Do sleep disturbances improve following psychodynamic psychotherapy for adolescent depression?

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Abstract

Title: Do sleep disturbances improve following psychodynamic psychotherapy for adolescent depression?

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Background: Sleep disturbances are frequent and one of the most common symptoms of Major Depressive Disorder in adolescents. Psychodynamic psychotherapy typically does not target sleep disturbance specifically, however recent evidence indicates treatment for depression, including short term psychodynamic therapy may have an added effect in reducing co-occurring sleep problems. It is not known if transference work in psychodynamic treatment for depression improves sleep.

Methods: Analyses were conducted using secondary data from a Norwegian multi-centre, randomized controlled trial. Adolescents aged 16-18 years (n=69, 84% female) met diagnostic criteria for Major Depressive Disorder based on the Beck Depression Inventory (BDI-II). They were randomized to one of two treatment modalities, with or without transference work. Sleep problems were assessed on baseline, at therapy session 20 (20 weeks), post-treatment (28 weeks) and one year follow up (80 weeks) with the BDI-II and the Symptom Checklist 90 (SCL-90).

Results: At baseline, 69% of the adolescents exhibited moderately to extreme sleep difficulties. Sleep disturbance was significantly correlated to depression depth. Exploratory analyses suggest that symptoms of insomnia significantly decreased from baseline to end of treatment on self-report forms. This decrease maintained until follow-up. No differences in recovery of sleep problems were found between the two treatment groups.

Limitations: This thesis report data based on subjective measures from a relatively small, mostly female adolescent sample.

Conclusion: Sleep disturbance is common in adolescents with depression. Current findings confirm that sleep problems decrease in parallel to psychodynamic psychotherapy for depression, with or without transference interventions. For youth with persisting or residual insomnia symptoms, sleep should constitute a particular treatment target to help prevent further disease and disability.

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Abbreviations

BDI	Beck Depression Inventory
CBT	Cognitive Behavioral Therapy
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th edition
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, 5th edition
FEST	First Experimental Study of Transference Interpretations
FEST-IT	First Experimental Study of Transference Work – In Teenagers
GAF	Global Assessment of Functioning
ICD	International Classification of Disease
IMPACT	Improving Mood trough Psychoanalytic and Cognitive-Behavioral Therapy
MADRS	Montgomery-Asberg Depression Rating Scale
MDD	Major Depressive Disorder
MDE	Major Depressive Episode
PDT	Psychodynamic psychotherapy
RCT	Randomized Controlled Trial
SCL-90	Symptom Checklist-90
STPP	Short-term Psychodynamic/Psychoanalytic Psychotherapy
WAI	Working Alliance Inventory

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1 Introduction

Sleep disturbances are frequently seen in adolescents with a depressive illness (1), being both a risk factor and a core diagnostic symptom of depression. There is evidence (2) that impaired sleep affects the initiation and development of depression in adolescents, and current literature suggest there is a bidirectional association between depression and sleep disorders as insomnia, hypersomnia and the co-occurrence of these sleep abnormalities (3-5). A growing body of literature on this subject suggests that sleep problems and depression may be caused by a separate underlying factor (2). Thus, sleep disturbance is considered a prodromal symptom of Major Depressive Disorder (MDD), in which it can predict the course and outcome of depression. Depression is linked to future insomnia, and insomnia is likewise linked to depression in the future (2, 3).

Both sleep disturbances and depression in adolescents are a growing problem and the illnesses individually greatly impacts the youth's areas of life (6). Sleep problems are common, especially during adolescence, and should be detected and treated early to prevent development of persisting disorders. However, there is still little knowledge on how to angle the treatment and intervention for sleep disturbance in depression.

Psychodynamic psychotherapy for youth is effective for reducing depressive symptoms (7). Transference interventions is an assumed core active ingredient in this kind of therapy. However, evidence of the efficiency of transference interventions as a therapeutic tool for adolescents with co-occurring depression and sleep disturbances is currently non-existing, leaving a big gap in literature.

In the following section, the current state of the research field on sleep disturbance and depression in adolescents will be presented. Alongside with the research field on psychodynamic psychotherapy for youth it will constitute the broad contextual framework for the aims of this thesis.

1.1 Sleep problems among adolescents

Sleep loss in adolescence has over the last few decades becoming increasingly recognized as a serious health risk as well as an important public health issue (8). To promote healthy development, The National Sleep Foundation (9) recommend adolescents aged 14 to 17 years

old to sleep between 8 to 10 hours per night. Older teenagers and young adults under 26 years are recommended 7 to 9 hours per night. In a review (10) analyzing 41 surveys of worldwide adolescent sleep patterns published between 1999 to 2010, Gradisar and colleagues found the adolescent sleep pattern to be more variable across the week compared to children and adults. Total sleep duration was on average shorter in weekdays than sleep in weekends, with 53% of the studies reporting average school-night sleep duration to be under 8 hours, thus insufficient for younger adolescents. None of the studies analyzed by Gradisar and colleagues reported insufficient sleep duration in weekends, thus the accumulated sleep debt during a week was relieved by oversleeping in weekends or vacations. These findings are consistent with a study (11) among 1285 Norwegian high school students aged 16 to 19 years old where 39.2% slept less than 6.9 hours during weekdays, subsequent to the 60% of participants reporting 2 hours longer sleep duration in weekends.

Prevalence estimates of unspecific sleep problems among adolescents vary from 7% to 39% (10). The international numbers are consistent with results of Norwegian studies (12) showing that one in four Norwegian adolescents between the age of 16 to 19 years old meets formal diagnostic criteria for insomnia disorder in accordance to the DSM-V classification system (13). Insufficient sleep in adolescence are believed to be due to biological changes during the pubertal onset (2, 8), including changes in the sleep-wake homeostasis that favors late nights, increased use of caffeine, use of electronic and social media (8), and school start times (14).

Although adolescents may experience a range of sleep problems (15), two distinct sleep problems dominate the general youth population: insomnia and daytime sleepiness. Sleep loss in youth constitute a serious risk to both physical and emotional health (16), and evidently affects a wide range of functioning (6), for example cognitive performance (17), curricular attainment (10, 17), and school dropouts (18). In the general population, self-reported sleep problems and insomnia are cross-sectionally and prospectively associated with severity of depressive symptomatology (19, 20). In addition to the knowledge that sleep difficulties in children and adolescents evidently (10, 21) predicts the risk of developing depression later in life, these aspects make it crucial to add knowledge to the management of sleep impairment in adolescence given the important development period.

1.1.1 Sleep disorders

Sleep disturbance has been found to be one of the most common symptoms of depression in adolescents (22, 23). While insomnia and daytime sleepiness as previously stated are considered the most common sleep problems in the general youth population (10), the sleeping difficulties experienced in depression differ from sleeping difficulties among the general adolescent population, and adolescents with other mental health illnesses. Subjective reports of poor sleep quality, insomnia and hypersomnia all leads to objectively more wakefulness in bed in adolescents with co-occurring depression (2).

Among the sleep disorders, hypersomnia and insomnia disorder are the most studied conditions in youth. These disorders constitute a big economic and social burden with several studies reporting correlations between low sleep quality and pain (24), injuries and accidents (6), chronic medical conditions (25), suicidality (26) and poor school performance (27, 28). Sleep disorders are furthermore independent risk factors for suicidality (29). Both decreased (over 5 hours) and increased (over 10 hours) total sleep time is found to be empirical risk factors for suicidal behavior in adolescents, compared to total sleep time on 8 hours. Some authors have reported that extreme alterations in total sleep time may indicate more severe suicidal behavior and suicide attempts (30, 31). However, a recent replication study (32) failed to report any association between sleep duration and insomnia, reasoning symptoms of insomnia to be individually associated to suicidal ideation.

