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Doctor of Clinical Psychology (DClinPsych)

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Word Counts by Components

Research Component	Word Count
1. Critical Review of the Literature	7131
2. Service Improvement Project	5403
3. Theoretically Driven Research Project	5149
4. Executive Summary	837
5. Connecting Narrative	908
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Critical Review of the Literature

Adolescents with mental health problems frequently report disturbed sleep. Despite the emerging evidence that disrupted sleep is a contributory factor of mental health problems, the treatment of insomnia in adolescents is a relatively overlooked topic when compared to the adult literature. The current review aimed to examine the emerging literature on the impact of Cognitive Behavioural Therapy for insomnia (CBTi), the first line recommended treatment for insomnia, on sleep and psychiatric symptoms in young people. An additional aim was to examine the acceptability of CBTi to young people and to describe any adaptations to the intervention that are employed to address adolescent developmental changes. Systematic searches of PsychINFO, Medline, EMBASE, and Scopus databases were performed to capture the key search terms of i) young people, ii) insomnia, and iii) sleep intervention. Studies were required to include a quantitative measure of insomnia and at least one psychiatric symptom measure at pre- and post-treatment. Eighteen studies (*n*=8 controlled, *n*=10 uncontrolled) were identified. The majority of studies (*n*=14) were given an overall quality rating of 'fair'. Results found promising effects for self-reported insomnia and psychiatric symptom outcomes, specifically large effects on depression and smaller effects on anxiety. CBTi led to improvements in behavioural problems and psychosis related outcomes but this was only assessed in a small number of studies. CBTi appears an acceptable intervention to adolescents, however adaptations to address developmental changes were rare. Further good quality, controlled studies are warranted in clinical populations.

Keywords: Adolescents, insomnia, CBTi, psychiatric symptoms

Service Improvement Project

Background Adolescents with mental health problems frequently report sleep disruption and there is increasing evidence that sleep disturbance is a contributory factor in the occurrence of mental health problems. Despite this, sleep is frequently overlooked as a treatment target. Adolescent inpatient wards present additional challenges to sleep, yet little is known about sleep problems in this setting. Mixed-methods were used in two linked studies. Study one examined the prevalence of insomnia at admission in adolescent inpatients, and cross-sectional associations with psychiatric symptoms and admission length. Study two sought the perspectives of ward clinicians on patients' sleep.

Method Data from 100 adolescent inpatients, aged 11-17 years, were gathered from admission routine outcome measures and medical records. Associations were analysed using a series of linear regressions. A clinician focus group and qualitative interviews were conducted and analysed using thematic analysis.

Results Fifty percent (n=50) of the sample screened positive for insomnia. Moderate to large significant associations were observed separately between insomnia severity and the severity of depression (β=-0.56), anxiety (β=-0.51), self-harm (β=-0.49), psychotic experiences (β=-0.32), and conduct problems (β=-0.30), but not admission length. Qualitative data identified three key themes: i) the experience of sleep problems, ii) barriers and facilitators of sleep, and iii) managing sleep problems on the ward. Clinicians described a reciprocal relationship between insomnia and psychiatric symptoms. Although a psychological intervention was viewed as potentially helpful, limited capacity meant this was not routinely offered. Sleep hygiene, melatonin, hypnotic and psychiatric medications were typical treatment responses.

Conclusions Insomnia was prevalent in this adolescent inpatient sample. Existing psychological interventions require adapting to overcome the barriers to sleeping on a ward. Improving sleep is important in and of itself, but there are potential benefits for risk management and alleviating psychiatric symptoms which require testing.

Keywords: Insomnia, adolescents, inpatient

Theoretically Driven Research Project

Background: The Covid-19 pandemic has had a negative impact on the population's mental health, particularly for individuals with Health Anxiety (HA) and Obsessive Compulsive Disorder (OCD). This is in conjunction with a significant change in accessibility of face-to-face psychological services, which have had to rapidly adapt to the remote delivery of therapy.

Aims: The study aimed to evaluate the effectiveness of evidence-based CBT interventions for HA and OCD delivered via a blend of online therapist consultations interspersed with self-study reading materials. A secondary aim was to evaluate remote training workshops provided to therapists.

Method: Therapists attended 3 half day remote workshops after which consecutive participants with HA or OCD were assigned to therapists for treatment. Monthly expert supervision was provided. Patients completed routine outcome measures at each session and an idiosyncratic measure of preoccupation with Covid-19 at pre- and post-treatment.

Results: Significant and comparable improvements were observed on measures of anxiety, depression and social adjustment from pre- to post-treatment in both the HA (n=13) and OCD (n=20) groups. Disorder specific measures also showed significant improvements after treatment. The HA group showed greater levels of change on the Covid-19 specific questionnaire. The training workshops were well received by therapists, who valued the monthly supervision sessions.

Conclusions: The results of the study are consistent with the online delivery of CBT for HA and OCD with the inclusion of additional self-study booklets being effective.

Key Words: Health Anxiety, Obsessive Compulsive Disorder, CBT, Online, IAPT, Self-help

Critical Review of the Literature

Title: Cognitive behavioural therapy for insomnia, effect on sleep and psychiatric symptoms in young people: a systematic review

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Abstract

Adolescents with mental health problems frequently report disturbed sleep. Despite evidence that disrupted sleep is a contributory factor of mental health problems, the treatment of insomnia in adolescents is a relatively overlooked topic when compared to the adult literature. The current review aimed to examine the emerging literature on the impact of Cognitive Behavioural Therapy for insomnia (CBTi), the first line recommended treatment for insomnia, on sleep and psychiatric symptoms in young people. An additional aim was to examine the acceptability of CBTi to young people and to describe any adaptations to the intervention that are employed to address adolescent developmental changes. Systematic searches of PsychINFO, Medline, EMBASE, and Scopus databases were performed to capture the key search terms of i) young people, ii) insomnia, and iii) sleep intervention. Studies were required to include a quantitative measure of insomnia and at least one psychiatric symptom measure at pre- and post-treatment. Eighteen studies (*n*=8 controlled, *n*=10 uncontrolled) were identified. The majority of studies (*n*=14) were given an overall quality rating of 'fair'. Results found promising effects for self-reported insomnia and psychiatric symptoms, specifically large effects on symptoms of depression and smaller effects on anxiety, but more controlled trials in clinical populations are needed. CBTi led to improvements in behavioural problems and psychosis related outcomes but this was only assessed in a small number of studies. CBTi appears an acceptable intervention to adolescents. Adaptations to address developmental changes were rare and addressing them may boost efficacy. Further good quality, controlled studies are warranted in clinical populations.

Keywords: Adolescents, insomnia, CBTi, psychiatric symptoms

Introduction

It is estimated that two thirds of mental health disorders have their onset during adolescence (Kessler et al., 2005), and young people with mental health problems frequently report disturbed sleep (Blake et al., 2018). Within the adult literature there is increasing evidence that sleep disruption is a contributory causal factor for a variety of mental health disorders (Freeman et al., 2020). Importantly, treating insomnia using Cognitive Behavioural Therapy (CBTi) has been shown to improve a range of mental health outcomes, with the most researched areas being psychotic experiences, depression, and post-traumatic stress disorder (PTSD; Freeman et al., 2020). Whilst the underlying mechanisms for such a relationship is still under investigation, one possible suggestion has been via emotional regulation. Sleep disruption has been found to negatively impact on individuals' emotional reactivity and ability to regulate emotions (Gruber & Cassoff, 2014) . Consistent with this Reeve et al (2018) found the association between sleep disruption and psychotic experiences to be mediated by negative affect. It is plausible that a causal relationship may also hold in adolescent samples, but the literature has not yet been reviewed.

Given the potential for CBTi to improve a range of mental health symptoms it gives rise to the possibility of CBTi being utilised as an early preventative strategy for subsequent mental health problems (Harvey, 2011). This argument is further bolstered by the fact that sleep is often viewed as an easier or more accessible treatment target with lower associated levels of stigma (Espie, 2021). Psychiatric symptoms are dimensional traits which span a spectrum of severity (Adam, 2013). This allows the opportunity to examine the relationship between sleep and psychiatric symptoms in a range of populations, across the spectrum of severity. If there is evidence that sleep treatments result in participants moving down the spectrum of severity, it suggests that treating sleep may be utilised as a preventative strategy.

Insomnia disorder, subsequently referred to as insomnia, in adolescents has comparable prevalence rates (10.7%) to adult populations and a median age of onset of 11 years (Johnson et al., 2006). Despite this, the vast majority of clinical trials treating sleep disruption have focussed on the adult population (Trauer et al, 2015) and treatment guidelines for insomnia in young people are lacking. For people aged 16 and older, CBTi is currently the recommended first line treatment for persistent insomnia (National Institute for Clinical Excellence; NICE, 2015; Wilson et al., 2010). CBTi is a multicomponent intervention (see table 1) incorporating cognitive, behavioural and educational elements (Morin, 2004). In adults, CBTi leads to improvements in sleep, including moderate to large effects on insomnia symptoms (measured by the Insomnia Severity Index, ISI), Sleep Onset Latency (SOL) and sleep quality, and small to moderate effects on Total Sleep Time (TST), number of awakenings and Wake After Sleep Onset (WASO; Trauer et al., 2015; van der Zweerde et al., 2019). Clinically significant effects remain at 12 months after therapy in adults (van der Zweerde et al., 2019). The efficacy has also been demonstrated when patients present with co-occurring psychiatric symptoms (Wu et al., 2015), and importantly, the treatment is acceptable to patients (Morin & Benca, 2012). A review of the available evidence of the efficacy and acceptability of CBTi for young people is needed and could inform clinical practice for the treatment of sleep disruption in this group.

Table 1: *Components of CBTi*

Component	***Description***
Sleep restriction	Aims to increase homeostatic sleep pressure at the desired time of sleep onset by limiting the time spent in bed to closely match the individuals' current total sleep time. This is then extended over time to reach the desired sleep time.

Stimulus control	Uses principles of associative learning to re-establish the association between bed and sleep and thus breaking conditioned arousal in bed.
Cognitive therapy techniques	Identifying, challenging, and modifying unhelpful beliefs about sleep
Relaxation techniques	Techniques to reduce pre-sleep arousal, e.g., progressive muscle relaxation, guided imagery etc.
Sleep hygiene education	Information and guidance which targets factors (environmental, dietary, lifestyle etc.) which can negatively impact sleep.

