Experiences of wake and light therapy in patients with depression: A qualitative study

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ABSTRACT: Wake therapy can reduce depressive symptoms within days, and response rates are high. To sustain the effect, it is often combined with light therapy. Few studies have focussed on factors related to patients’ adherence to the regime, and none has used qualitative methods to examine their experience of these combined interventions. Therefore, the aim of the present study was to illuminate patients’ experiences with wake and light therapy and factors related to adherence. Thirteen inpatients with depression were included. They participated in an intervention consisting of three wake therapies during the first week, 30 min of daily light treatment for the entire 9 weeks, and ongoing psychoeducation regarding good sleep hygiene. Patients kept a diary, and individual semistructured interviews were conducted. Data were analysed using qualitative content analysis. The participants’ overall experience with the treatment was positive. Some experienced a remarkable and rapid antidepressant effect, whereas others described more long-term benefits (e.g. improved sleep and diurnal rhythm). Yet recovery was fragile, and patients were only cautiously optimistic. Social support was important for maintaining the motivation to stay awake and receive daily light therapy. Overall, participants found the treatment worthwhile and would recommend it to others with depression. The study revealed a lack of knowledge among participants about the connection between regular sleep patterns and depression. In conclusion, this study provides insight into patients’ experiences, and knowledge that can contribute to guidelines for future adherence-promoting organization of wake and light therapy.

KEY WORDS: light therapy, major depression, patients’ experience, qualitative content analysis, wake therapy.

INTRODUCTION

Major depression is a common disorder affecting approximately 5% of the European population (Paykel et al. 2005). It is the leading cause of disability in the world (World Health Organization 2016), and has a lifetime prevalence of 16.5% in the USA (Kessler et al. 2003). Pharmacological treatment and psychotherapy are the most commonly-used treatments, but the full effect is seen only after weeks, and approximately 33% of patients will fail to achieve remission, despite multiple treatment attempts (Rush et al. 2006). Therefore, alternative therapeutic strategies are needed.

Sleep deprivation (wake therapy) can reduce depressive symptoms within hours (Giedke & Schwarzler 2002, Pflug & Tolle 1971; Wu & Bunney 1990). Patients undergoing wake therapy usually stay awake for a whole night and the following day (total 36 hours) (Wirz-Justice et al. 2013). After one wake therapy, a significant reduction in depressive symptoms is seen in up to 60% of patients (Wu & Bunney 1990). However, the effect can be transient (Wu & Bunney 1990). Therefore, to maintain the effect of wake therapy, it is
often combined with other chronotherapeutic interventions, such as light therapy and sleep phase advance therapy, or sleep time stabilization (Martiny et al. 2012; Wu et al. 2009). Chronotherapy can be defined as controlled exposure to environmental stimuli that act on biological rhythms (Wirz-Justice et al. 2013).

Recent studies have indicated that wake therapy in combination with other chronotherapeutic interventions can produce a sustained antidepressant effect, and clinical benefits are seen even in treatment-resistant patients (Echizenya et al. 2013; Martiny et al. 2012, 2015; Michalak et al. 2007; Sahlem et al. 2014; Wu et al. 2009).

To achieve this sustained effect, patient adherence to the regime is pivotal in relation to wake therapy, as well as to light therapy and sleep time stabilization; however, adherence in long-term treatments is often low (World Health Organization 2003). According to the World Health Organization (2003), no intervention strategies towards adherence have been shown to be effective across all patients, conditions, and settings. Therefore, interventions targeting improved adherence should be aimed at treatment-related factors as the patients experience them.

Few studies have focussed on patients’ experience with chronotherapeutic treatments. Regarding wake therapy, some aspects of the experiences are illuminated in quantitative studies; for example, revealing the percentage of patients satisfied with wake therapy (Martiny et al. 2013; Moscovici & Kotler 2009), being adherent (Echizenya et al. 2013), and feeling discomfort (Giedke & Schwarzer 2002). Quantitative methods describing patients’ experiences are based on prearranged hypotheses and might leave unexpected experiences or explaining factors undisclosed, as was the case with the study of Martiny et al. (2013), in which 48% of patients found wake therapy difficult, yet what they found difficult was not described.