When compared to healthy controls, a recent case-control study (33) by Gupta and colleagues found adolescents with depression to have significantly worse subjective measures of sleep quality, in regard to sleep hygiene and subjective sleep parameters. This finding is consistent with meta-analyses (2, 34) that has reported significantly higher subjective symptoms of sleep problems (poor sleep quality, insomnia, hypersomnia) among adolescents diagnosed with depression compared to a non-clinical group. Except for Gupta, none of the studies used structured instruments specific for sleep assessment.

1.3.1 Insomnia

According to the most recent criteria in DSM-5 (13), insomnia disorder is a condition of unsatisfactory sleep quality or quantity. Symptoms may include difficulties initiating sleep, fragmented sleep, non-restorative sleep and early morning awakening. The sleep difficulties

must occur at least three nights per week for at least three months, and symptoms have to cause clinical impairment. The key word is poor quality of sleep, hence sleep loss is associated with a range of negative psychological reactions, such as impaired problem solving (35), increased perception of pain (36), negative perception to neutral stimuli (37) and poor emotion regulation (38).

Insomnia disorder is the most frequently investigated sleep disorder in literature. It is considered the most prevalent sleep disorder in general in youth, with prevalence estimates ranging from 7-36% for difficulties initiating sleep, and 20-26% for sleep-onset latency (10). A large population-based study (12) among 9875 Norwegian adolescents aged 16 to 19 years found a total prevalence ranging from 18.5% in insomnia according to DSM-V criteria, to 23.8% using the DSM-IV criteria, and 13.6% using quantitative criteria for insomnia. As seen in other studies (39), Hysig and coworkers found age to be positively associated with insomnia prevalence.

Over the last decades, several studies (24, 39, 40) have reported an increase in insomnia symptoms in the general population. The large Norwegian national survey (SHoT) (39) from 2018 found the overall prevalence of insomnia in 50.054 college and university students aged 18 to 35 years to be 30.5%, according to the DSM-V criteria. The said study reported a substantial increase in sleep problems from 2010 to 2018, especially pronounced in females. Although both sexes had a significant increase in the SHoT-study, other studies (12, 40) have likewise found a significant gender difference, with females having a higher insomnia prevalence than males.

Any insomnia symptom in adolescence is related to all classes of mental disorders, included mood disorders as MDD and anxiety disorders (6, 41). A cross-sectional study (26) from 2015 found that medical conditions like chronic pain or poor lifestyle determinants as obesity and tobacco use is more prevalent in adolescents experiencing insomnia symptoms meanwhile suffering from a mental disorder, compared to healthy controls. Furthermore, the findings from this study suggested that symptoms of insomnia seemed to potentiate the severity of all co-occurring mental disorder (26). A meta-analysis from 2014 (2) concluded that symptoms of sleep disturbance like insomnia is likely to predict depression in adolescents, rather than the other way around. This finding is supported in research on insomnia in the adult population, where non-depressed individuals experiencing insomnia have a twofold risk to develop depression, compared to healthy adults with no sleep difficulties (34). However, in

the adult population there is also evidence both insomnia and depression predict each other (23, 42).

Cognitive behavioral therapy (CBT) is recommended as the first-line approach for treatment of insomnia in otherwise psychiatric healthy adolescents (21). CBT for insomnia (CBT-i) primarily addresses patients' cognitive strategies, such as dysfunctional beliefs concerning sleep, and behavioral control regarding relaxation and stimulus control around bedtime (43). There is evidence that CBT-i might help reduce insomnia and have a further benefit of reducing symptoms of psychiatric disorders such as depression (44). A comparative study (45) of 304 adults with insomnia found that group CBT-i delivered in seven sessions seemed to improve the severity of depressive symptoms in men and women with elevated symptoms of depression at baseline. Whether treatment for depression in adolescents likewise helps improve sleep disturbances was first recently studied in the IMPACT study (1), finding the number of sleep problems significantly reduced after treatment for depression. This study found no significant main effect between CBT, Short-Term Psychoanalytic Psychotherapy (STPP) or the active control treatment Brief Psychosocial Intervention (BPI).

Hypersomnia

Hypersomnia is a broad term characterized by excessive daytime sleepiness and prolonged sleep duration. In the DSM-V, the hypersomnia term is referred to as a core criterion for MDD (13), while hypersomnolence disorder is a clinically defined syndrome (46).

Literature on sleep disorders and depression lack clear continuous definitions of hypersomnia, excessive daytime sleepiness and hypersomnolence. For the purpose of this thesis, the term "hypersomnia" will refer to the DSM-IV definition of excessive sleep (criterion 4):

> *"Hypersomnia may include either an extended period of nighttime sleep or daytime napping that totals at least 10 hours of sleep per day (or at least 2 hours more than when not depressed)"* (47).

Compared to insomnia, there exist less research of the impact of hypersomnia and depression in adolescents. Hence, the prevalence of hypersomnia symptoms in Major Depressive Disorder remains a challenge to sum up for the adolescent population. Various terminology in current literature and numerous measurements across different studies is furthermore leading to large discrepancies in findings. However, a review (48) on hypersomnia and depressive

disorder found a prevalence raging from 9% in children to 76% in adults. Poorer prognosis, functional impairment and an increased risk for relapse are elements associated with hypersomnia co-occurring with MDD (49).

In the context of sleep disorders and depression, hypersomnia is important mentioning in regard to the bidirectional relationship between these conditions (49). Furthermore, symptoms of hypersomnia may evidently co-occur with symptoms of insomnia in individuals with depression (29, 50). As a result of poor sleep during a depressive episode, subsequent daytime tiredness and frequent or prolonged naps may be confused with hypersomnolence disorder. The two conditions are frequently overlapping, both clinically and in literature (49).

1.2 Depression

Depression is a common medical condition that varies from mild to severe, and manifests as emotional and physical problems; persistent feelings of loss of interest, sadness, weight loss or gain, inability to concentrate, feelings of worthlessness, recurrent thoughts of death, changed perception of pain, and even alterations of immune markers (51). The regular psychiatric standpoint is that sleep complaints are symptoms of depression.

Depression is diagnosed according to one of the two major diagnostic classification systems. The World Health Organization complies “The International Classification of Disease and Related Health Problems” (ICD) (52). The “Diagnostic and Statistical Manual of Mental Disorders” (DSM) (13) is compiled by the American Psychiatric Association. Both classification systems are recognized classification of mental disorders and is widely used for both clinical and research purposes.

Both DSM and ICD differentiate between a single depressive episode, recurrent depression and chronic depressive conditions. To diagnose a Major Depressive Episode (MDE), both classification systems require an episode of two weeks or more with persistent depressed mood, in addition to diminished interest or pleasure in normal activities. This has to be accompanied by symptoms such as decreased energy, psychomotor retardation or agitation, impaired concentration, indecisiveness, feelings of guilt, hopelessness, decreased libido, suicidal thoughts, or changes in sleep and appetite (47). Symptoms that are clearly attributable to another medical condition are excluded. The severity is based on the functional impairment of the disease. Additionally, Major Depressive Disorder requires that the clinical course is

characterized by one or more Major Depressive Episodes. In the present study, MDD has been diagnosed by using the criteria in the fourth version of DSM, DSM-IV (47).