Despite the efficacy of CBTi in adults, it has been argued that treatments for adolescent insomnia need tailoring to account for the nature of sleep at this development stage (Harvey, 2016). During adolescence, maturational changes occur to the bioregulatory processes that influence sleep, namely the circadian rhythm and the homeostatic sleep pressure; (Borbely, 1982; Owens, 2014). These changes significantly alter one's sleep architecture, duration, and timing (Carskadon, 2011; Crowley et al., 2018; de Zambotti et al., 2018), leading adolescents to favour sleep later in the evening. Adolescents are also vulnerable to additional environmental and psychosocial factors which can negatively impact on their sleep. School times remain constant, meaning adolescents often wake at an early phase in their circadian cycle, and as such are more likely to be sleep deprived (Crowley et al., 2018). Increased screen time, technology use and social engagement - all arousing activities - can also delay sleep onset (Carskadon, 2011). At the same time increased stress relating to school attainment, peer-relationships and social media use may also put the sleep system under additional pressure (de Zambotti et al., 2018).

Suggested adaptations to account for these developmental changes have included addressing the circadian rhythm delay via the inclusion of timed light exposure as well as nonphotic cues, such as, mealtimes, exercise, and social activities (Harvey, 2016). Sleep is an

output of the circadian system, and hence addressing the phase delay should in turn stabilise sleep. Inclusions of motivational interviewing in adolescent interventions for sleep are also proposed to be important to increase motivation to change whilst also promoting autonomy (Harvey, 2016). It is unclear how, or if, current CBTi interventions for adolescents are adapted to account for these developmental factors. Synthesising any such adaptations will be important to contextualises the outcome data, and could serve as a clinical resource informing future treatment protocols.

The current review

The purpose of the current review is to examine the emerging literature on the effect of CBTi on insomnia and psychiatric symptoms in young people. The review also aims to examine the acceptability of CBTi interventions and to summarise whether and if adaptations are implemented to optimise treatment for this population. The following questions will be addressed:

1) What is the treatment effect of CBTi on insomnia symptoms in young people?
2) What is the treatment effect of CBTi on psychiatric symptoms in young people?
3) What adaptations (if any) are used to optimise CBTi for young people?
4) Is CBTi an acceptable intervention to young people, as indicated by treatment completion rates and participant satisfaction?

Whilst the focus of the review is on the treatment of adolescents with insomnia it was decided to include papers using the Pittsburgh Sleep Quality Index (PSQI) as a screening tool (Buysse et al., 1989). Whilst not exclusive to insomnia, (the PSQI is a measure of sleep quality), it is the most widely used measure of sleep disorders in sleep research and has been shown to screen effectively for insomnia (Mollayeva et al., 2016).

Methods

Search strategy

A search was undertaken of the PsychINFO (1806 to present), Medline (1946 to present), EMBASE (1974 to present) and Scopus databases on 23rd February 2021, updated on 1st November 2021. The strategies for PsychINFO, Medline and EMBASE were run simultaneously in Ovid. Search terms sought to capture the key concepts of: i) insomnia, ii) young people and, iii) sleep intervention (Table 2). The exact steps taken to search Ovid are presented in Appendix 1a.

Table 2: *Search terms for systematic review*

Concept	Search Terms
Insomnia	Insomnia OR Sleep* AND
Young People	Adolescen* OR youth OR teen* OR student* OR "young person" OR "young people" OR "young adult" OR juvenile* OR child* AND
Intervention	"Cognitive Therap*" OR "Behavio?r* Therap*" OR "CBT" OR "psychological intervention" OR "psychological treatment" OR "stimulus control" OR "sleep restriction" OR "sleep compression"

Inclusion criteria

Papers were required to include:

1) A sample aged between 10-24 years old, based on the World Health Organisation (WHO) definition of young people (WHO, 2014).
2) A sample with participants meeting criteria for insomnia disorder, determined through structured clinical interview or by scoring above a clinical threshold on a validated self-report measure of insomnia / sleep quality

3) One of the following study designs: definitive or pilot randomised control trials (RCTs), non-randomised trials, or case series. For the purposes of the review a case series was defined as having four or more participants (Abu-Zidan et al., 2012).
4) Interventions including sleep restriction or stimulus control as minimum components of CBTi. This decision was based on research suggesting that these interventions are effective as standalone therapies for insomnia (Espie et al., 1989; Miller et al., 2014).
5) A quantitative measure of insomnia completed at baseline and post-treatment. This could include a self-report questionnaire for insomnia, sleep onset latency (SOL), wake after sleep onset (WASO), total sleep time (TST), sleep quality or actigraphy data.
6) A quantitative measure of one or more psychiatric symptom completed at baseline and post-treatment.

Papers were excluded if they met any of the following criteria:

1) Existing review papers
2) Not written in English
3) Not peer reviewed
4) Individual case descriptions
5) Dissertation and conference abstracts
6) Samples including young people with intellectual disabilities or cognitive impairment.

Procedure

Study selection followed the PRISMA guidelines (Rethlefsen et al., 2021), see Appendix 1b for the completed checklist. After removing duplicates the combined searches produced 2518 papers. Titles and abstracts for all papers were screened by LJ for relevance according to the inclusion / exclusion criteria. A second independent rater (JH) screened 20% (N=504).

Cohen's Kappa (Cohen, 1960) - calculated to determine the level of agreement between raters regarding inclusion/exclusion - showed there was 'substantial agreement' (k=0.71, p<0.001). To increase reliability further an additional 150 abstracts were screened yielding 'near perfect' agreement (k=0.89, p<0.001). Following the initial screening, 80 papers were examined in full and 18 were eligible for inclusion in the review. Agreement by the second rater (n=20) during the full text stage was 'near perfect' (k=0.89, p<0.001). Hand searches of references and citations resulted in no additional papers for inclusion. Figure 1 shows the PRISMA flow diagram of the search process including reasons for exclusion at the full text stage.

Data extraction

The gold standard Cochrane data collection form for intervention reviews: RCTs and non-RCTs (Cochrane Collaboration, 2014) was adapted to aid data extraction (see Appendix 1c). Fifty percent (n=9) of papers were subjected to data extraction by an independent rater (JH) to ensure accuracy, and any disagreements were resolved through discussion.

Quality appraisal

A systematic critical appraisal of eligible papers was conducted to assess the relative strengths and weaknesses of the studies and to consider the risk of bias in the designing and reporting of the findings. Due to the heterogenous nature of the studies included in the review the Down's and Black appraisal checklist (Downs & Black, 1998) was used because it could be applied to a broad range of study designs. The tool assesses potential bias across five subscales; reporting, external validity, measurement bias, selection bias, and power. Additional guidelines were developed to aid reviewers completing the checklist. The first two studies (10%) were double rated by the primary supervisor, BS, to ensure consistency and

achieved ‘substantial agreement’ (k=0.80, p<0.001). A further 35% (n=6) papers were double rated by JH with ‘near perfect’ agreement (k=0.81, p<0.001). Studies were given an overall quality rating of excellent, good, fair, or poor (Brown et al., 2019).