Some studies have focussed on adherence and causes of low adherence in relation to light therapy. In a study of patients with seasonal depression, which used light therapy at baseline, patients were followed for a mean of 8.8 years. At follow up, 58% had not used light therapy in the previous winter, as they found the treatment ineffective or inconvenient, or they did not feel depressed enough to begin treatment (Schwartz et al. 1996). In another study, the purpose was to identify cognitive and behavioural predictors of light therapy use. Self-efficacy and social support were identified as predictors (Roecklein et al. 2012). Adherence to light therapy was examined in a pilot study (n = 19), which found that 31.6% of patients dropped out (Michalak et al. 2007). Patients were allocated to either bright light therapy (intervention) or dim red light (placebo). A non-statistically-significant trend was found towards better adherence by patients in the intervention group.

The existing literature highlights only certain areas of patients’ experiences. Thus, there is a lack of in-depth knowledge of patients’ motivation for, and experiences with, combined chronotherapeutic interventions. Despite promising results, these treatment methods are not commonly used in clinical practice. Increased knowledge of the patient experience would be helpful in further decision-making. Moreover, increased knowledge about factors impeding and promoting adherence could benefit future organization of treatments.

The aim of the present study was to illuminate patients’ experiences with wake and light therapy and factors related to adherence.

MATERIALS AND METHODS

A descriptive design using qualitative methods was applied.

Participants

Thirteen inpatients with moderate-to-severe depression, admitted to the Department of Affective Disorders, Aarhus University Hospital, Risskov, Denmark, participated in the present study. They all participated in a randomized, controlled trial (RCT) examining the efficacy of the intervention. The measured outcomes in the RCT were duration of admission and response and remission rates in weeks 2 and 9 on the 17-item Hamilton Depression Scale (Bech 1996; Hamilton 1967; Williams 1990). These results will be presented and discussed in another article. The RCT included 64 patients, and the participants in this qualitative study were included consecutively at the beginning of enrolment. However, three more patients included in the RCT were subsequently excluded, as they had cognitive deficits that made interviewing difficult. Enrolment continued until further participants contributed no new relevant understanding; this occurred at participant number 13. Inclusion criteria were age 18–67 years, Danish-speaking, a diagnosis of depression according to International Classification of Diseases-10 (World Health Organization 1993), and a Hamilton Depression Scale score of at least 18. Patients with depression as part of a bipolar disorder were
required to be on adequate mood-stabilizing therapy at study entry. Exclusion criteria were severe suicidal ideation, panic anxiety and personality disorder, drug or alcohol abuse, psychotic disorder, pregnancy, glaucoma, epilepsy, and electroconvulsive therapy. The 13 participants (five women and eight men, mean age: 37 years, range: 18–66) differed in previous duration of depression, degree of treatment resistance (Fekadu et al. 2009), response to the intervention, and level of general self-efficacy (Schwarzer & Jerusalem 1995) (Table 1). All but one included patients were being treated with antidepressants.

**Interviews and diaries**

Individual semistructured interviews were carried out by the first author, who is an experienced nurse. Before her studies, she was employed in one of the wards from which the participants were recruited. Her contact with participants was primarily in relation to interviews, but occasionally also to project tasks, such as inclusion and measures. The participants were requested to keep a diary; five of them did so on a regular basis. The first author read the diary notes before conducting the interviews in order to identify areas for further elaboration. Interviews (n = 9) were mainly conducted by the end of the 9-week intervention. However, a significant proportion of participants chose not to write a diary. The interviews were supplemented by an additional interview after wake therapies (n = 8). In total, 17 interviews were conducted with an average duration of 27 min (range: 13–51). The interviews took place at the hospital in a room familiar to the participants. An interview guide was used, and the central questions were: Why did you choose to participate? How did you experience the wake therapies? How did you manage the challenges/crises you went through during the wake therapies? Did you experience any change in your condition during and after the wake therapies? How did you experience light therapy? Can you describe your everyday life before you entered the study? How is your diurnal rhythm/everyday life now? Interviews and diaries were transcribed verbatim.