Major Depressive Disorder is associated with significant disability, morbidity and mortality. Moreover, MDD often co-occurs with other mental health conditions, especially anxiety disorders and insomnia (5). In regard to sleep, studies using objective sleep measures have found polysomnographic changes such as REM disturbance in MDD (53). A shared psychopathology between MDD and comorbid insomnia have in studies been suggested (54) because of the similarity of the polysomnographic abnormalities seen in primary insomnia, according to the DSM-IV. However, researchers have recently begun to ask if sleep disturbances might be more than merely a symptom of depression (55). Plentiful empirical research report high frequencies of sleep problems in individuals with a comorbid depressive disorder. However, most evidence from studies with longitudinal design find that sleep disturbance serves as a risk factor for subsequent depression (55, 56).

1.2.1 Depression in adolescents

Over the last decades, the number of adolescents impaired by mental health disorders have increased concernedly (57). Population studies (58) have found that 5% of Norwegian children and adolescents between the age of 0 to 17 years are treated for mental health disorders in the children and youth psychiatric services every year. The numbers are relatively stable over time, except for teenage girls. From 2011 to 2016, the percentage of Norwegian girls aged 15 to 17 years being given a diagnosis in the children and adolescent psychiatric services increased from 5% to 7%. Comorbid conditions are frequent, and the increase is seen primarily in diagnoses as depression, anxiety disorders and adjustment disorders (58). The same pattern is seen in other industrialized countries. A survey of Canadian youth aged 15 to 24 years indicated that 11% had experienced a major depressive episode in their lifetime (59). Similarly, a US cross-sectional study (57) found that the 12-month prevalence of Major Depressive Episodes in adolescents increased from 8.7% in 2005 to 11.3% in 2014. Data from this study show that the rate of increase in depression among older adolescents and young adults was significantly more rapid relative to the older population. Meanwhile, the treatment number in adolescent mental health services has remained quite stable for the same period of time (60).

It is unclear why there has been such a substantial increase in adolescent depression over the last decade. Several theories have been suggested, and the link between time spent using electronic media (smartphones, computers, social media) and the rise in depressive symptoms has been explored (61, 62) and been discussed as a main contributor. Consequently, it is likely that the increase in depressive symptoms in adolescents will continue in the future as screen time most likely will not decrease.

Exposure to psychosocial stress and a family history of depressive disorders are the strongest risk factors for depression in adolescence (63). The developmental period marks the onset of mood disorders such as depression, where pubertal transition, cognitive changes and social adjustments all are essential contributors. The cognitive maturation in adolescence leads among other things to changes in social understanding, including for example increased self-awareness (64) and enhanced levels of stress, especially pronounced in girls (65, 66). In addition to social changes and changes in brain circuits, puberty (67) is often proposed as a core contributor to the increase of depression in adolescents, as well as the gender difference that emerges during these years. Thus, symptom presentation of depression may vary with age and gender; however, the clinical and diagnostic descriptions are largely similar in children, adolescents and adults. According to DSM-IV (47), pediatric depression is characterized by prolonged or recurrent sadness or irritability. The eminence of mood reactivity, fluctuating symptoms and irritable mood makes depression in adolescents more often overlooked than in adults (68), thus adolescent depression often has been underdiagnosed (63) and untreated. It is of great importance to recognize and diagnose adolescents with depression to prevent further development of the disorder and avoid recurrent disease.

The World Health Organization has described MDD as “a leading cause of disability worldwide and a major contributor to the overall global burden of disease” (69). As for the general population, depression in youth may result in severe impaired functioning and morbidity. The impairment caused by depression in adolescents is associated with a wide range of disease and impaired functioning, including reduced academic attainment (70) and substantial negative social consequences. Early adolescent depression is furthermore associated with poorer overall health in adulthood, higher health care utilization and increased work impairment due to compromised physical health in the future (16). Suicide is a leading cause of death among adolescents and young adults in Western countries (57, 59), and

depression is evidently as a major risk factor for suicidal behavior. At the time of death, more than half of adolescent suicide victims reported to have a depressive disorder (71).

Co-occurring sleep loss in adolescence are associated with more severe major depressive episodes (29, 33), has been linked to more severe and recurrent depression, and increased suicidal ideation (30). Yet, little is known about how co-occurring sleep disturbances and depression in adolescents interfere, and how to angle the treatment for these individuals.

1.3 Psychodynamic psychotherapy

The main purpose for any treatment of mental disorders is reduction of the symptoms of the illness. Psychodynamic psychotherapy (PDT) descends from psychoanalytic practice and is traditionally described as a psychological treatment form that focuses on exploration of the unconscious content in a person, such as wishes, impulses and various defense mechanisms that is not fully known to self. PDT aims to make the patient conscious about recurrent themes by enhancing the patient's insight about how repetitive patterns sustain the individual's problems. Psychodynamic principles of attachment theory, relational theory, developmental psychology, object relation theory and affect focus theory is the theoretical foundation and framework for the dynamic therapy form. Psychodynamic psychotherapy is distinguished from other psychological therapies by seven features (72):

1. Focus on affects and expression of the full range of the patients' emotions.
2. Exploration on patients' attempts to avoid distressing thoughts and feelings (avoidance and defense mechanisms).
3. Identification of recurring themes and patterns in patients' thoughts, feelings, relationships, self-concept and life experiences.
4. Discussion of past experience to explore how these experiences affect current experiences and relationships (developmental focus).
5. Focus on interpersonal relationship (object relations and attachment).
6. Focus on the therapy relationship (traditionally analytic work).
7. Exploration of fantasy life, including wishes, desires and dreams.

In addition to seek symptom remission for the disease, the psychodynamic oriented therapist also aims to promote positive dynamic change by fostering the presence of the individuals'

resources and psychological capacities. Long lasting improvement of relations, increased insight in oneself and ones' reactions, improvement of affect tolerance and increased capability to solve upcoming problems are all examples of important parts of the therapeutic process of PDT.

1.3.1 Psychodynamic psychotherapy for youth

Psychotherapy for youth differs from psychotherapy for adults in terms of specific youth factors, such as age and development stage. The child and adolescent therapists' interpersonal skills, in addition to parental or caregivers' expectations to therapy and parenting style is added unique factors in child and adolescent therapy that might contribute to treatment course and outcome (73). The knowledge of common factors in youth psychotherapy, and exactly how they differ from adult common factors, is still in its infancy.

Single studies, meta-analyses and reviews show that youth psychological therapy is effective (7, 74). Short-Term Psychodynamic Psychotherapy (STPP) for youth is a leading form for brief therapy (typically therapy duration under 40 sessions) after psychodynamic principles. There is emerging evidence STPP for adolescents is effective for the improvement of depressive symptoms (7, 75, 76). The treatment form is recognized as being equally effective as other treatment forms (e.g., CBT) in the treatment of child and adolescent depression (77). STPP typically concentrate on one major therapy focus rather than the more traditional psychoanalytic approach associated with free speech about unrelated issues.

However efficient, researchers have for decades been struggling to find the key active ingredient in psychotherapies for young people. Literature is generally sparse on what works for whom. Research on psychotherapy have found a general equivalence of outcomes between treatment forms as CBT and PDT (75). Common therapeutic techniques like encouraging the patient to express feelings and suggest alternatives to how the patients relate to, and understand these feelings and experiences, is all thought to be of importance for the therapeutical process (77). The collaborative experience between the therapist and the patient and the importance of care is among the elements found to be of significance in meta-analyses of adolescent psychotherapy (78). Some studies suggest that *common factors* in psychotherapy, referring to shared components between all psychotherapeutic approaches, might have a greater impact on treatment outcome than specific therapeutic techniques. These common factors include the working alliance between patient and therapist, therapist

characteristics, patient characteristics, family characteristics, patients' motivation and expectation, caregiver involvement and caregiver expectations for therapy (73).