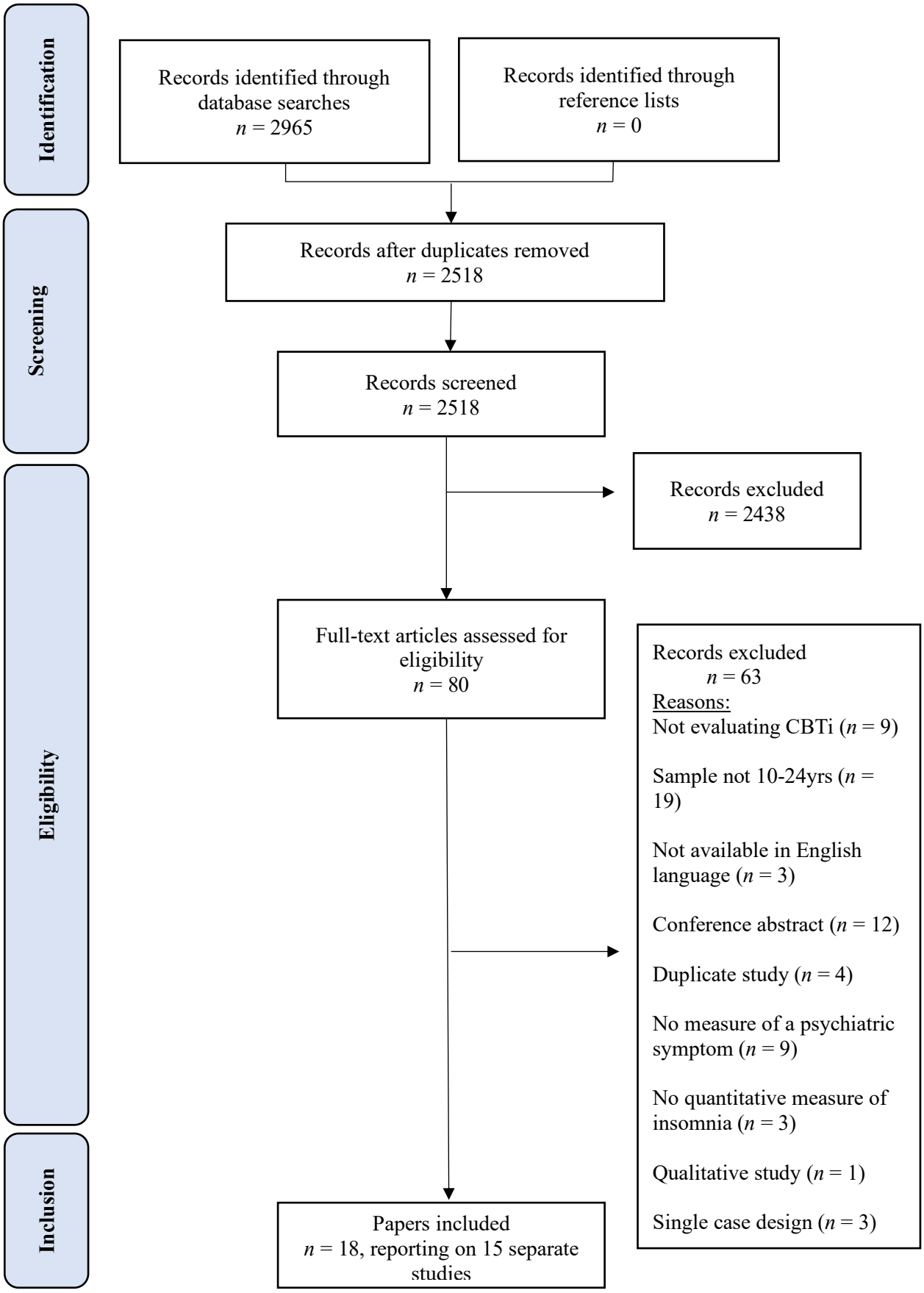


Figure 1: *PRISMA flow diagram*

Results

Study Characteristics

Of the 18 papers identified in the review, four papers (Blake et al., 2016; 2017a; 2017b; 2018) reported on the same data from the SENSE trial and hence were considered together, resulting in 15 included studies. Table 3 provides a summary of the study characteristics. Participant ages ranged from 11-24 years. The aims of the studies varied from piloting an intervention, assessing acceptability and feasibility, and examining potential moderators of treatment effects. The majority were uncontrolled (*n*=10) and used non-clinical populations (*n*=11). The most frequent psychiatric symptoms to be included were depression (*n*=13), and anxiety (*n*=12). No studies assessed the effect of CBTi on symptoms of post-traumatic stress disorder (PTSD) or mania. CBTi interventions varied in length from 4 to 10 sessions (mode=6) and were delivered in individual (*n*=5), group (*n*=9), and digital formats (*n*=4).

Table 3: *Characteristics of included studies*

Author (year)	Country	Study aims	Design & Sample size	Population	Mode of CBTi delivery	Intervention duration	Completion	Overall quality
Aslund (2020)	Sweden	Test preliminary effects of CBTi for adolescent insomnia with comorbid depression, anxiety &/or chronic pain	Case series, N=23	Clinical	Individual Face-to-face	6 sessions	78% (18/23) completed all sessions	Fair
Bei (2013)	Australia	Develop practical method to deliver sleep program & examine feasibility of intervention	Uncontrolled pilot, N=10	Community	Group Face-to-face	6 sessions	90% (9/10) completed programme	Poor
Blake (2016)[1]	Australia	Investigating if intervention could improve sleep & internalising symptoms in at-risk adolescents.	Parallel group RCT, N=123	Community	Group Face-to-face	7 sessions	95% completed CBTi intervention	Good
Blake (2017)[1]	-	Test whether intervention improves behaviour problems in at-risk adolescents	-	-	-	-	-	Good
Blake (2017b)[1]	-	Test if intervention would improve sleep & anxiety on school nights for at-risk adolescents	-	-	-	-	-	Fair
Blake (2018)[1]	-	Extend previous findings by examining potential moderators of therapeutic improvements	-	-	-	-	-	Fair
Bradley (2018)	UK	Assess feasibility & acceptability of adapted sleep intervention	Case series, N=11	Clinical	Individual Face-to-face	Up to 8 sessions	100%	Fair
Clarke (2015)	USA	Test whether augmenting CBT for depression with CBTi improves depression outcomes	Pilot RCT, N=41	Mixed	Individual Face-to-face	Up to 10 sessions	100% completed CBTi intervention	Fair
Cliffe (2020)	UK	Evaluate feasibility of augmenting digital CBTi to usual care for adolescents in CAMHS with significant mental health difficulties	Case series, N=49	Clinical	Digital app + weekly telephone call	6 sessions	33% (13/39) completed all sessions	Fair

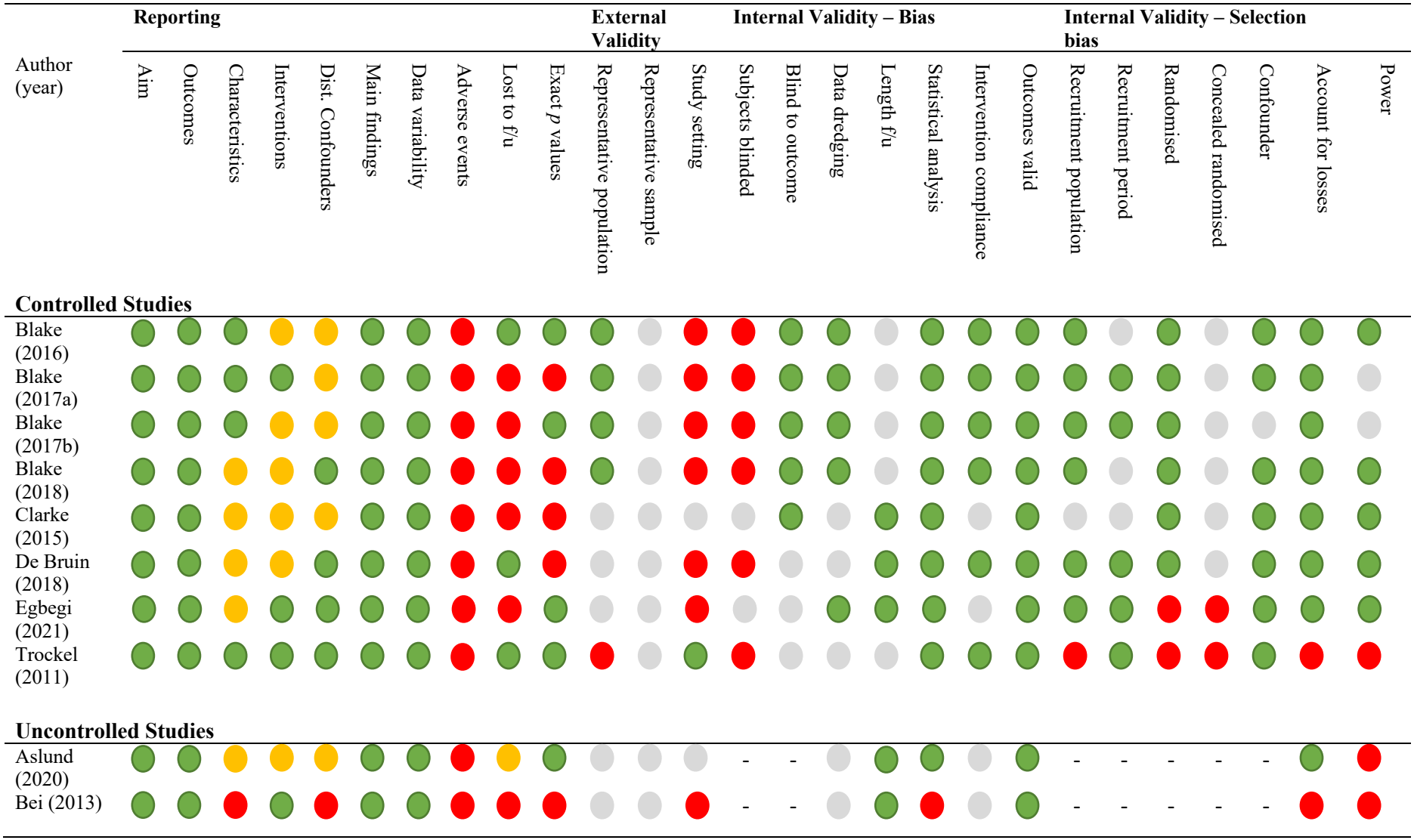
Conroy (2019)	USA	Pilot modified 5-session group CBTi intervention with depressed adolescents	Open label uncontrolled pilot, N=16	Community	Group Face-to-face	5 sessions	68.75% completed all sessions	Fair
de Bruin (2018)	Netherlands	Establish if CBTi improves adolescent psychopathology & if so, whether insomnia mediates this effect	RCT, N=116	Community	Group Face-to-face & Internet	6 sessions + booster	Group 92.11%, Internet 97.44% completed all sessions	Good
Egbegi (2021)	Nigeria	Examine the effect of CBTi among in-school adolescents with sleep difficulties in Southern Nigeria	Parallel controlled trial, N=50	Community	Group Face-to-face	5 sessions	28% completed all sessions	Fair
Palermo (2017)	USA	Evaluate preliminary efficacy of brief CBTi on sleep, psychological symptoms & health related QoL	Case series, N=40	Clinical	Individual Face-to-face	4 sessions	92% completed active treatment	Fair
Rollinson (2021)	UK	Explore feasibility & clinical outcomes of a brief CBTi intervention on adolescents in secondary mental health services	Case series, N=15	Clinical	Individual Face-to-face	Up to 6 sessions	Not reported (overall attendance 79%)	Fair
Schlarb, (2011)	Germany	Develop and evaluate the JuST intervention programme for acceptance, feasibility and effectiveness.	Uncontrolled pilot, N=18	Community	Group Face-to-Face	6 sessions	88.89% completed all sessions	Fair
Trockel (2011)	USA	Test efficacy of e-mail delivered self-help program based on CBTi for first year university students	Quasi experimental design, N=125	Community	Digital (email)	8 sessions	54% completed programme	Fair
Werner-Seidler (2019)	Australia	Examine acceptability, feasibility & preliminary effects of a CBTi intervention (Sleep Ninja) delivered to adolescents via smartphones	Case series, N=45	Community	Digital (Smartphone app)	6 sessions	33% completed all sessions	Fair
Zetterqvist (2021)	Sweden	Develop & assess feasibility & preliminary effects of internet CBTi for adolescents with insomnia comorbid to psychiatric conditions	Case series, N=20	Clinical	Digital (internet delivered)	7 sessions	67% (14/21) completed 4/7 sessions: classed as completers	Fair