**Procedure and context**

The present study was carried out in two acute inpatient wards; one for patients with mood disorders in general, and one mainly for those with unipolar depressions and personality disorders. The participants received individualized standard treatment consisting of antidepressants, supportive conversations, National Acupuncture Detoxification Association (NADA) ear acupuncture, milieu therapy, and exercise offers. The combined chronotherapeutic intervention was offered as a supplement and consisted of: (i) three wake therapies during the first week, patients staying awake Sunday, Tuesday, and Thursday nights, with recovery nights in between allowing for 12 hours of sleep; (ii) daily light treatment for 30 min per day during the entire 9-week project period using a Daylight lamp (Uplift Technologies, Dartmouth, NS, Canada) with 10 000 lux white light. The timing of

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**TABLE 1: Participants' characteristics (n = 13)**

<table>
<thead>
<tr>
<th>Participant no.</th>
<th>Sex (male/female)</th>
<th>Age (years)</th>
<th>Length of current depressive episode, (months)</th>
<th>Time since appearance of first depression (years)</th>
<th>Degree of treatment resistance (MSM)</th>
<th>Depression scores (HAM-D17) (baseline, week 1, week 2, week 9)</th>
<th>General self-efficacy (baseline, week 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>48</td>
<td>&lt;12</td>
<td>3</td>
<td>5 (mild)</td>
<td>24, 12, 18, 22</td>
<td>11, 10</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>46</td>
<td>&gt;24</td>
<td>6</td>
<td>13 (severely)</td>
<td>25, 25, 29, 12</td>
<td>12, 16</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>28</td>
<td>&gt;24</td>
<td>12</td>
<td>8 (moderate)</td>
<td>18, 19, 24, 25</td>
<td>23, 30</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>66</td>
<td>12–24</td>
<td>1</td>
<td>7 (moderate)</td>
<td>30, 25, 26, 7</td>
<td>26, 32</td>
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<tr>
<td>5</td>
<td>Male</td>
<td>41</td>
<td>12–24</td>
<td>1</td>
<td>8 (moderate)</td>
<td>20, 18, 12, 7</td>
<td>17, 21</td>
</tr>
<tr>
<td>6</td>
<td>Female</td>
<td>36</td>
<td>&gt;24</td>
<td>21</td>
<td>11 (severely)</td>
<td>29, 21, 19, 12</td>
<td>10, 10</td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>43</td>
<td>&lt;12</td>
<td>&lt;1</td>
<td>4 (mild)</td>
<td>22, 19, 12, –</td>
<td>21, –</td>
</tr>
<tr>
<td>8</td>
<td>Male</td>
<td>43</td>
<td>&lt;12</td>
<td>15</td>
<td>8 (moderate)</td>
<td>18, 13, 15, 6</td>
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<tr>
<td>9</td>
<td>Female</td>
<td>18</td>
<td>12–24</td>
<td>5</td>
<td>6 (mild)</td>
<td>23, 22, 25, 27</td>
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<tr>
<td>10</td>
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<td>23</td>
<td>&lt;12</td>
<td>5</td>
<td>5 (mild)</td>
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<td>27, 31</td>
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<tr>
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<td>11</td>
<td>7 (moderate)</td>
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<td>12–24</td>
<td>11</td>
<td>6 (mild)</td>
<td>22, 13, 22, 11</td>
<td>20, 29</td>
</tr>
</tbody>
</table>

Maudsley Staging Method (MSM): score is based on episode duration, baseline symptom severity, and treatment failure. General Self-Efficacy Scale: a 10-item psychometric scale designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life; range is 10–40 points. HAM-D17, Hamilton Depression Rating Scale – 17-item version.
light therapy was based on the Morningness–Eveningness score, which is used to calculate the optimum timing for morning light therapy (Horne & Ostberg 1976); and (iii) sleep time stabilization, with patients keeping a sleeping diary for 9 weeks describing sleep onset, sleep offset, daytime sleep, and sleep quality. They participated in weekly assessments with a focus on psychoeducation regarding good sleep hygiene and maintaining a stable rhythm. Psychoeducation was based on diary records. Two project nurses carried out the weekly assessments and the psychoeducation during the project period. As a minimum, the participants were admitted to hospital during wake therapy and the following weekend (9 days). Thereafter, they could be discharged at their physician’s discretion.