A meta-analysis by Weisz and colleagues (74) containing five decades with research of psychological treatment for children and adolescent found however overall weak efficiency in youth with moderate to severe depression. Moreover, Weisz and colleagues found smaller effect sizes for the treatment of comorbid states when treated concurrently. These findings are concerning given that comorbid states and co-occurring problems as depression and sleep disorders are highly prevalent and pervasive for a young individual.

Although emerging, the empirical research on efficiency of psychotherapy for children and adolescents is far behind that of adult therapies. The existence of key differences in adult versus youth psychodynamic psychotherapy has to be determined and investigated further to figure out what approach is most suitable to improve the efficiency of psychological treatment for young people with depression.

1.3.2 Transference and transference work

Ever since Sigmund Freud formally introduced the transference term in 1912 (79), it has been recognized as an essential element in psychoanalytic therapies. The term refers to the idea that the patients' repressed past will be repeated in new contexts of the patient's life, such as to the therapist. Freud, the founder of psychoanalysis, initially thought that transference represented resistance in the patient. After evolving his ideas and theories, Freud found that transference was means to translate and identify the patient's unconsciousness. As Freud developed as a therapist, he considered the analysis of transference to be the most effective component in psychoanalytic treatment of mental disorders (80) and through this analytic process the patient should get the chance to experience a relating with the therapist who provided the conditions for change (81).

As phenomenon, transference is still used in classical psychoanalysis and psychodynamic psychotherapy. Transference interpretations remain as the assumed core active ingredient in psychodynamic psychotherapy and is used to improve dynamic change and hereby symptom relief in patients. However, in comparison to Freud's early theories, clinicians and researchers of newer time rely on broader definitions of transference. The transference term no longer refers to only the representation of the patients' internalized early life experiences, but also

includes the relationship with the therapist being a new experience to investigate (82). By transference interpretations is meant statements that aims to reveal insight about unconscious patterns or processes not previously consciously acknowledged by the patient (73). In practice, a transference interpretation is an intervention technique in which the therapist comments the patients' verbal or non-verbal communication to promote insight. By fostering this insight, the patients gain novel understanding of repetitive elements in their relational history, both outside the therapy room and in therapy.

In most empirical studies transference interpretations are now defined as an explicit focus on the here-and-now relationship between the therapeutical setting in the light of early relationships (83, 84). An further important dimension is the patient's reaction to the interpretation and how the therapist respond in the *third interpretative turn* (85) that follows the patient's reaction.

In transference research, different transference interventions are divided into a set of categories (73) that range from superficial remarks from the therapist, for example regarding being in a room together, to more complex interpersonal interventions. In the First Experimental Study of Transference Interpretation (FEST) study, transference work was divided in a set of five categories of specific transference interpretation techniques (86):

1. The therapist address interactions in the patient-therapist relationship.
2. The therapist encourages the patient to explore their thoughts and feelings about therapy and the therapist.
3. The therapist includes herself directly in interpretation of the patient's internal dynamic elements (conflicts).
4. The therapist encourages the patient to discuss what he or she believe the therapist might think and feel about the patient.
5. The therapist provides interpretation of repetitive interpersonal patterns, including genetic interpretations (naming the patient's impulse, anxiety, defense, relationship to parents, relationship to other people (87)), and links these patterns to the current patient-therapist relationship.

Research on the effectiveness of transference interventions for adults shows an inconsistent picture in treatment outcome, even transference itself for long has been subject for debate in the professional environment. The usefulness of transference in psychotherapy for adults was

reviewed by Suszek and colleagues (88) in 2015. They concluded that studies using psychodynamic approaches confirm the existence of transference, and that studies using non-psychodynamic approaches indicated conditions in which transference work seemed to be efficient (88). Some research fails to report associations between the use of transference interpretations and treatment outcome (83, 89), and some authors even argue it may be disadvantageous if negative transference dominates (88). Rather than direct connections between transference work and treatment outcome, there is empirical evidence suggesting the improvement of symptoms in psychotherapy with transference work is due to key mediators as increased insight and tolerance (90-92), results that strengthens when combined with increased emotional expression (93).

For decades, researchers on various adult psychotherapies have been trying to measure and isolate key active components of psychotherapy. The same cannot be said for research in children and adolescents, at least in terms of volume. It is still unknown for the public if the use of transference interpretations is useful for improving the level of depressive symptoms in young people. Expectantly, the results from the submitted study First Experimental Study of Transference Work – In Teenagers (FEST-IT) (94) will bring more knowledge to this gap in literature.

1.4 Aims

One of the main hypotheses in FEST-IT: “The primary hypothesis is that the transference group may have a more favorable course during the treatment period than will the comparison group” (94), including significantly improved depressive symptoms.

The aim of this thesis is therefore threefold: First to describe the level of sleep problems in a sample of adolescents with depression within the FEST-IT study, measured by diagnostic interviews and self-report questionnaires. Second to examine if the sleep symptoms are associated with symptoms of depression. Lastly, this study wants to investigate the differences in sleep symptoms between the two treatment groups in FEST-IT.

1.4.1 Hypoteses

1. Sleep disturbances decrease throughout psychodynamic psychotherapy.
2. Changes in sleep quality are closely associated to changes in depression.

3. Sleep disturbances decrease significantly more in the transference group than in the non-transference group.

2 Method

2.1 The First Experimental Study of Transference Work – In Teenagers (FEST-IT)

The adolescents in this study were taking part in a multi-center, randomized clinical trial on psychodynamic psychotherapy for adolescents with major depressive disorder. The First Experimental Study of Transference Work–In Teenagers (FEST-IT) study has dismantling study design, one specific component was experimentally controlled (94).

2.1.1 Patient material

Patients in this thesis were recruited among adolescents with symptoms of depression who were referred to child and adolescent outpatient clinics in the South-Eastern Health Region, primarily in the Oslo area and in Vestfold County in Norway. The patients were representing mainly urban areas. There were 57 girls and 12 boys, all attending classes in secondary school or high school.

70 adolescents aged 16-18 years diagnosed with a severe unipolar disorder according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (47) were included in the study. According to the ethical approval, the participating adolescents were first informed about the study after scoring over 10 on BDI and/or above 15 on the MADRS (94). Written informed consent was then obtained from all patients. Exclusion criteria was comorbid psychosis, substance abuse, learning difficulties and pervasive developmental disorders. One patient withdrew the consent to participate.

Comorbidity was frequent among the adolescents (94). Table 1 on page 17 shows relevant patient characteristics. Axis I and II diagnosis were based on the Mini International Neuropsychiatric Interview (M.I.N.I.) (95) and Structured Interview for DSM-IV Personality (SIDP-IV) (96). Pre-treatment characteristics on Axis I besides depression included anxiety disorders, primarily social phobia and generalized anxiety disorder. Both proposed and recognized personality disorders (PD) according to DSM-IV-TR (47) were measured among Axis II diagnosis. 31 of the patients had one or more diagnosis on Axis II, most commonly depressive or avoidant PDs. 16 (23%) of the patients met the diagnostic threshold for other

Axis II-diagnosis, including: 5 patients met criteria for negativistic PD (7.2%), 3 patients met criteria for paranoid PD (4.4%), 3 met criteria for obsessive compulsive PD (4.4%), 2 met criteria for dependent PD (2.9%), 1 met criteria for schizoid PD (1.4%), borderline PD (1.4%) and histrionic PD (1.4%), respectively. The mean GAF score at the initial psychodynamic evaluation was 59.5 (SD = 5.3 range 44.2–73.2). The mean GSI score (Global Severity Index from SCL-90) was 1.3 (SD = 0.5, range 0.5–2.7). The mean BDI score was 28.6 (SD = 9.1, range 10–58). Mean pre-treatment scores implied that the patient sample in this study on average had mild to moderate functional impairment and was moderately depressed. The distribution in this sample is however diverse and representative of outpatient adolescents offered dynamic psychotherapy.