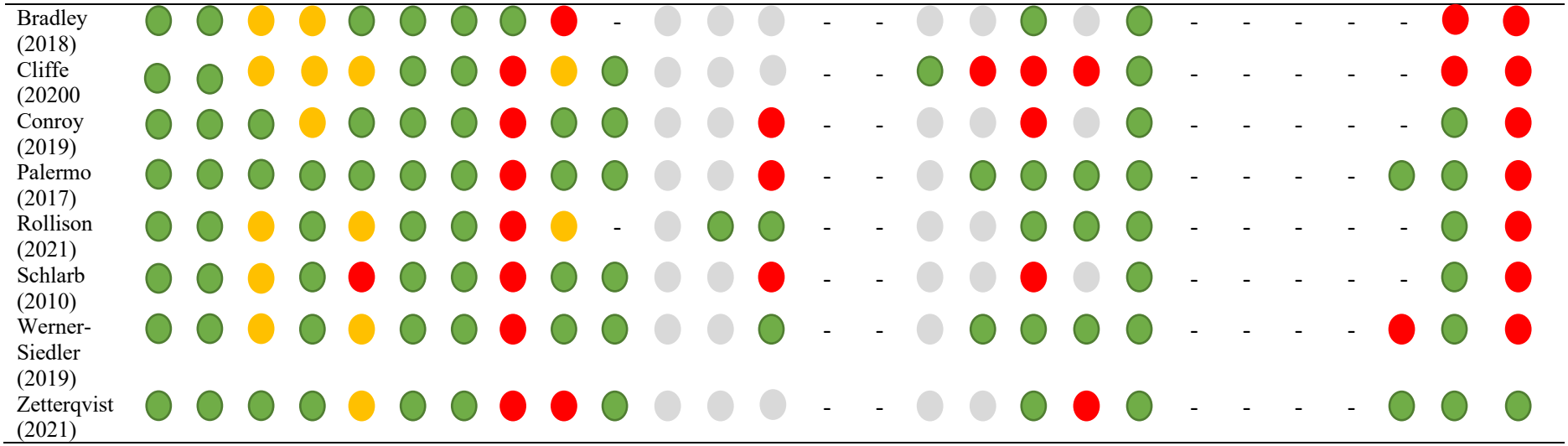
Note: [1] All reporting on SENSE trial data. Acronyms: CBTi = Cognitive Behaviour Therapy for Insomnia; RCT = Randomised Controlled Trial

Quality Appraisal / Risk of Bias

The overall quality rating assigned to each study can be seen in Table 3 (see Table 4 for individual ratings of each item.) It should be noted that uncontrolled studies could not be rated on six items due to lack of a control group/randomisation and so at best could achieve a 'good' rating. Of all the studies three were rated as 'good', fourteen as 'fair', and one as 'poor.' None were rated as excellent, indicating that each study had at least some methodological issues. A particular area of strength was that all studies used reliable and valid measures for their main outcomes, both for sleep and psychiatric symptoms. Adverse events were only adequately reported by one study (Bradley et al., 2018) which is of concern given the studies included adolescents who would be considered a vulnerable population. Few studies had pre-registered data analysis plans making it difficult to determine if statistical analyses were decided *a priori*. With regards to possible bias the studies were unable to blind participants to the receipt of a psychological intervention and hence posed a risk to internal validity. Not all studies accounted for losses to follow up which could potentially impact on findings given that those participants are unlikely to be lost at random (Clark, 2011). The majority of studies did not use 'real world' settings which impacts on the generalisability of their findings and is a threat to their external validity. Additionally, it was difficult to determine whether the studies sample was representative of the wider population. Given that the majority of studies were rated as 'fair', the collective findings from the studies should be interpreted with a degree of caution.

Table 4: *Quality Appraisal summary for all items*




Bradley (2018)
Cliffe (20200
Conroy (2019)
Palermo (2017)
Rollison (2021)
Schlarb (2010)
Werner-Siedler (2019)
Zetterqvist (2021)
Yes; Partial; No; Unable to determine.

Sleep outcomes

Overall, the findings on sleep outcomes indicate that it is possible to treat sleep disruption in young people effectively with CBTi, with the main delivery method in controlled trials being group format. However, the studies are lacking follow-up data beyond 26-weeks to inform how well these improvements are sustained over time. Table 5a provides an overview of the findings on insomnia and psychiatric symptoms outcomes from the controlled studies (*n*=5).

The two strongest trials methodologically to assess group CBTi were de Bruin et al., (2018) and the SENSE trial (Blake et al., 2016; 2017a; 2017b; 2018). The de Bruin et al., (2018) study was a large (N=116) pre-registered, good quality trial. They compared face-to-face group CBTi, and internet delivered CBTi, with a waitlist control. The study found large between group effects on insomnia symptoms in both the internet and group CBTi conditions compared to waitlist. Actigraphy and sleep diary data found medium to large effects on SOL and SE, and a medium effect on TST for actigraphy in the internet group only. All effects on sleep outcomes were maintained at 2-month follow-up. There was no control group for between group comparisons beyond this, but moderate to large within subject effects for SE and insomnia symptoms were maintained at 12-month follow-up. The SENSE trial compared group CBTi (Sleep SENSE) to a control study skills group (Study SENSE) in adolescents from secondary schools with sleep disruption (PSQI global score>4), and high anxiety (Spence Children's Anxiety Scale; SCAS, total score >32 males, >38 females.) The study found favourable results for the CBTi condition at post-treatment, with medium between group effects on sleep quality (η^2=0.06), SOL (η^2=0.08), and sleep efficiency (SE; η^2=0.08). Whilst the trial is intending on following up participants up to 2-years post-treatment, at present no follow-up data is available meaning it is not possible to determine whether these gains are maintained in the longer term.

The third study to compare group CBTi compared to a waitlist control in Nigerian school children was Egbegi et al. (2021). Whilst the results were consistent with the previous two studies with large treatment effects for the CBTi condition on reducing insomnia symptoms and SOL, and increasing TST, the results were based on completer analysis (CBTi *n*=21, control *n*=16) as opposed to intention to treat due to disruption in data collection resulting from Covid-19. Additionally, there was no follow-up data, and this was the only controlled study that did not include either a sleep diary or actigraphy measure due to the lack of technical and material resources in the area.

Trockel et al., (2011) examined the efficacy of CBTi delivered digitally. The study used email to deliver 8 weekly sessions of either CBTi or a stress management/emotional health programme. The sample consisted of first year university students and based upon initial screening were split into groups of 'good sleepers' (PSQI<5) or 'poor sleepers' (PSQI>5). For poor sleepers the intervention was associated with a large between group effect on sleep quality favouring the CBTi group (*n*=19) compared to the Breathe group (*n*=15). Whilst the study showed promising results for poor sleepers, these participants were a small proportion of the overall total sample (N=125). The study was not randomised, rather participants were assigned condition based on their place of residence, which may be a confound.

Clarke et al., (2015) was the only controlled study to examine the impact of individual CBTi. They investigated whether augmenting CBT for depression with CBTi could improve depression outcomes for depressed adolescents, compared to CBTi for depression combined with sleep hygiene. Whilst there was no clear indication of a strong effect, the Number Needed to Treat (NNT) was favourable to the CBTi condition for insomnia symptoms at

post-treatment (NNT=3.2) and follow-up (NNT=4.8). So, for every 3.2 participants receiving CBTi, one person would experience a reduction in insomnia symptoms. Actigraphy results were encouraging with a large effect on TST for the CBTi group at post-treatment, however this was not maintained at 26-week follow-up. Methodologically the study has a rating of 'fair', however the lack of clear findings for insomnia symptoms is inconsistent with the findings from the other controlled studies.

The results from the uncontrolled studies provide additional support that insomnia can be effectively treated in young people, and that this is possible in both clinical populations with diagnosed psychiatric disorders, and non-clinical populations. Unfortunately, due to the lack of long-term follow-up it is currently not clear how sustainable these improvements are over time. Sleep outcomes were broadly consistent across the uncontrolled studies with results indicating large within-subject effects, or statistically significant improvements on insomnia symptoms from pre- to post-treatment (see table 5b). Whilst these effects are likely inflated due to the lack of a control group it is encouraging that these results were found irrespective of the sample population, with improvements in both clinical (*n*=6) and non-clinical (*n*=3) samples. Five studies (Åslund et al., 2020; Bradley et al., 2018; Palermo et al, 2017; Rollinson et al., 2021; Zetterqvist et al., 2021) included follow-up data and reported that improvements were maintained. However, the longest follow-up was only 4-months (Zetterqvist et al., 2021), and Åslund et al, (2020) reported follow-up data from only 8/23 participants. The one exception was Bei et al., (2013) whose study only examined sleep quality at pre- and post-treatment. Whilst they reported moderate improvements in sleep quality, this study was the weakest methodologically, with only a poor rating, so is not necessarily representative of the rest of the studies.

Psychiatric Symptoms

Depression

All the controlled studies examined depression symptoms with a valid outcome measure (*n*=5). Medium to large between group effects on depression were found in three studies (de Bruin et al., 2018; Egbegi et al., 2021; Trockel et al., 2011) favouring the CBTi group. The de Bruin et al., (2018) study found similar effect sizes for both the group (β=-0.45) and internet (β=-0.44) CBTi conditions compared with waitlist, but these improvements were not sustained at 2-month follow-up for either condition. The SENSE trial found no difference between groups on depression symptoms from pre- to post-treatment (η^2=0.01), however the long-term aim of the trial was to investigate if CBTi could prevent the emergence of Major Depressive Disorder (MDD) at 2-year follow-up, hence anyone with a history of MDD was excluded from the study. Therefore, participants in both conditions were likely to have low levels of depressive symptoms at the outset which would allow little room for improvement. Whilst Clarke et al., (2015), the only controlled study to use a clinical sample of depressed adolescents, did not find any between group effects on depression symptoms in their study, given that the insomnia manipulation does not appear to have been wholly successful, it is therefore difficult to interpret their results. This is especially the case given that both groups also received CBT for depression as part of the study.

Eight uncontrolled studies examined the impact of CBTi on depression symptoms, of which six used a clinical sample. All studies reported significant improvements on depression symptoms from pre- to post-treatment ranging from small to large within subject effects. Of the studies including a follow-up (*n*=5), these gains were maintained to 4-months. Of the two studies which only found small within group effects, Palermo et al., (2017) was a diverse group including some participants with physical comorbidities (e.g. chronic pain) which may

impact on treatment effects, and treatment was four sessions, the lowest treatment duration of all included trials. The Werner-Seidler et al., (2019) study recruited based only on the presence of mild insomnia and participants reported only mild symptoms of depression at baseline which may have resulted in floor effects.