Ethics

Chronotherapeutic interventions generally have few side-effects (Wirz-Justice et al. 2013), but the tendency to relapse after wake therapy is one disadvantage (Wu & Bunney 1990). The participants were informed about this risk, which we tried to reduce by combining wake therapy with light therapy and sleep time stabilization. Another side-effect is the risk of switching into mania (in bipolar patients) (Colombo et al. 1999). In order to reduce this risk, patients with bipolar disorder had to undergo adequate mood-stabilizing treatment for a minimum of 1 month before entering the study. Overall, combined chronotherapeutic interventions seem to have more advantages than disadvantages.

The Danish Central Region Committee on Health Research Ethics approved the project (no. 1-10-72-254-13). Patients were informed verbally and in writing about the project, and that participation was voluntary and withdrawal was possible at any time. Data were treated confidentially, and the Danish Data Protection Agency approved the study (identification no. 1-16-02-209-13).

Analysis

Data from the transcribed interviews and patient diaries were analysed using qualitative content analysis (Hsieh & Shannon 2005), with both a manifest analysis and latent analysis (Berg 2006). After several readings, the text was divided into meaning units, which were sorted into categories and subcategories according to the manifest content. In the manifest analysis, five categories and 13 subcategories were identified. The results from the manifest analysis will not be reported in detail. However, the main categories were:

(i) motivation for participation; wake therapy, light therapy, and sleep time stabilization, with the subthemes of positive experiences, negative experiences, and change in habits in each category; (ii) the need for support; (iii) environment; and (iv) would repeat wake and light therapy. A latent analysis was then performed in which the meaning structure across the manifest findings was identified. The analysis was conducted by the first author in collaboration with the second and the last authors, and during the analysis, the findings were discussed until consensus was reached.

Methodological considerations

The methodological demand for trustworthiness was sought in different ways (Graneheim & Lundman 2004; Lincoln & Guba 1985). The strategy for inclusion was that of maximal variation, and it was done consecutively until redundancy was achieved. Consistent findings across a heterogeneous sample are strong and enhance credibility. Some patients made diary notes, which were read in relation to the interviews. This triangulation of methods provided a real-time picture of the experience, supporting participants’ memories and guiding the interviewer’s awareness of themes to be addressed in the interviews. Several researchers were involved in the design of the study, and the analysis was done in collaboration with the second and the last authors, who challenged the first author’s interpretation and preunderstanding.

FINDINGS

The latent analysis revealed one main theme and four subthemes (Fig. 1).

Main theme: cautious optimism

The main theme reflected the participants’ overall positive experience with the intervention, but also found that recovery was fragile and participants were only cautiously optimistic, although all would recommend wake and light therapy to others. Many had a long history with conventional pharmacological and psychotherapeutic treatments with limited effect and were becoming desperate. Thus, the non-pharmacological and participatory nature of the treatment made it particularly attractive, and helped the participants regain confidence in recovery. This emerging hope kept them motivated and adherent, and new knowledge acquired during the project period made them aware of the importance of changing sleeping habits and daily

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routines, and improved their self-management in these areas. Social support was crucial for motivation and adherence to the intervention.

Four subthemes were embedded in the overall theme: (i) the last straw, illustrating the hope the treatment represented; (ii) a small miracle – for some, illustrating the benefits some experienced during wake therapy; (iii) staying awake – killing time, illustrating the challenging and promoting factors for adherence to the treatment; and (iv) from chaos to sleep, illustrating the long-term benefits of focusing on changing sleeping habits and of light therapy.