All medication was recorded at baseline, post-treatment and at one-year follow-up. Only one patient reported taking antidepressant medication pre-treatment. One patient was taking sleeping medication at baseline. One patient reported taking antipsychotic medication throughout the study period. Post-treatment one patient reported taking antidepressants, however, this was not the same patient as at baseline. Four patients reported taking sleeping medication at the end of the study (97).

Table 1. Pretreatment characteristics of the patients included in FEST-IT.

	Total (n=69) Mean (SD)
Age	17.3 (0.7)
BDI	28.6 (9.1)
GAF	59.4 (5.2)*
MADRS	22.7 (6.1)[a]
GSI	1.33 (0.5)
	N(%)
Female	57 (83)
Axis I diagnosis	
Depressive disorder	100 (100)
Social phobia	19 (28)
Panic disorder	16 (23)
Generalized anxiety	17 (25)
Agoraphobia	8 (12)
PTSD	2 (3)
Eating disorder	2 (3)
Axis II diagnosis	31 (45)
Depressive	24 (35)
Avoidant	19 (28)
Other	16 (23)

* based on evaluator's rating
[a] based on evaluator's and therapist's rating

BDI Beck Depression Inventory, GAF Global Assessment of Functioning, MADRS Montgomery and Asheim Depression Rating Scale, GSI Global Severity Index (SCL-90).

2.1.2 Treatment

The Short-Term Psychodynamic Psychotherapy (STPP) manual from the IMPACT study (98) was used as the treatment manual. Short-Term Psychodynamic Psychotherapy is a well-established treatment model in psychotherapy (99), and the manual combines aspects of STPP

that primarily focus on techniques aimed at helping adolescents prevail developmental problems, likewise accentuate the role of attachment theory, interpretation of unconscious conflicts and the conception of internal working models. As stated in the study protocol (94) relational interventions were part of the treatment, for instance through addressing the adolescent's interpersonal transactions with others, or to interpret dynamic elements in the adolescent's relationships with others. The youths were offered individual 45-minutes therapy sessions once a week, with a total treatment duration of 28 weeks.

The adolescents were randomized into two treatment groups. The non-transference group (comparison group) received treatment with general psychodynamic techniques as described above. In the transference group additional techniques for transference work were prescribed: 1) The therapist addressed transactions in the patient-therapist relationship, 2) the therapist encouraged the patients to explore thoughts and feelings about the therapy and the therapist, and 3) the therapist interpreted direct manifestations of transference and linked repetitive interpersonal patterns to the transactions between patients and therapist. These specific techniques were proscribed in the non-transference group. None of the treatment groups did specifically consider how to address sleep disturbance as a routine intervention.

2.1.3 Therapists

Patients were assigned to one of twelve therapists. The therapists were eight psychiatrists and four clinical psychologists, six men and six women. All therapists were experienced and had at least two years of formal education in psychodynamic psychotherapy for adolescents. In addition, all therapists were trained in a one year-program in terms of specifically offering transference interventions in psychodynamic therapy and dynamic psychotherapy without transference work.

2.1.4 Evaluation

Only the therapist and researcher knew the randomization arm. Independent evaluators interviewed patients before, after and one year after therapy. One blinded evaluator was assigned to each patient and performed a semi-structured GAF interview and psychodynamic interview modified after Malan (87) and Sifneos (100). In addition to the M.I.N.I. and SIPD-IV interviews, the psychodynamic interviews lasted 45-60 minutes. If possible, the patient's therapist was present during the interview, but no therapist ratings were included in the

analysis. Patients' depression depth, interpersonal functioning and overall level of functioning were measured. To minimize bias, the interviews were audio-taped and additional assessments were made by two independent raters blinded to the randomization.

After the interviews, the patients filled out the BDI-II and SCL-90 as self-report forms. Furthermore, these forms were filled out three times during therapy. Patient forms measured depression depth, symptom pressure, interpersonal functioning and therapy alliance.

The therapists cut questionnaires related to the patient's depression depth and alliance during treatment and at therapy termination.

2.2 Ethics

The Central Norway Regional Ethics Health Committee in Mid-Norway approved the study protocol (REK: 2020/21355 FEST-IT). An informed consent was obtained after the participants had received information about the study. In accordance with Norwegian legislation, adolescents aged 16 years and older can make their own decisions regarding participating in health studies, and thus gave consent themselves. Participants in both treatment groups received well-established psychotherapy methods that are well described and frequently used.

2.3 Measures in the present study

2.3.1 Symptom Checklist 90 Revised (SCL-90-R)

The SCL-90-R (101) is a 90 question self-report psychometric instrument designed to determine symptom severity and subjective psychopathology. It is widely used for research purposes, measuring outcome in psychiatric and psychological treatment. Psychometric properties have been described for adolescents (102), and the Norwegian version is well designed for assessing overall mental distress, and changes in mental distress (103). Patients in this study completed the SCL-90 after psychodynamic interviews at pre-treatment, during treatment (after session 12), at post-treatment and at 1-year follow-up. In the present study we use three of the specific questions related to sleep difficulties and use the mean value of these items as primary outcome measure.

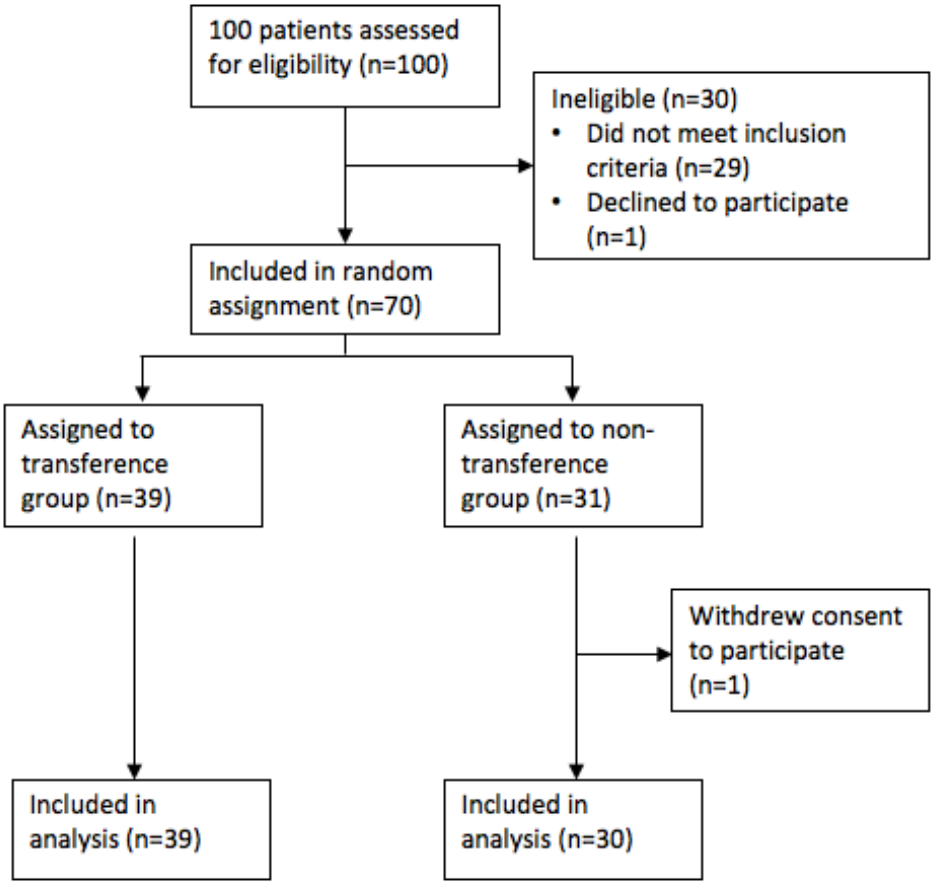
Of particular interest in this thesis are the questions “Trouble falling asleep”, “Awakening in the early morning” and “Sleep that is restless or disturbed”. These items tap into the key symptoms of *insomnia* during DSM-diagnosed Major Depressive Disorder and constitute the number of sleep symptoms in this study.