Anxiety

The SENSE trial and de Bruin et al., (2018) trials were the only controlled studies to examine the impact of CBTi on anxiety symptoms. The SENSE trial found that CBTi led to a small improvement in anxiety compared to the control. de Bruin et al., (2018) found a medium between group effect on anxiety at post-treatment for the internet group, but only a small, non-significant effect for the group treatment compared to waitlist. By 2-month follow-up the effect for the internet group had also reduced to a small, non-significant effect.

The impact of CBTi on anxiety symptoms was examined by eight uncontrolled studies (*n*=6 used a clinical sample). Results were mixed with two studies finding no change in symptoms, whilst six studies reported improvements in symptoms from pre- to post-treatment which ranged from small to large within subject effects. Rollinson et al., (2021) was the only study to report a large effect, however they reported on the total scores for the Revised Child Anxiety and Depression Scale (RCADS; Chorpita et al., 2000) which is a combined measure for both anxiety and depression symptoms, so it not possible to determine the specific effects for the different subscales.

Other psychiatric symptoms

The de Bruin et al., (2018) study looked at the broadest range of psychiatric symptoms, and neurodevelopmental outcomes and reported improvements across Attention Deficit Hyperactivity Disorder (ADHD), somatic problems and behavioural difficulties. There were no significant effects on conduct problems in either treatment condition. The ADHD finding of medium to large between group effects for treatment condition (group and internet respectively) maintained at 2-month follow-up, is a novel finding given that to our knowledge this has not yet been addressed by the adult literature. The SENSE trial (Blake et al., 2017a) also assessed the impact of CBTi on behavioural difficulties. Their mediation analysis showed that the effect of treatment condition on social problems, attention problems, and aggressive behaviours, was mediated by moderate improvements in perceived sleep quality. Additionally, the effect of CBTi on post-treatment PSQI scores, compared with the control group, depended on individual's pre-treatment levels of anxiety, depression and self-efficacy (Blake et al., 2018). Participants with moderate to high scores on these measures showed greatest improvement in sleep quality after CBTi suggesting that those with co-occurring symptoms of emotional disorders may actually benefit more from CBTi.

Only three uncontrolled studies examined the effect of CBTi on psychiatric symptoms other than depression and anxiety. Bradley et al., (2018), using a manualised intervention, found a medium within subject effect on paranoia, and small effect on hallucinations which were maintained at 1-month follow-up. Whilst the results are limited by their small sample (N=11) and inclusion of only a 1-month follow-up, this was one of only two studies to assess the impact of CBTi on paranoia and hallucinations in adolescents. Zetterqvist et al., (2021) also reported medium within subject effects on paranoid ideation and psychoticism from baseline to 4-month follow-up. This study also reported a large effect on obsessive

compulsive disorder (OCD) symptoms, the only study to measure this. The third study was Schlarb et al., (2011) who reported statistically significant improvements in behavioural and emotional functioning, as measured by the Youth Self Report (YSR; Achenbach, 1991), however due to a lack of reporting on the subscales this result is difficult to interpret meaningfully.

Overall, the findings from the higher quality studies, with a strong insomnia manipulation, indicate a medium to large effect on depression and a small effect on anxiety symptoms. However, these studies have not included clinical samples and there is a lack of follow up data beyond 2-months. There are early indications from the de Bruin et al., (2018 study that improvements in sleep lead to improvements in other problems: oppositional problems, ADHD, and somatic problems, however these encouraging results require replicating. Whilst the lack of a control group limits the conclusions that can be drawn from uncontrolled studies, the fact that they found similar large effects for depression and small effects for anxiety as the controlled studies, whilst including samples with more complex presentations of co-occurring mental health problems, indicates the wider applicability of CBTi to clinical populations. Results from the two studies examining psychosis related outcomes are promising and suggest that this is an area which would warrant further investigation in controlled trials.

Table 5a: *Sleep and mental health results in controlled studies*

Author (year)	N	Age, Mean (SD) years	Gender, % Female	Intervention groups	Sleep measures	Between group effects on sleep outcomes	Mental Health variables	Mental Health measures	Between group effects on mental health outcomes
Blake (2016) Blake (2017a) Blake (2017b) Blake (2018)	123	14.48 (0.95)	60	CBTi vs. Study Skills	PSQI Actigraphy Sleep diary	ITT: Medium effect on sleep quality (η^2=0.06) favouring CBTi Reduced SOL (η^2=0.06) & increased SE (η^2=0.08) for CBTi group. No difference TST, WASO or BT	Anxiety Depression Behaviour problems (Social, Attention & Aggression)	SCAS CESD CBCL-YSR	ITT: CBTi led to small effect on anxiety (η^2=0.02) No difference between groups for depression (η^2=0.01) Effect of CBTi on post treatment PSQI depended on pre-treatment moderate or relatively high SCAS (*b*=-0.05), CES-D (*b*=-0.07) & GSE (*b*=0.12) Mediation model found specific indirect effects of treatment condition on behaviour problems (Social problems, attention problems & aggressive behaviour) via perceived sleep quality
Clarke (2015)	41	16.5 (1.9)	63	CBTi & CBT dep vs. Sleep hygiene & CBT dep	ISI Actigraphy Sleep diary	ITT: No difference between groups on insomnia symptoms (*d*=-0.10) Short term advantage for CBTi completers TST (*d*=1.12) No effect NNT favourable to CBTi	Depression	CDRS-R	ITT: No difference between groups (*d*=-0.01)

de Bruin (2018)	116	15.6 (1.6)	75	CBTi Group (GT) & CBTi Internet (IT) vs. Waitlist	HSDQ Actigraphy Sleep diary	ITT: Large effect (GT β=-1.04, IT β=-0.98) compared to w/l. Reduced SOL (GT β=-0.99, IT β=-0.87), increased SE (GT β=0.91, IT β=1.09), increased TST (GT β=0.24, IT β=0.37) compared to w/l Increased SE (GT β=0.47, IT β=0.41) Reduced SOL (GT β=-0.44, IT β=-0.44) but not TST compared to w/l. All effects maintained at f/u	Depression Anxiety Somatic ADHD Oppositional Conduct	YSR	ITT: For IT compared to w/l at post Tx sig. large effect on ADHD (β=-0.5), sig. medium effects on depression (β=-0.44), anxiety (β=-0.45) & somatic (β=-0.37) Sx. Non-sig small effect on oppositional (β=-0.24), no different conduct. For GT compared to w/l at post Tx sig. large effect on somatic Sx (β=-0.53), sig. medium effects on depression (β=-0.45), oppositional (β=-0.42) & ADHD (β=-0.32) Sx. Non-sig small effect on anxiety (β=-0.22) and medium effect conduct (β=-0.32).
Egbegi (2021)	50	14.92 (1.15)	64	CBTi vs. waitlist	ISI PSQI	Completer analysis: Large treatment effect favouring CBTi (ηp^2=0.59) Large effect for CBTi reducing SOL (ηp^2=0.39) and increasing TST (ηp^2=0.47)	Depression	SMFQ	Completer analysis: CBTi resulted in large treatment effect on reducing depressive symptoms (ηp^2=0.34)
Trockel (2011)	125	n.r Range 19-22	48.8	CBTi vs. Emotional health programme	PSQI	Completer analysis: Poor sleepers: large effect on sleep quality (*d*=1.33) compared to control	Depression	CES-D	Completer analysis: Poor sleepers: Medium effect on depression compared to control (*d*=0.57)

Acronyms: PSQI=Pittsburgh Sleep Quality Index; SCAS=Spence Children's Anxiety Scale; CES-DC=Centre for Epidemiological Studies-Depression Scale for Children; CBCL-YSR=Child Behaviour Checklist-Youth Self-Report; GSE=General Self-Efficacy Scale; ISI=Insomnia Severity Index; CDRS-R=Children's Depression Rating Scale-Revised; HSDQ=Holland Sleep Disorder Questionnaire; YSR=Youth Self-Report; n.r=not reported; SOL=Sleep Onset Latency; WASO=Wake After Sleep Onset; TST=Total Sleep Time; SE=Sleep Efficiency; BT=Bed Time; NNT=Number Needed to Treat; dep=Depression; w/l=waitlist; SMFQ=Short Mood & Feelings Questionnaire; f/u=Follow up; Sig.=Significant; ITT=Intention to treat; w/l=wait list; Tx=treatment; Sx=symptoms

Table 5b: *Sleep and mental health results in uncontrolled studies*

First author, year	N	Age, Mean (SD) yrs	Gender, % female	Sleep measures	Within group effects on sleep outcomes	Mental Health variables	Mental Health measures	Within group effects on mental health outcomes
Aslund (2020)	23	15.5 (1.6)	78	ISI-A Sleep diary	ITT: Large effects on insomnia symptoms post treatment (*d*=1.63) Reduced SOL (*d*=0.99) Reduced WASO (*d*=0.42) Small increase TST (*d*=0.22) Increased SE (*d*=0.8)	Anxiety Depression	SCAS CES-DC	ITT: Medium to large effects pre-post on depression (*d*=0.87) and anxiety (*d*=0.31) symptoms. Maintained at f/u
Bei (2013)	10	Range reported 13-15	100	PSQI Actigraphy	Completer analysis: Moderate improvements (*d*=0.51) Reduced SOL (*d*=0.53) Increased SE (*d*=0.51) Small increase TST (*d*=0.46)	Anxiety	SCAS	Completer analysis: No difference total score (*d*=0.02). Small effects on separation (*d*=0.28) & panic subscales (*d*=0.22), small deterioration GAD (*d*=-0.29)
Bradley (2018)	11	18.5 (1.9)	55	ISI SLEEP-50 PSQI Actigraphy Sleep diary	Completer analysis: Large effect pre-post (*d*=6.8) Large effect pre-post (*d*=1.7) Improved sleep quality (*d*=2.9) n.r n.r	Paranoia Hallucinations Dep / Anx / Stress	GPTS SPEQ DASS	Completer analysis: Medium & small effects on paranoia (*d*=0.6) & hallucinations (*d*=0.3). Medium effect depression (*d*=0.5) & small effect anxiety (*d*=0.2) symptoms
Cliffe (2020)	49	15.6 (1.19)	76	ISI SCI Sleep diary	Completer analysis: Sig. improvement (*p*<0.001) Sig. improvement (*p*<0.001) Improved sleep quality (*p*<0.001) & SE (*p*=0.005)	Anxiety & Depression	RCADS MFQ	Completer analysis: Sig. reduced anxiety (*p*=0.005) & depression (*p*=0.004) Sig. reduced depression symptoms (*p*=0.03)
Conroy (2019)	16	17.3 (1.7)	75	ISI Actigraphy Sleep diary	Completer analysis: Large effect (*d*=1.35) Reduced SOL (*d*=7.96) Reduced night-time awakening (*d*=0.82) Increased SE (81% - 86%)	Depression	QIDS	Completer analysis: Decrease from moderate to mild depression (*p*=0.011)