**Last straw**

Most participants had recurrent depression for several years; some since adolescence. They described a daily life, prior to the admission, marked by depressive symptoms, such as sadness, hopelessness, worthlessness, feelings of guilt, suicidal thoughts, anxiety, insomnia, and fatigue. These symptoms had caused major problems, as they were unable to manage jobs or education. Moreover, they had withdrawn from social life, and described a daily life characterized by isolation and inactivity. They had tried numerous treatments for their depression: psychotherapy, different antidepressants, exercise, herbal medicine, diets, and in some cases, electroconvulsive therapy (ECT). Some participants had tried nearly all relevant treatments for depression with little or no effect:

I've been admitted several times and treated with antidepressants for many years and never felt it was quite enough. (Participant 6)

All participants had tried antidepressants, and they saw several disadvantages with the medication. Some found it frustrating that treatment effects were achieved only after several weeks. Other participants felt that, although antidepressants could reduce symptoms, medication alone was not enough to make them recover. Most had experienced side-effects from antidepressants (e.g. anxiety, dizziness, and drowsiness), and it motivated them to try a non-pharmacological treatment. A few participants did not tolerate any antidepressants, leaving them with reduced treatment options. A few participants had tried ECT, some with good effects. However, some had experienced side-effects, mainly memory loss, which made them abandon the treatment. More participants mentioned that the few potential side-effects of the chronotherapeutic intervention had a crucial influence on their decision to participate in and complete the study:

The major reason why I did this is because there's no chemistry involved and it's not dangerous. It seemed like an easy way. (Participant 8)

The participants had in common the fact that they were desperate to get better, and they had almost lost hope of recovery, as they had experienced either limited effects of previous treatments or severe side-effects. By participating and trying the combined intervention, many regained confidence in recovery. They saw combined wake and light therapy and sleep time stabilization as a simple, natural, and alternative treatment with few side-effects, where they could take an active part in their treatment. However, their previous negative experiences with treatments made them guarded in their expectations. As one woman wrote in her diary:

I am beginning to get nervous about the wake therapy – it is my hope, my hopeful way of light – my way back to life to some strength! I wish, I hope – but dare I? (Participant 6)

The desire for recovery was dominant and seemed to have an influence on adherence. Several participants stated that giving up was not an option, and all but one completed the 9-week study period.

**Small miracle: for some**

In the week in which participants went through the three wake therapies, some experienced increased
energy and better mood, as well as calming of thoughts and improved cognitive function, enabling them to think clearly. The rapid improvement gave the patients hope for the future and motivation to carry on with the wake and light therapy. The alleviation was particularly marked for some participants, and was also observed by relatives and medical staff:

I woke up full of energy. My mind was clear and I was able to think clear thoughts – GREAT. I could feel my depression and sadness, but in a different way. I felt happy and full of energy. It has been many years since I’ve felt like that. (Participant 11)

The participants who did not feel an immediate alleviation during the wake therapies were disappointed. Many had seen an interview on television in which a former patient had described an almost miraculous recovery after wake therapy. Others had seen fellow patients recover after wake therapy. Therefore, they described feelings of despair, hopelessness, and suicidal thoughts, as they did not experience this rapid recovery. However, during the following weeks, many of them gradually felt an improvement in their condition (e.g. in sleep and diurnal rhythm):

One could have hoped for a more rapid response, but it has improved in the last 14 days of the project. (Participant 4)

My fellow patient recovered much faster than I did. It was a little frustrating to see her getting better during the wake therapies when I did not. Nevertheless, yesterday I had my first good day. (Participant 12)

Completing wake therapy successfully entailed a rush of happiness and satisfaction for the participants; a feeling that was compared with ‘runner’s high’ and a victory. This re-established their self-confidence and motivated some to repeat the treatment, if necessary, another time. Some would do it if they became depressed again; others would repeat it if they had severe sleep problems:

