van den Bout (2008) points out that logging nightmares is also a form of indirect CBT found to reduce nightmare frequency. The nightmare frequency for most of the completers starts to fluctuate and for some completers (see completer 1 and 5) decrease during stage 2 and further in stage 3. Hence neither exposure, nor rescripted dream mastery elements seem to be able to account for the changes seen in stage 2. This could indicate an alternative understanding of IRT, where stage 2 of positive imagery exercises could be a separate IRT component with its own mechanism of action. Possibly the impact happens by completers gaining control over their imagery system during the day and this control might influence or even generalize to the imagery at night as proposed by Rousseau & Belleville (2018). Alternatively, it could work by promoting a general increase of positive imagery in the imagery systems during the day mirrored in the nightly imagery activity allowing a decrease in nightmare scripts being activated and for some completers also an increase in dream activity a process that could also be supported by the behavioral activation seen in this study. Dream activity is also proposed by Rousseau & Belleville (2018) as a part of the mechanism of action of restoration of sleep function.

The findings in this study raise the hypothesis that IRT for trauma-affected refugees could include 3 stages with separate effective therapeutic components, that could be implemented individually or in sequence based on the patients' needs and capabilities in line with stepped care models for treatment. It seems to be difficult for a considerable portion of the trauma-affected refugees to participate in the exposure and rescripting of stage 3, but the majority seem to be able to engage in stage 1 and 2. Patients with severe cognitive deficits preventing them from engaging in stage 1 could perhaps benefit from stage 2 and possibly also from stage 3. Patients with low avoidance, who present with only one or a few trauma-related nightmares might only need to receive treatment with IRT stage 3. A patient who wishes to avoid exposure to trauma content can be offered treatment with stage 1 and stage 2. It could be argued that skipping stage 3 with the most direct exposure to trauma related material could be viewed as supporting the patient's avoidance hence not be helpful, however the results indicate that exposure for this patient group might not be limited only to stage 3. Whether it might be useful to implement IRT stages separately could be determined in a dismantling study.

4.4. Unexpected benefits of IRT

Behavioral activation was reported by all completers in the study when practicing positive imagery exercises.

Reduction of flashbacks is reported by completer 3 and 5. Germain et al. (2004) also found a reduction in flashbacks and proposed that the increase in mastery element of rescripted dreams may also reflect a more global active component causing the reduction in flashbacks. Since flashback frequency was not reported on the nightmare log it is not possible to determine in which IRT stage the reduction occurred in the current study. Since completer 3 did not experience dreaming the rescripted dream, it could be hypothesized that the reduction of flashbacks might be dependent on the rehearsal and mastery of positive imagery exercises, and on learning how to use the techniques to overcome negative intruding images in stage 2.

4.5. Treatment design

The study shows diversity in the completers needs and capabilities and the possibility of an extended treatment period along with the flexible IRT manual design proved paramount for the completers as well as multi-modal treatment so urgent personal and social matters could be dealt with by a social worker in parallel with psychotherapy.

4.6. Strengths and limitations

This is to the authors' knowledge the only study evaluating IRT with trauma-affected refugees apart from Sandahl et al. (2021). The study had a small sample size. Thus, the results cannot be generalized, and the study cannot conclude anything regarding the effect of IRT. However, the initial results are encouraging, and the qualitative method gives a thorough description of the completers experience. The manual was developed, and the IRT carried out by the same person (first author) that had limited experience with psychotherapy and no previous experience with IRT.

5. Conclusion

This study showed that the results on the standardized measures indicate improvement from pre-IRT to post-IRT on all ratings and that the trauma-affected refugees were interested in IRT and generally found IRT acceptable, as it was designed and conducted at CTP (despite the relatively high drop-out, many cancellations, and no-show rate). Among the five who completed treatment, the experience with the 3 IRT stages varied and was largely affected by individual avoidance strategies, and urgent personal or social matters. Some completers experienced major improvement during IRT and were able to utilize the majority of the IRT techniques. Others experienced only little improvement and found only a few IRT techniques useful.

Overall IRT seems to be a good alternative or supplement to trauma-focused treatment. Probably even more so if IRT contains more therapeutic processes than earlier understood and can be used in three separate stages for different patient needs and profiles. This would increase its applicability for trauma-affected refugees.

6. Future research

Future randomized controlled trials are needed to determine when IRT as an intervention is best placed relative to other forms of trauma treatment in trauma-affected refugees. Whether IRT could be used as a treatment consisting of different stages with different components that can be adopted flexibly should be determined by future research in a dismantling study.

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