Palermo (2017)	40	14.9 (1.9)	75	ISI Actigraphy Sleep diary	ITT: Large effect (*d*=1.23) maintained at f/u Few changes detected Small effect SOL (*d*=0.35) Increased SE (*d*=-0.36) Reduced WASO (*d*=0.51) TST no change	Anxiety Depression	PASF PDSSF	ITT: Small effect anxiety (*d*=0.29), maintained at f/u Small effect depression (*d*=0.25) maintained at f/u
Rollinson (2021)	15	17.73 (2.81)	73	ISI Sleep diary	ITT: Large effect (*d*=3.26) SE average increase 64% -84%	Psychological well being	RCADS CORE	ITT: Large effect pre-post (*d*=1.16), maintained f/u Large effect pre-post (*d*=0.94), maintained f/u
Schlarb (2011)	18	13.73 (1.58)	56	SDSC Sleep diary	Completer analysis: Sig. improvements ($p<0.001$) Decrease SOL Increased SE Increased TST	Emotional well-being	YSR	Completer analysis: Sig. decrease in total scores ($p=0.044$)
Werner-Seidler (2019)	45	13.71 (1.35)	66	ISI PSQI Sleep diary	ITT: Large effect (*d*=-0.90) Small effect (*d*=-0.46) Reduced SOL (*d*=-0.36) Less TIB after waking (*d*=-0.70) Increased TST (*d*=0.46)	Depression Anxiety	PHQ-A GAD7	ITT: Small effect on depression (*d*=-0.36) Small effect on anxiety (*d*=-0.41)
Zetterqvist (2021)	20	15.48 (1.29)	90	ISI Sleep diary	ITT: Large effect (*d*=1.88) maintained at f/u Increased SOL (*d*=1.04) Increased sleep quality (*d*=1.06) Increased SE (*d*=1.01)	Depression Anxiety OCD Paranoia Hallucinations	MADRS-S SCL-90	ITT: Pre-F/u moderate effects on depression (*d*=0.55) Pre – f/u large effects on OCD (*d*=0.87), medium effects on paranoid ideation (*d*=0.62) & psychoticism (*d*=0.53). No sig. change anxiety

Acronyms: ISI-A=Insomnia Severity Index-Adolescent version; SCAS=Spence Children's Anxiety Scale; CES-DC=Centre for Epidemiological Studies-Depression Scale for Children; n.r=not reported; PSQI=Pittsburgh Sleep Quality Index; ISI=Insomnia Severity Index; GPTS=Green Paranoid Thoughts Scale; SPEQ=Specific Psychotic Experiences Questionnaire; DASS=Depression, Anxiety & Stress Scale; SCI=Sleep Condition Indicator; RCADS=Revised Child Anxiety & Depression Scale; MFQ=Mood & Feelings Questionnaire; QIDS=Quick Inventory of Depressive Symptomatology-Self-report; PASF=Pediatric Anxiety Short Form; PDSSF=Pediatric Depressive Symptoms Short Form; CORE=CORE outcome measure; SDSC=Sleep Disturbance Scale for Children; YSR=Youth Self Report; PHQ-A=Patient Health Questionnaire-Adolescent version; GAD7=Generalised Anxiety Disorder 7-item scale; MADRS-S=Montgomery-Asberg Depression Rating Scale-Self report; SCL-90=Symptom Check List 90-item; SOL=Sleep Onset Latency; WASO=Wake After Sleep Onset; TST=Total Sleep Time; SE=Sleep Efficiency; TIB=Time in Bed; f/u=Follow up; Sig.=Significant; ITT=Intention to treat

Adaptations to intervention

Only one study (Bradley et al., 2018) made reference to following the guidance of Harvey (2016) with regards to addressing the circadian rhythm disruption and included elements to realign the sleep/wake cycle and bolster daily activities. This trial reported the largest within-group effect size on overall insomnia symptoms. Three studies incorporated elements to address motivation to change as part of their CBTi intervention (Bei et al., 2013; Bradley et al., 2018; SENSE trial). Three further uncontrolled studies assessed motivation to change in participants pre-treatment (Cliffe et al., 2020; Conroy et al., 2019; Werner-Seidler et al., 2019). Overall, the majority of studies did not address circadian phase delay, a slowing of the build-up of sleep pressure or adolescent specific drivers of pre-sleep hyperarousal, and hence did not incorporate the adaptations suggested by Harvey (2016) to optimise sleep treatment for adolescents. Within the studies included it was more typical to see superficial adaptations, for example, restricting use of electronics (Clarke et al., 2015), simplifying resources (Rollinson et al., 2021), and adapting language to be more developmentally appropriate (Zetterqvist et al., 2021). Whilst these adaptations may well be important, they do not address the specific developmental changes that occur to adolescents' sleep during this period.

Acceptability

Acceptability of an intervention can be assessed in a variety of ways. Studies in this review primarily assessed this through intervention completion rates and requesting feedback directly from participants. Completion rates were generally high with eight studies reporting the proportion of completed sessions as 78% or above (see Table 2). Only one study (Rollinson et al., 2021) did not report the percentage of sessions completed, but did report an overall attendance rate of 79%. This level of adherence to the intervention would indicate that CBTi was generally acceptable to the participants. Of the six studies with retention rates less

than 78%, four of these delivered CBTi digitally either via smartphone, internet, or via email. The two studies with the lowest retention rates (33%) used a digital app (Cliffe et al., 2020; Werner-Seidler et al., 2019). In the case of Cliffe et al. (2020) less than half (37%) of participants expressed a definitive preference for web based treatment. Conroy et al. (2019) reported a 68.75% completion rate for their group intervention. The authors reported changes in schedule and transport problems as reasons for participants reduced attendance. However, the study gave little detail regarding the arrangements for the group, including where or when the group was held, meaning it is difficult to determine if there were other contributory factors for the lower completion rate. Egbegi et al. (2021) reported the lowest completion rate with 28% of participants (*n*=7) completing all five sessions of their group intervention. This study was unfortunately affected by the Covid-19 pandemic which likely impacted retention.

Nine studies sought feedback directly from participants regarding acceptability of the intervention. This was done via questionnaire surveys and semi structured interviews. Overall, the feedback appeared favourable to the intervention with CBTi largely being acceptable to adolescents. However, all measures/interviews used were idiosyncratic, developed by the individual research teams. The lack of standardisation across measures means it is difficult to compare ratings across studies. It was more common for the uncontrolled studies to include a measure of acceptability (*n*=6), than controlled studies (*n*=3), which is likely due to the intervention being at an earlier stage of development.

Discussion

This review searched the empirical literature for studies examining the potential treatment effect of CBTi on insomnia and co-occurring psychiatric symptoms in young people. Additional aims were to assess whether adaptations were used to optimise the intervention in this age group, and to determine how acceptable CBTi is to young people. Eighteen studies were identified of which seven used clinical populations. Most studies (n=14) were given an overall quality rating of 'fair' indicating some methodological issues were present limiting the ability to be able to draw definitive conclusions. However, from the available studies there is a good indication that CBTi can be effective at improving insomnia symptoms in young people. There is also an emerging evidence base that CBTi can improve psychiatric symptoms but there are significant gaps in the research. At present the strongest evidence from controlled studies is mainly with non-clinical populations and most findings are focussed on depression and anxiety. Whilst there are encouraging findings for other psychiatric symptoms, such as, behavioural difficulties and psychosis related outcomes, there is currently not enough evidence to draw any strong conclusions and so these need further investigation.

Results from both the controlled and uncontrolled studies, including adolescent samples meeting criteria for insomnia disorder, indicate that insomnia symptoms can be effectively treated in young people with CBTi. Studies reported medium to large effect size improvements on subjective measures of overall insomnia symptoms and sleep quality. Results for objective measures were more variable with small to large effect sizes on SOL, SE and TST. Whilst these results were consistent across controlled and uncontrolled studies, caution should be used interpreting the within subject effects as these are likely inflated due to the lack of a control group. The strongest evidence, from RCTs, showed CBTi to be most

commonly delivered via group format, and notably only one controlled study (Clarke et al., 2015) used an individual format to deliver treatment. The adult CBTi literature shows that individually delivered treatment results in significantly larger improvements in a range of subjective and objective measures of sleep, including SOL, SE and sleep quality than group treatment (Yamadera et al., 2013). This is likely owing to the amount of personalisation that is required for certain elements of CBTi, such as, establishing an individual's sleep window. It may therefore be possible to boost the efficacy of CBTi through individually tailored treatment, though this requires testing. The amount of treatment sessions delivered also varied widely across the different studies (range=4-10), and few studies specified what they considered to be a 'full dose' of treatment. For adults it is typical for CBTi to take between 4-6 sessions (Morin & Benca, 2012), and more sessions are offered for people with comorbid severe mental health problems (Freeman et al., 2015). Future studies to examine the optimum number of sessions to include in CBTi treatments for young people in addition to comparing group with individual formats would be beneficial. It is plausible for example that more than four sessions would be required to address both the adolescent circadian phase delay alongside other maintenance factors of insomnia.

There is emerging evidence that CBTi improves psychiatric symptoms in young people. The two commonly studied variables were depression and anxiety. The strongest evidence, from higher quality studies, with strong insomnia manipulations indicate that improved sleep leads to medium to large effect on depression and a smaller effect on anxiety symptoms. However, these studies were predominantly using non-clinical populations. An intriguing finding is that individuals with higher levels of co-occurring psychiatric symptoms (particularly depression and anxiety) may actually benefit more from sleep interventions (Blake et al., 2018) suggesting that sleep interventions may be a particularly good fit for this

group. There were also promising results for other difficulties, such as, behavioural problems, ADHD, and psychosis related outcomes but these were measured in only a few studies. Given that sleep disruption is an established causal factor for psychotic experiences (Freeman et al., 2020) the findings for psychosis related outcomes, including medium within subject effects on paranoia and psychoticism, particularly deserve follow-up in controlled trials. A pilot randomised controlled trial is already underway to test whether treating sleep problems for patients at ultra-high risk for psychosis has the potential to reduce the rate of transition to a psychotic disorder (Waite et al., 2020).