It feels a bit like a ‘runner’s high’. (Participant 10)

It is fantastic...showing that I can. It moves some boundaries, you know? Those personal victories were good. (Participant 6)

Generally, participants experienced the recovery they achieved during wake therapy as fragile, and they experienced mood swings in the following 8-week project period. Some participants benefitted only a little from participation in the project and would not repeat it. However, they considered that trying it had been worthwhile. Like the rest of the participants, this group would recommend that other patients with depression try wake and light therapy:

I have had good days. I have experienced several days of smiling and having a genuine urge to laugh. This I haven’t experienced for a long time, but I still have depressive periods where I just don’t function. (Participant 3)

I had to do something to get out of the depression. Not that I am out of it, but this enabled me to do something myself. It felt better than just waiting for the medication to have an effect. (Participant 12)

Many participants found it helpful to start the day with light therapy. Some woke up faster and with more energy, while others felt calmer in mind and body. One described it as a dark cloud being lifted. Light therapy required participants to sit in front of the lamp for 30 min each morning. For some, this was positive and gave them a quiet start and structure to the day, whereas others found it annoying. This was particularly so for participants experiencing little or no positive effect from it. Dedicating time and irritated eyes were the only negative side-effects reported:

The hardest part has been the 9 weeks with light therapy. It has required great discipline always to remember this damned lamp. (Participant 1)

During the periods of admission, staff often had to remind the participants of the daily light therapy. After discharge, participants reported that support from relatives was important for their adherence. One participant moved in with his parents during the 9-week study period and they woke him up every morning for the light therapy. Others spoke about partners who took over morning duties and served coffee to encourage them. One patient found light therapy so unpleasant that she would not repeat it. The others would consider doing it again, and several had bought a lamp for themselves by the end of the study. After 1 week of the study ending, one patient, having discontinued the light therapy, experienced deterioration, and chose to return to it.

Staying awake: killing time

As the participants became tired during the wake therapies, some experienced physical discomfort (e.g. headache, neck and back tension, restless legs, shivering,
nervous stomach, heartburn, dizziness). Participants were also mentally affected, as they became more sensitive and vulnerable. They described periods in which they felt powerless and pessimistic. Others became more irritable or more anxious, and one participant had to leave the study, as his anxiety worsened. Most of the participants experienced massive mood swings during the weekend after ending wake therapy. Some described having a feeling of the body needing to regain balance. The participants recommended that future patients should be prepared for these possible side-effects, as it would help them to maintain hope for recovery, and thus, promote adherence:

It has been fluctuating, very mixed. I’ve had massive mood swings – very sad, almost happy, much crying and of course very tired, but tiredness has been a small price to pay... In the weekend, after it was completed, I felt an enormous mood swing... I would have liked to have been prepared for that. (Participant 6)

Staying awake for 36 hours was challenging. Participants spent time drinking coffee, doing puzzles, playing Sudoku, drawing, playing games, or surfing the Internet. Many watched television or movies; however, as they became tired, physical activities or showers helped them through. At night, physical activity was limited to walks in the ward or in the atrium, or riding the exercise bike. Many participants were surprisingly active the day after being awake all night, and went to the fitness centre or took long walks. The hours between 3.00 and 6.00 A.M. were difficult for most participants, although the afternoons at the end of the 36 hours were also challenging. Generally, daytime was experienced as the easiest period because of the activities that were available to participate in. Some participants experienced the physical surroundings in the hospital unit as suboptimal for wake therapies (e.g. the rooms were too small, too dark, too cold, and/or too isolated).