2.3.2 Beck Depression Inventory (BDI-II)

The BDI-II (104) is a commonly used 21-item self-report instrument designed to measure specific symptoms of depression. Psychometric properties have been described with capacity to discriminate between depressed and non-depressed subjects, showing high reliability and structural validity in a variety of populations (105). Patients in this study completed the BDI-II after psychodynamic interviews at pre-treatment, during treatment (after session 12), and at one-year follow up. The BDI-II was used as secondary outcome measure in this study.

Item 16 in the BDI-II contains a question about changes in sleep pattern the last two weeks. Responses might be “sleeping more than usual” or “sleeping less than usual”. This item was not excluded for the analyses in this thesis. See chapter 4.2 for a discussion about this method selection.

Figure 1. Simplified flow chart in FEST-IT.



2.4 Statistics

IBM SPSS (Statistical Package for the Social Sciences, Chicago, IL, USA) version 25 for Windows was used to run analyses. Variables were made by assembling three sleep specific questions in SCL-90. The mean value of these questions was calculated for each patient at all measuring times.

To assess if the number of sleep symptoms reduced over the course of psychological treatment for depression, independent samples T-test was used.

Variables for each patient's change in BDI-II and SCL-90 scores were computed by subtracting values at one-year follow-up from values at baseline. When assessing the relationship between continuous variables, Pearson's r-correlation coefficient was used to examine the correlation between self-reported depression depth in BDI-II and self-reported sleep problems in SCL-90.

To determine whether there was an interaction between treatment modality and time, a two-way mixed ANOVA was conducted with a between-subjects independent variable of treatment modality, with two levels (transference group, non-transference group), and a within-subjects independent variable of time with four levels (baseline, halfway through therapy, post-treatment and follow-up). Where assumptions were violated, confirmatory analyses were conducted by running analyses with 1000 bootstrap samples. All results were coherent, and results based on non-bootstrapped analyses are presented for the purpose of this thesis.

The cutoff for statistical significance was set at $p < 0.05$.

2.4.1 Missing data

Missing data during the study period was high, 58 (84 %) participants had available and complete data sets for SCL-90 at post-treatment and 46 (67%) had complete data sets one-year follow-up. In regard to BDI, 6 patients had missing data at baseline, 11 had missing data post-treatment and 23 had missing data at one-year follow-up. Analyzes were conducted of the frequency of the missing data across treatment groups. According to the unpublished paper from the FEST-IT study, analyzes of the frequency of the missing data could be treated as “missing completely at random” in this thesis. Although the groups were not identical at the distinctive times there was found no significant differences in the missing data between treatment groups.

3 Results

3.1 Descriptive statistics of sleep problems at baseline

On examination of subjective ratings of sleep problems in SCL-90 at baseline, the most commonly reported symptom was “difficulties falling asleep”, 69% answered moderately to extremely, see table 2 for details. The least commonly reported symptom was “Early morning awakening”. There were no statistical significant differences between treatment groups for frequency of baseline sleep problems, $F(1,66) = .39$, $p = .53$, $n_p^2 < .01$.

Table 2. Frequency of SCL90 sleep difficulties at baseline (*n* = 69). (%)

	Trouble falling sleep	Restless or disturbed sleep	Early morning awakening
Not at all	17.6	31.3	58.8
A little bit	10.3	16.4	13.2
Moderately	23.5	19.4	13.2
Quite a bit	22.1	19.4	7.4
Extremely	26.5	13.4	7.4

3.2 Correlation between sleep and time

For the whole group (*n=69*), there was a statistical positive correlation between the level of sleep symptoms in SCL-90 at baseline and the level of sleep symptoms at session 20, r(20)= .49, n= 22, p= .019). There was a weaker positive correlation between the level of sleep symptoms in SCL-90 at session 20 and the level of sleep symptoms at the end of treatment, r(33)= .035, n= 35, p= .37. There was no significant correlation between sleep symptoms in

SCL-90 between end of treatment and the level of sleep symptoms at follow-up, r(32)= .32, n=34, p= .118).

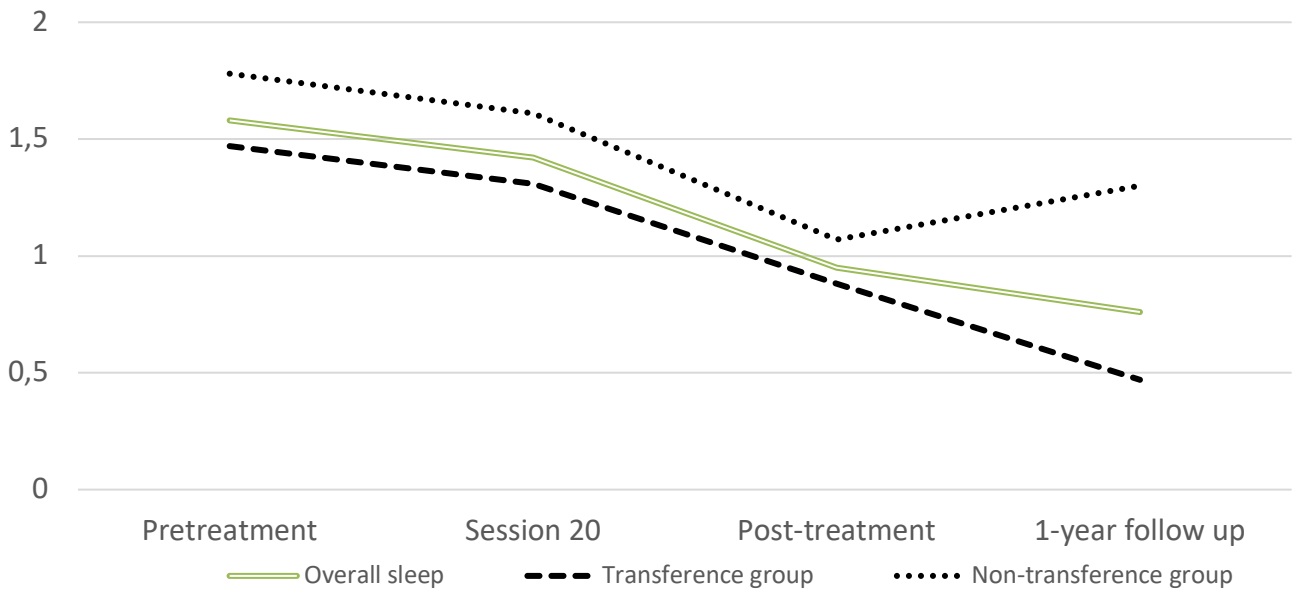
3.3 Correlation between depression and sleep

A Pearson correlation coefficient was computed to assess the relationship between sleep symptoms and depression depth over time for all patients. There was no statistical correlation between sleep symptoms and depression at baseline, r(56)= .16, n= 58, p= 2.42. There was a weak significant positive correlation at session 20, r(35)= .489, n= 37, p= .002. There was also a statistically significant strong positive correlation between depression symptoms and sleep symptoms at follow-up, r(43)= .56, n= 45, p < .001). Lower values of sleep symptoms were associated to lower depression symptoms.