As with the adult literature, the impact of CBTi on depression has received the most attention in adolescents. Altered reward responsivity has been suggested as a potential mechanism by which the two disorders are linked. Ling et al., (2021) found adolescents with insomnia showed more blunted reward positivity which has previously been found to be a biomarker of depression (Proudfit, 2015). Studies are also addressing whether CBTi could be used to prevent the emergence of depression. The adult literature indicates that CBTi has the potential to reduce new onset depression (Cheng et al., 2019; Christensen et al., 2016). Whilst not possible to address this in adolescents based on the current literature, the forthcoming results of the SENSE trial will establish whether it may be a preventative strategy in adolescents too.

Adaptations to the intervention, such as those suggested by Harvey,(2016), to address the circadian rhythm disruption experienced by adolescents were rare. In fact only one study (Bradley et al., 2018) explicitly mentioned incorporating this guidance into their intervention. Future studies should aim to address these developmental changes more explicitly, rather than simply adapting the language and formatting of adult CBTi content. Interestingly across

the studies there was a lack of parental involvement in the treatment. Only one study included parents at every session (Palermo et al., 2017), and the Bradley et al., (2018) study encouraged participants to recruit a 'sleep team', composed of either family or friends, for support during the treatment. This is surprising given how challenging CBTi can be as it requires individuals to make substantial changes to their sleep habits. For adolescents, parents typically take a lead role in both implementing routines (Orchard et al., 2020) and accessing services for support (Reardon et al., 2017). It would therefore seem advisable for future studies to consider the role in CBTi interventions for young people.

CBTi appeared acceptable to adolescents both in terms of intervention completion rates and feedback from participants. Interestingly it was studies delivering CBTi digitally that reported some of the lowest retention rates. The use of technology to deliver interventions has often been thought of as a way to increase the acceptability of treatment and increase engagement of young people with treatment, however, a recent review has highlighted that the evidence for this is currently unclear (Georgeson et al., 2020). Similarly, our review would cast doubt on how acceptable these types of interventions are to adolescents given the lower completion rates (range=33-67%). One possibility for the lower completion rates for digital treatment is that with face-to-face treatment the presence of a therapist in the room may help enable better engagement and motivation with the therapy. This may be especially relevant for adolescents with co-occurring psychiatric symptoms which makes accessing treatment more difficult (Åslund et al., 2020). Half of the included studies (*n*=9) sought direct feedback from participants regarding the acceptability of the intervention. However, there was no consistent use of a specific measure making direct comparisons difficult. In future, studies which are seeking participant views of the acceptability of an intervention, would benefit from having a standardised measure available

which would allow for more meaningful comparison between interventions. Sekhon et al., (2017) provide a helpful framework for examining the acceptability of healthcare interventions which could be used to achieve this.

Limitations & Future Directions

Several limitations to the review should be acknowledged. The reviewer was not blind to the study authors affiliation which could have introduced potential bias. Also, there was no examination of publication bias conducted. With regards to the findings of the review, both sleep and psychiatric symptom outcomes are currently lacking long-term follow-up. Only two studies reported follow-up data after 4-months, which limits the ability to determine how sustainable any improvements are over time. This is especially important for the adolescent population which is a dynamic and heterogenous group given the developmental changes they are experiencing (Kessler et al., 2005; Owens, 2014). Another concern regarding the methodology of the included studies is that only one study adequately reported on adverse events. Whilst CBTi in adults has a strong evidence base, it is not without limitations and in some instances has been found to negatively impact on functioning, especially when implementing sleep restriction (Kyle et al., 2011). When working with particularly vulnerable populations, such as adolescents who are likely to be less stable in their presentation, it is even more important that attention is paid to potential adverse events (Condon et al., 2021). When considering the samples that were used in the studies there was little reporting on the ethnicity of the participants. Only one study (Egbegi et al., 2021) examined the impact of CBTi in an African population and of the studies reporting ethnicity data (n=6) the samples were predominantly Caucasian. Individuals from different ethnic backgrounds are likely to have different needs and cultures with regards to sleep and hence studies are needed to consider whether CBTi is as effective for ethnically diverse populations or if adaptations to

the treatment are required. A final point of consideration is the amount of variation within the studies as to how different constructs were measured, e.g., five different measures were used to assess insomnia symptoms, seven measures for anxiety, and ten separate self-report questionnaires for depression. The variability across measures could mean that they were measuring slightly different constructs and hence direct comparisons should be made with caution.

Conclusions

The findings of this review indicate that CBTi can be effective at reducing self-reported insomnia and co-occurring depression and anxiety in young people, and that this can be achieved across a range of clinical presentations. Studies consistently found medium to large effects on depression and smaller effects on anxiety. CBTi led to promising improvements in behavioural problems and psychosis related outcomes but this was only assessed in a small number of studies. CBTi appears an acceptable intervention to adolescents, however adaptations to address developmental changes are rare and including them may boost the efficacy of treatment. Further good quality, controlled studies are warranted in clinical populations.

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Service Improvement Project

Title: Sleep disturbance in adolescent inpatients: prevalence, associations with clinical outcomes and clinician perspectives.

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Abstract

Background Adolescents with mental health problems frequently report sleep disruption and there is increasing evidence that sleep disturbance is a contributory factor in the occurrence of mental health problems. Despite this, sleep is frequently overlooked as a treatment target. Adolescent inpatient wards present additional challenges to sleep, yet little is known about sleep problems in this setting. Mixed-methods were used in two linked studies. Study one examined the prevalence of insomnia at admission in adolescent inpatients, and cross-sectional associations with psychiatric symptoms and admission length. Study two sought the perspectives of ward clinicians on patients' sleep.

Method Data from 100 adolescent inpatients, aged 11-17 years, were gathered from admission routine outcome measures and medical records. Associations were analysed using a series of linear regressions. A clinician focus group and qualitative interviews were conducted and analysed using thematic analysis.

Results Fifty percent (n=50) of the sample screened positive for insomnia. Moderate to large significant associations were observed separately between insomnia severity and the severity of depression (β=-0.56), anxiety (β=-0.51), self-harm (β=-0.49), psychotic experiences (β=-0.32), and conduct problems (β=-0.30), but not admission length. Qualitative data identified three key themes: i) the experience of sleep problems, ii) barriers and facilitators of sleep, and iii) managing sleep problems on the ward. Clinicians described a reciprocal relationship between insomnia and psychiatric symptoms. Although a psychological intervention was viewed as potentially helpful, limited capacity meant this was not routinely offered. Sleep hygiene, melatonin, hypnotic and psychiatric medications were typical treatment responses.

Conclusions Insomnia was prevalent in this adolescent inpatient sample. Existing psychological interventions require adapting to overcome the barriers to sleeping on a ward. Improving sleep is important in and of itself, but there are potential benefits for risk management and alleviating psychiatric symptoms which require testing.

Keywords: Insomnia, adolescents, inpatient

Introduction

Adolescents with mental health problems frequently report disrupted or altered sleep (Blake et al., 2018). Between 71-88% of young people with mental health problems report experiencing sleep disturbance (Alfano et al., 2007; Orchard et al., 2017). Little is currently known about the prevalence of sleep problems on adolescent inpatient wards. Sleep problems have historically been viewed as a consequence or symptom of mental health problems (Freeman et al., 2020), and have therefore not typically been assessed or targeted with treatment. In the adult literature, however, there is now good evidence that sleep problems may contribute to the occurrence of mental health problems (Freeman et al., 2017; Harvey et al., 2011). Interventions to improve sleep have led to subsequent improvements in depression (Gee et al., 2019; Henry et al., 2020) anxiety (Espie et al., 2019), and psychotic experiences (Freeman et al., 2017). A small pilot randomised controlled trial of a psychological sleep intervention on an adult acute ward found treating insomnia has the potential to reduce admission length (Sheaves et al., 2018).

It would seem likely that sleep disruption may also play a role in the experience of mental health problems in adolescents. This may take the form of a reciprocal relationship; that is, sleep problems may worsen mental health difficulties, and mental health difficulties may adversely impact on sleep. Adolescents with a psychiatric disorder, including depression, anxiety, conduct disorder, and attention deficit hyperactivity disorder (ADHD), are at higher risk of having insomnia, irrespective of diagnosis relative to community samples (Hysing et al., 2020). Evidence from pilot trials suggests that treating sleep disruption in adolescents has the potential to improve affective symptoms, anxiety, conduct, and hyperactivity problems (de Bruin et al., 2018), and psychotic experiences (Bradley et al., 2018). Whilst manipulation studies are important for assessing causation with any certainty

(Brown et al., 2019), association studies can highlight potential causal relationships. In adolescent inpatients, sleep difficulties at admissions were associated with borderling features at discharge (Wall et al., 2020), and sleep disturbance has been associated with self-harm and poorer school performance (Dewald et al., 2010; Hysing et al., 2015).

Adolescent inpatients frequently present with co-occurring psychiatric problems and elevated risk related behaviours. If, as the emerging evidence suggests, sleep disruption is a causal factor in mental health problems, then treating it may be one route to improving a range of psychiatric symptoms. Cognitive Behavioural Therapy (CBT) is the first line recommended treatment for insomnia in adults (NICE, 2021; Qaseem et al., 2016; Riemann et al., 2017), and emerging evidence suggest that it improves both insomnia and psychopathology symptoms in adolescents (de Bruin et al., 2018). Improving sleep may also result in individuals feeling better able to cope with and benefit from the experience of being admitted to hospital. A further advantage of such an approach is adolescents in crisis may find it easier to discuss sleep as opposed to their more stigmatised mental health difficulties (Bradley et al., 2018; Gregory & Sadeh, 2016), making it a potentially more acceptable treatment target. However, factors related to the admission itself might be disruptive to sleep. Frequent night-time observations and a noisy environment (Sheaves et al., 2018), in combination with disruption to education and family life (Gowers et al., 2000) are likely to leave this population vulnerable to increased sleep disruption during their inpatient stay. It would therefore seem prudent to gain an understanding of ward processes and their potential impact on sleep in this setting.