The need for support during wake therapy was dominant, and support from staff, family, and fellow participants was experienced as extremely helpful and encouraging. Furthermore, companionship during wake therapies was emphasized as useful. However, some found wake therapy with just one other person intimidating; therefore, group wake therapy was suggested as a solution:

I was motivated by Peter, who was also on the ward and had already participated in the project. He was the epitome of a trustworthy support – like really good. He reflected on the project, and it was good to discuss it with him. (Participant 5)

From chaos to sleep

Prior to admission, participants had disturbed sleep patterns. Some had diurnal variation in their depression, and as they felt better during the evening, they stayed up until after midnight. This resulted in problems getting up in the morning and engaging in regular daily life (e.g. work/education) and family obligations (e.g. sending their children to school). Others went to bed early; however, they often had problems falling asleep. Most described their sleep during the nights as interrupted and shallow, and owing to fatigue, long naps during the day were frequent. Some participants slept as much as possible during the day to escape the depression. Generally, the participants had some knowledge about factors promoting good sleep (e.g. sleep hygiene advice). However, they had difficulties keeping up the motivation to follow through on them. Some expressed a lack of knowledge on the connection between regular sleep patterns and depression.

Generally, participants experienced markedly better sleep during the study period, with many describing their sleep as longer, deeper, and less interrupted. Moreover, some experienced reduced problems falling asleep (e.g. one participant reported that she now could go to bed and fall asleep promptly for the first time in 12 years). The importance of having a regular rhythm became evident to the participants, and many began to have regular sleep onset and offset, and avoided taking daytime naps. This was a struggle for many participants, as it had been their escape from depression:

Not sleeping during the day has been difficult. It has been my way of getting away and gaining some peace of mind... I have had days where I have slept, but it has been nothing compared to previously... Back then, I was in bed night and day. (Participant 6)

At weekly follow-up conversations, matters related to sleep hygiene and sleeping diaries were discussed. Participants found these conversations helpful in keeping up the motivation to follow the sleep hygiene advice. In particular, the advice to take part in relaxing activities and avoid light from televisions and iPads before bedtime was found to be helpful. Daily activities
were also discussed, and many participants became more active and started to do bike rides and take long walks. The negative impact the previous disturbed sleeping pattern had on family life became apparent, as the participants applied a structured sleep management strategy. Sleep had often been used as an escape from depression during the daytime, thereby inhibiting night-time sleep, and limiting the hours spent with family:

I have become aware that it is important to get the diurnal rhythm stabilized – not sleeping during the day. Well, there has been some learning, which is important to me. I now function much better in the family because I follow their rhythm. I am tired at night because I don’t sleep during the day. I get up early – I feel it is good for me. (Participant 5)

DISCUSSION
The aim of the present study was to illuminate participants’ experience of a chronotherapeutic intervention combining wake and light therapy with sleep time stabilization, and factors related to adherence.

The main theme, ‘cautious optimism’, reflected the participants’ overall positive experience with the intervention, but also that recovery was fragile. Although the intervention was challenging and demanded personal discipline and stamina from the participants, they expressed a positive attitude towards the intervention and generally adhered to it, with only one dropping out of the study. The cautiousness might stem from earlier disappointing experiences with conventional treatment, but the ambiguity did not seem to negatively influence their adherence. Patients’ experiences of taking antidepressants have also been reported as ambiguous (Buus et al. 2012) or related to several conflicting issues (Anderson & Roy 2013) and to common negative attitudes towards use of antidepressant (Van Geffen et al. 2011). Several factors can influence medication adherence, such as beliefs, attitudes, medication factors, and interactions with health care (Buus et al. 2012; Crowe et al. 2011; Van Geffen et al. 2011). However, in our study, social support and emerging hope due to recovery were found to be the dominant factors for promoting adherence.

Many participants had been through several conventional treatments with limited effect. This finding highlights a problem in the treatment of depression, as approximately one-third of patients undergoing it will fail to achieve remission, despite multiple treatment attempts (Rush et al. 2006). The opportunity to participate actively in their own treatment was a much appreciated aspect of the wake and light therapy. It might well be that it gave participants a sense of control, which they did not experience when waiting for the effect of antidepressants. The ability to achieve and maintain a sense of control is important for a person’s mental well-being (Shapiro et al. 1996). This ability is called ‘locus of control’, and refers to the extent to which individuals believe they can control events affecting them (Rotter 1966).