Table 3**.** Frequency of SCL-90 sleep difficulties at baseline, session 20 end of treatment and follow-up (%).

Number of sleep symptoms	Baseline (0 weeks) (*n* = 68)	Session 20 (20 weeks) (*n* = 37)	End of treatment (28 weeks) (*n* = 58)	Follow-up (80 weeks) (*n* = 46)
0	5.9	16.2	20.7	37
> 0-1	28	35.1	34.5	26
> 1-2	35.3	29.7	32.8	22
> 2-3	19.1	10.8	12	15
> 3-4	7.4	8.1	0	0

Figure 2. Changes in mean sleep quality (SCL-90) (%).



3.4 Differences between treatment groups

There was a substantial main effect for time, Wilks' Lambda = .77, F (0.1, 6) = 6.24, p= .001, partial eta squares .221, with both groups showing a reduction in sleep problems across the time period. A mixed between-within subjects' analysis of variance was conducted to assess the impact of the two different interventions (transference, non-transference) on the patients scores on the sleep items in SCL-90 across the pre-treatment, mid-treatment, post-treatment and one year follow up. There was no significant interaction between intervention and time, Wilks' Lambda = .456, F (0.1, 6) = .881, p= .456, partial eta squared = .039. The main effect comparing the two types of treatment was not significant, F (1, 68) = .017, p= .89, suggesting no difference in the effectiveness of the two treatment groups.

4 Discussion

As highlighted in the literature, randomized controlled trials are experimental studies where the only expected difference between participants in randomly assigned groups is the outcome variable linked to the treatment that is provided. The safety and efficacy of psychological treatments are best studied by the RCT design, that yield reliable data when elements as diagnosis and treatment are clearly specified, and the psychopathology is less complex (106).

The aims of this study were to describe the level of sleep problems in young people with depression and examine if the number of sleep symptoms were associated with the depression depth during the course of psychodynamic psychotherapy. Furthermore, the efficacy of transference interventions in insomnia symptoms between two treatment groups were investigated.

In the following section, the results and limitations of the exploratory analysis in this thesis will be discussed in the perspective of the working hypotheses and related studies on this subject.

4.1 Main findings

The results of this thesis show how sleep problems is highly prevalent among adolescents with depression. It also shows how symptoms of insomnia decline during the course of psychodynamic psychotherapy for depression, and furthermore how the number of sleep problems is correlated to the level of depression. The data used in this study is from the Norwegian FEST-IT study, a randomized controlled trial of psychodynamic psychotherapy that with dismantling design aims to determine the impact of transference interventions in therapy. In the present study, exploratory analyses indicated no differences in recovery of sleep disturbance between the transference and non-transference group.

4.1.1 Patient characteristics at pre-treatment

Not surprisingly, the results of this thesis show how sleep complaints is highly prevalent among adolescents with depression. The most frequently reported symptom was difficulties initiating sleep, with an incidence similar to a population-based study (41) on insomnia in adolescents aged 13 to 16 years of age. The patient sample in the current study had on average

lower occurrence of comorbid sleep problems than adolescents in the related IMPACT study (1). It is however clear that sleep impairment is highly common in the presentation of MDD in adolescents, as seen in relatable studies in adult populations (8, 10).

4.1.2 Psychodynamic psychotherapy for depression

Secondly, findings show how co-occurring sleep disturbances in the adolescent patient sample appeared to improve parallelly to psychodynamic psychotherapy for depression. This finding is likewise in line with former work on psychotherapy for depression and the simultaneous presence of comorbid sleep disturbance (1), supporting the efficacy of psychotherapy. Furthermore, the results show how the number of sleep problems are correlated to the level of depression and thereby how the level of sleep problems decrease as the patients experience recovery from the depressive disorder.

Few studies have examined the efficiency of different psychological treatment techniques on adolescents with co-occurring depression and sleep disturbance. The findings of this thesis are consistent with the findings of the recent IMPACT-study (1) that reported significantly lower sleep problems in adolescents after treatment for depression. The said study found however no differences between the three psychotherapeutic modalities CBT, STPP and BPI.

If the decrease in sleep problems seen in these analyses is due to the recovery of depression, or if psychodynamic psychotherapy for depression independently improves symptoms of insomnia and depression is difficult to determine. In a meta-analysis of the link between poor sleep and depression in adolescents, Lovato and Gradisar (2) oppose a conceptual model that shows how poor sleep might be leading to increased negative cognitive processes such as ruminative thinking and further the development of depression. In regard to the evidence of the bidirectional relationship (3) between sleep disturbances and depression, reducing rumination might be an evident key element for the recovery of both sleep onset latency and depression.

4.1.3 Group differences

Exploratory analysis indicated no differences in recovery of sleep disturbance between the transference and non-transference group. Adolescents in the present study were randomized to receive psychodynamic psychotherapy for depression with or without a moderate intensity of

transference interventions. None of the treatment groups targeted sleep problems specifically. Adolescents in both treatment groups reported a significant decrease in sleep disturbances after receiving psychotherapy. The decrease in the number of insomnia symptoms continued into one-year follow-up, showing no statistical difference between the treatment groups. It is however important to acknowledge that sleep problems naturally may improve over time, and in the absence of a wait list control group the conclusions regarding treatment are limited (1).

Results from the main analysis in the unpublished FEST-IT study (107) suggest that use of transference interventions amplified the efficiency of STPP for depression in adolescents. The results indicate that depressive symptoms decrease significantly more when the therapists focus on the relationship between patient and therapist. Arguing that depression depth is closely associated to the level of sleep disturbance, one could have expected a group difference for this current study.

Visual inspection of the graphics based on mean scores suggested that the overall sleep problems for adolescents in the non-transference group did not continue to decrease from end of treatment to one-year follow-up. The statistical non-significance in the present study might be related to a small sample size. Based on the analyses in this study, changes in sleep quality occurred in parallel with changes in level of depression. There is therefore reason to suspect that the individuals suffering from residual sleep problems still experienced quite high symptom pressure of depression.

4.1.4 Residual sleep problems

Persisting insomnia is common after treatment for depression (1, 108). As the sleep problems for the adolescents in this study generally improved over the entire study period, some of the patients lost overall progress in the recovery of sleep problems between the end of treatment and post-treatment follow-up. At follow-up, over half of the participating adolescents reported having some degree of sleep impairment one year after treatment. 15% of the participants still experienced moderately to markedly symptoms of insomnia at follow-up. A Turkish study (108) on relapse rates among adults with co-occurring insomnia reported a threefold higher frequency of depression recurrence in participants being partially remitted form MDD compared with fully remitted participants. Similar numbers have not yet been investigated in youth, however half of the young participants in the IMPACT study reported residual sleep problems at post-treatment, 23% still experiencing persisting MDD and sleep impairment.

The underlying mechanisms for driving the relationship between sleep disturbance and depression in adolescents remains unclear. Given the evidence that residual sleep difficulties may play a causal role in the development of depression (2) and have lasting, adverse effects in terms of somatic and psychosocial health for the young person (6), several authors have argued sleep problems may benefit from direct interventions (1). Authors like Gulec and colleagues (108) have discussed that more stable remission of depression could be achieved by insomnia-specific interventions, given that sleep disturbance may serve as independent predictors for early recurrence of depressive episodes (2, 23).