Although not the case for all, a remarkable and rapid, but fragile, recovery was described. This is in line with the finding of Martiny et al. (2012), who found that after 2 weeks of a similar intervention, 41.4% of patients had a 50% reduction on the 17-item Hamilton Depression Scale. The effect of wake therapy can be temporary (Wu & Bunney 1990), which was the case for some patients in our study. Thus, the recovery, although brief, gave some participants hope, potentially helping them maintain motivation to change sleeping habits and daily routines. This entailed improved sleep, and possibly helped them recover faster. They reported falling asleep easier, and sleeping deeper and for longer, and with fewer interruptions. Results from Martiny et al.’s (2013) study partly support this finding, as the participants reported sleeping longer, and sleep logs showed a significant advance of the sleep–wake cycle, indicating fewer problems falling asleep. The lack of knowledge among our participants of factors promoting good sleep and the association between regular sleep patterns and relief in depression was striking. This association is well established, and we know that 80% of patients with major depression have sleep problems (Winkelman 2015). This raises awareness of the need for an enhanced focus on patient education, participation, and empowerment, as these are closely related when the goal is helping patients to change habits and to acquire daily routines (Aujoulat et al. 2007).

The participants pointed out several factors influencing adherence to treatment. Physical activity during wake therapies made it easier to stay awake. Social support was important for remaining motivated to stay awake and have daily light therapy. This is in line with Roecklein et al. (2012), who identified social support as a predictor of light therapy use. In the same study, a high degree of self-efficacy was also found to predict better adherence. The concept of self-efficacy originates from Albert Banduras’ social cognitive theory, and can be defined as a person’s judgment of their capability to accomplish a certain level of performance.
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(Bandura 1986). Bandura (1986) describes different factors that might increase self-efficacy (e.g. vicarious experiences that let people visualize or observe people like themselves perform a task successfully). This might explain why peer support from fellow patients in our study was highlighted as a factor promoting adherence, leading to the suggestion of group-based wake therapy.

One factor potentially impeding adherence was the fragile nature of the recovery. All participants described mood swings during the intervention, challenging the motivation to continue. Participants highlighted the importance of being prepared for the mood swings and of extra support expected from staff during these periods. Another challenge was observing others responding to treatment when a participant was not responding. In these cases, frequent conversations were required in order to keep the participant engaged. Enduring light therapy for 9 weeks was, in some cases, also a challenge, as some participants found it annoying, particularly those experiencing little or no positive effect. This is in line with the study of Michalak et al. (2007), where intervention patients receiving light therapy were more adherent than control group patients, indicating the effect of light therapy to be important for motivation, and thus, adherence.

CONCLUSIONS

The combined chronotherapeutic intervention is demanding, yet our study revealed that depressive patients, with the right support, are motivated and capable of completing it. Overall, participants found the treatment worthwhile. Not all would repeat it; however, all would recommend it to other patients with depression.

RELEVANCE FOR CLINICAL PRACTICE

Our study reveals a demand for alternative treatments for depression, and this combined chronotherapeutic intervention is one example that could be implemented in clinical practice if sufficient resources and motivation for supporting patients are present. Examples of other chronotherapeutic interventions are reviewed by Wirz-Justice et al. (2013). The participants in our study noted social support from peers, relatives, and staff as the main factors promoting adherence. Mental health nurses could play an important role facilitating sufficient support. Group wake therapy could be a way of promoting peer support during the wake therapy sessions. Another way could be involving relatives during wake therapy as well, but mainly in the following weeks where patients (often at home) have to continue light therapy and maintain a stable rhythm. In our study, two mental health nurses carried out weekly assessments with the participants, focusing on sleep and maintaining a stable rhythm. Generally, the participants appreciated the assessments, and they described obtaining new knowledge about the association between regular sleep patterns and depression; this finding indicates a need for enhanced focus on this clinical practice. Mental health nurses could play an important role ensuring this, if they have sufficient knowledge about sleep and chronobiology. Emerging nursing literature on chronotherapeutics indicates a growing interest in this field (Crowe et al. 2015, 2016).

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