4.1.5 Medication

There was generally little use of medication for the adolescents in this study. At baseline there were no recordings of adolescents using sleep medication. Interestingly, as the sleep problems on average improved, six of the patients started to use sleep promoting medication during the study period. Sleep promoting medications is often used in the treatment of sleep disturbance in adolescents. However, the efficacy, tolerability and safety of this practice with youth remains unknown (1, 23). For the sake of the results in this study, this increase in medication use might indicate that for some of the patients, the sleep problems were more severe. It may even indicate that the sleep problems worsened over time or became residual, as seen for 33% of the young individuals in the IMPACT study (1). Regarding the current findings, the increased medication use might implicate that sleep complaints improved as a consequence of pharmaceutical treatment.

4.2 Strengths and limitations of the present study

Several strengths and weaknesses should be acknowledged in this thesis. The results are related to the randomized controlled trial of psychodynamic psychotherapy for adolescents, FEST-IT. The FEST-IT study was designed to determine the impact of transference interventions, and results from the main analysis are still unpublished.

The patient material in the FEST-IT study is a strength in this present study because it reflects the clinical reality for the patient group as a whole in an everyday outpatient setting. Liberal inclusion criteria in FEST-IT ensured that the patients in this sample is representative

regarding the complex psychological challenges and comorbidity in outpatient clinics and has therefore relevance for clinicians (106). Patients were not exclusively recruited for the study but agreed upon participation after meeting threshold for depression in outpatient clinics. Furthermore, gender differences known from Norwegian outpatient clinics reflects the gender imbalance (82% girls) in the data used from FEST-IT in this thesis. This might however also serve as a potentially confounding variable as studies on insomnia shows a gender imbalance in insomnia suffering and MDD (109).

This study had several limitations that might be investigated in future research. First, patients were categorized as having sleep disturbances based on three sleep items in SCL-90 that primarily screens for insomnia symptoms. Use of these items precludes considering other comorbid sleep disturbances associated with depression, such as hypersomnia. Furthermore, other medical conditions such as comorbid periodic restless legs syndrome (110) or pain conditions (25) known to greatly interfere with sleep satisfaction, would have been overlooked with this method. It is however not uncommon in studies for insomnia to be assessed by few items (111). This limitation is somewhat mitigated by the findings of the IMPACT-consortium (1), assessing sleep disturbance by semi-structured interview measure and self-report forms for assessing depressive symptoms. However, as pointed out by Reynolds and colleagues, it is likely that adolescents with depressive disorders also might experience comorbid sleep disorders that should be diagnosed and treated separately.

Second, self-reported sleep problems may be subject to multiple biases. There is a general notion that subjective measurements have uncertain reliability, and that depression itself will create cognitive biases, leading to inaccurate reporting of symptoms (112). The use of self-reported data is not necessarily related to the objective reality. The method of generalizing symptoms of sleep disturbances across a time period e.g., two weeks, will only produce subjective estimates of sleep impairment. That said, individuals' sleep complaint is subjective and is clinically diagnosed by self-reported personal ailments. For this reason, some studies on sleep suggests that self-report forms may be appropriate, and even important for measurement in this particular age group (33, 40, 113). Indeed, authors like Meyers and coworkers (112) have argued that subjective perceptions of sleep in depression may be as important as objective measurements for sleep impairment due to the lack of knowledge of subjective complaints in adolescent sleep research. The experience of having a problem might not be captured only by the use of objective sleep measures. On the other hand, there is

evidence (111) that utilizing sleep diaries or objective measures such as polysomnography or actigraphy (114) provide more accurate information about sleep. Interestingly, studies comparing self-reported sleep quality with objective measures such as actigraphy, suggest that adolescents are likely to over-estimate sleep duration in self-report forms (111), indicating the sleep loss measured in studies utilizing self-report forms might be greater than the data indicate.

A potential error in the findings of the correlation between sleep problems and depression is the correlation between BDI-II and SCL-90. Item 16 in the BDI-II contains a question about changes in sleep pattern the last two weeks. Responses might be "sleeping more than usual" or "sleeping less than usual". Item 16 was not excluded from the analysis due to the different wording from SCL-90 that contains the questions: "Trouble falling asleep", "Awakening in the early morning" and "Sleep that is restless or disturbed". This overlap between BDI-II and SCL-90 however disrupts the independence of the material between two different measures. Future work should exclude item 16 in the BDI-II when running analysis between sleep measures. Also, BDI was not conducted at end of treatment.

Finally, the small sample size and the high frequency of missing data is limitations of this study. Figure 2 on page 25 shows graphic difference between the mean reduction in sleep symptoms in the transference and non-transference group. However, the sample size in this study might be too small to detect any significant differences between the groups. Because of the sample size, several potentially confounding variables were not controlled for in this thesis. Further research should hesitate to include a larger sample.

4.3 Implications

Sleep is essential for all individuals and plays a particularly important role in adolescent development. Sleep difficulties are highly pervasive and have a great impact on young peoples' life quality and functioning. Like the affected sleep-deprived adolescents, society at large will correspondingly suffer severe economic consequences from sleep deprived youth (40). High medical costs and work impairment in young adulthood may be limited by early recognition and treatment of sleep disturbance and depression.

For adolescents with co-occurring depression and sleep disturbances, symptoms of impaired sleep are still often seen as a depressive symptom rather than a symptom of co-occurring

sleep disorder. Therefore, treatment is often angled towards recovery of the depressive symptoms. The bidirectional view of depression and sleep disturbance suggest that this approach is insufficient, and that sleep disturbances may benefit from specific interventions for sleep problems (1, 55). Recent evidence (115) even suggests that youth presenting with sleep impairment should be assessed and possibly treated for psychiatric disorders, particularly depression and anxiety disorder.

If replicated, the present findings could have implications for early intervention, and contribute to sort out the appropriate treatment for adolescents. Further research on this topic is crucial not only for disease prevention, but also because co-occurring MDD and sleep disturbance is associated with a more severe disease profile (29). Evidence (108) suggests symptoms of impaired sleep might be a modifiable risk factor to achieve or maintain depression remission. To break the potential cycle between poor sleep, worsening mental health and adverse outcomes, a range of sleep measures should be performed on adolescents with depression as a routine assessment in a clinical setting to determine who still experience sleep problems after treatment.

4.4 Conclucion

"[…] I found I had been lying awake so long that the very dead began to wake too, and to crowd into my thoughts most sorrowfully" – Charles Dickens (116).

In patient care, treatment of sleep problems has become an afterthought because of the notion that insomnia follows secondary to other mental health conditions (55). Given the absence of evidence on the magnitude and consequences of sleep loss in adolescents with depression, this thesis has aimed at contributing to enhance our knowledge of how psychological treatment for depression and specifically transference interventions may help reduce co-occurring sleep problems in youth. Highlighted by the tight association between symptoms of insomnia and the level of depression, this thesis has examined how a significant decrease in sleep problems has been elicited by treatment for depression in adolescents. However, as symptoms of insomnia persist in a share of the current patient material, this thesis argue that there is a need for more research to integrate evidence-based treatment specifically for the recovery of sleep.

The overall conclusion is that the results of this thesis underscore the importance of continuing to prioritize sleep in the research and treatment of depression in adolescents. With

both depression and sleep disturbances in adolescence on the rise, it is crucial both for the individual youth and society at large to carefully consider what interventions could benefit the individual young person, preventing future disease and disability. Although currently emerging, the present-day literature on this specific area is surprisingly sparse, given the high prevalence and severe impact on young people's functioning.

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