The present study

A mixed-method approach was used to extend the understanding of sleep disruption in an adolescent inpatient setting. The first objective was to identify the prevalence of insomnia in a sample of adolescent inpatients at admission. The second objective was to examine associations between insomnia severity and self-reported mental health symptoms, educational functioning, and admission length. We hypothesised that higher levels of insomnia would be associated with: i) more severe depression and anxiety, ii) more severe conduct and hyperactivity problems, iii) higher levels of psychotic experiences, self-harm, and educational difficulties, and iv) a longer admission. To contextualise the findings, the third objective was to obtain clinician perspectives on the experience of sleep for patients on the ward.

Study 1

Method

Design

A cross-sectional analysis of pre-existing data including outcome measures completed at admission and data related to admission length and diagnosis from electronic care records. The study was reviewed and approved by the local National Health Service (NHS) Quality and Audit team (OHFT Audit number: 69). The study was deemed a service evaluation of routinely collected patient data and hence no ethical review was required.

Participants

Participants were adolescents from one adolescent inpatient ward in Oxford Health NHS Foundation Trust. The 18-bed ward provides assessment and treatment for adolescents (11-17 years) experiencing significant mental health difficulties.

Procedure

On, or shortly after, admission, patients completed routine outcome measures (ROMs) as part of their standard care. Admission ROMs data with a completed (<25% of items missing) Sleep Condition Indicator (SCI) were considered for inclusion. The earliest available data was from 4th October 2015, after which all consecutive patients with ROMs data were considered for inclusion until the date of data collection (21st October 2019). ROMs data from 111 patients were identified. Patient questionnaires completed *prior* to admission (as part of planned admission; *n*=5) or without a completion date (*n*=2), and patients not yet been discharged (*n*=4), were excluded. This provided a final sample of 100 participants for analysis, representing 40% of total admissions (*n*=251) during the data collection window.

Patient presenting problems leading to admission were coded based on two data sources: i) diagnosis on electronic patient record (if present) and ii) presenting problems described on the admission referral form. Coding guidelines were generated by LJ to ensure a systematic approach (see Appendix 2b) and inter-rater reliability was assessed on a subsample of 20% of participants. Percentage agreement was 97.6%. Admission length data was obtained from electronic patient records, calculating total days between admission and discharge date.

Measures

Sleep Condition Indicator (SCI). The SCI (Espie et al., 2014) is an 8-item self-report questionnaire assessing insomnia symptoms. Questions are rated over the past month on a 5-point scale (0–4), with higher scores indicating better sleep. The questionnaire uses simple phrasing (e.g., "How long does it take you to fall asleep?") and hence considered appropriate

for use with adolescents. The SCI is a valid, reliable measure of insomnia with good concurrent validity (Espie et al., 2014). In adults, a score of <16 is indicative of likely insomnia disorder. Internal consistency in the current sample of adolescent inpatients was good (α=0.88).

Revised Child Anxiety and Depression Scale (RCADS). The RCADS (Chorpita et al., 2000) is a 47-item, self-report questionnaire assessing affective symptoms in young people. Items are scored on a 4-point scale (0-3). Higher scores indicating more severe symptoms. The 37-item anxiety total score and the 10-item depression subscale were used for this study. An item measuring sleep problems ("I have trouble sleeping") was omitted from the depression subscale due to potential criteria contamination, resulting in a 9-item scale. The RCADS has demonstrated good psychometric properties in adolescents with mental health problems (Chorpita et al., 2005). Internal reliability in the current sample was high for both total anxiety (α=0.96) and depression (α=0.91).

Strengths and Difficulties Questionnaire (SDQ). The SDQ (Goodman, 1997) is a 25-item self-report mental health screening questionnaire for adolescents including subscales for emotional symptoms, conduct problems, hyperactivity, and peer difficulties. Items are rated over the last 6-months on a 3-point scale. Higher scores indicating greater difficulties. The present study used the 5-item conduct problems and hyperactivity subscale scores only. The measure has satisfactory reliability and validity in a large representative sample (Goodman, 2001). Internal reliability in the current sample was in the acceptable range for both scales (conduct α=0.69, hyperactivity α=0.72).

The Health of the Nation Outcome Scale for Children (HoNOSCA). The HoNOSCA (Gowers et al., 1999) is a 13-item self-report questionnaire examining a range of psychiatric symptoms and indicators of social functioning in children. Items are rated over the previous two weeks on a 5-point scale. Higher scores indicating greater difficulties. This study used three single HoNOSCA items to provide separate indicators of the severity of 1) self-harm, 2) educational difficulties, and 3) psychotic experiences.

Borderline Personality Features Scale for Children (BPFSC-11). The BPFSC-11 (Sharp et al., 2014) is an 11-item self-report screening measure of borderline personality traits in children based on current presentation. Questions relate to behaviours associated with core features of Borderline Personality Disorder (BPD), including emotional dysregulation, negative relationships, and identity problems. Internal consistency for this sample (n=14) was good (α=0.88).

Statistical Analysis

Analyses was conducted using SPSS for Mac (Version 25). Overall rates of missing data were low, with 70/6954 missing data points (1%). For each questionnaire, participants with more than 20% missing items were excluded from the analysis. For participants with less than 20% missing items (n=13), these were pro-rated by averaging across the remaining items on that questionnaire. Visual inspection of the data and tests of normality, skewness, and kurtosis confirmed that the data met criteria for parametric analysis (see appendix 2c.)

Prevalence of insomnia was assessed using the SCI total scores and proportion of participants scoring below the validated threshold (<16). To examine the association between insomnia and individual symptoms, a series of simple linear regression analyses were

conducted with insomnia as the predictor variable. The Hochberg step-up method (Hochberg, 1988) was used to control for multiple comparisons. The association between insomnia and admission length controlled for the number of days between admission and completion of ROMs. The planned exploratory analysis on borderline features was not possible due to the small number of completed questionnaires (n=14). To assess the individual contributions of mental health variables, whilst controlling for each other, hierarchical multiple regression was conducted. Age was entered in block one and depression, anxiety, conduct, hyperactivity, self-harm and psychotic experiences were entered in block two.

Visual inspection of the residuals for each model suggested the assumption of equal variances was met. Un-standardised (B) and standardised (β) Beta coefficients with 95% confidence intervals are presented with R^2 values. Supplementary analyses were conducted with highly correlated dependent variables (r>0.7) by controlling for the correlated variable in the regression. This applied to the anxiety and depression variables only.

Results

Participant Demographics

Of the 100 included participants, 76 were female (76%), 23 were male (23%), and one preferred not to say. Mean age was 15.34 years (SD=1.41, range = 11-17). Most were White British (n=81, 81%). See Appendix 2d for complete ethnicity data. The most common presenting problems leading to admission were emotion dysregulation, anxiety /depression, and eating disorders (see Table 1). A third (n=31) were admitted after a suicide attempt.

Table 1: *Primary presenting problems leading to admission to ward from electronic patient records and admission referral forms.*

Presenting Problems / Diagnosis	***n***	**%**[1]
Emotion dysregulation / self-harm / suicidal ideation	49	49
Anxiety / depression	45	45
Eating disorder	39	39
Suicide attempt	31	31
Psychotic symptoms	18	18
Autism Spectrum Condition	16	16
Obsessive Compulsive Disorder	6	6
Anger / Conduct problems	5	5
Bipolar	5	5
Trauma	5	5
Attention Deficit Hyperactivity Disorder	4	4
Sleep Problems	4	4
Adjustment disorder	2	2
Gender identity	2	2
Substance misuse	2	2
Acute stress reaction	1	1
Attachment Disorder	1	1
Body Dysmorphic Disorder	1	1
Family relationship issues	1	1

[1] Percentages equate to greater than 100 as more than 1 problem descriptor could be applied to each participant.

Descriptive data

Of the total sample (N=100), 50% (*n*=50) screened positive for insomnia at the time of admission. Descriptive statistics illustrating mean scores are shown in Table 2 alongside the mean scores split by insomnia status. A total of 44% and 35% of participants scored in the clinical range on the RCADS for depression and anxiety, respectively. The range in

admission length was wide, from 8 to 289 days (9 months). The average number of days between admission and ROMs completion was 9 days (SD=12, range=0-69). In cases where there was a significant delay this was due to the patient being acutely unwell at admission and therefore unable to complete the questionnaires. A correlational analysis found no significant association (r=0.20, p=0.24) between number of days between admission and completion of the SCI and total CSI scores, therefore timing of completion is unlikely to have an impact.

Table 2: *Mean scores of all outcome variables for total sample and insomnia groups*

	Total Sample		**Insomnia**		**No Insomnia**	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)
Insomnia	100	16.6 (8.31)	50	9.60 (3.91)	50	23.6 (5.02)
Admission Length	100	81.3 (53.5)	50	73.7 (50.9)	50	88.9 (55.4)
Anxiety	99	51.4 (25.1)	50	60.5 (24.8)	49	42.1 (22.0)
Depression [a]	99	15.6 (6.88)	50	18.5 (5.79)	49	12.7 (6.69)
Conduct problems	98	2.42 (2.13)	48	2.81 (2.32)	50	2.06 (1.89)
Hyperactivity	99	5.20 (2.49)	49	5.89 (2.11)	50	4.52 (2.67)
Self-harm	97	1.76 (1.55)	48	2.45 (1.44)	49	1.08 (1.34)
Educational Difficulties	97	2.42 (1.36)	49	2.75 (1.11)	48	2.08 (1.51)

Psychotic experiences	96	1.41 (1.49)	47	1.74 (1.58)	49	1.08 (1.34)
Borderline personality traits	14	74.5 (21.3)	11	76.9 (21.4)	3	65.7 (23.1)

Note: [a] Excluding sleep item

Linear Regressions

Associations between insomnia severity, mental health variables, educational difficulties, and admission length are presented in Table 3.

Hypothesis 1: *more severe insomnia will be associated with more severe depression and anxiety*

Significant large associations were observed between greater insomnia severity and worse depression and anxiety as assessed by the RCADS. Insomnia accounted for 32% and 26% of variance in these variables, respectively. As anxiety and depression were highly correlated ($r > 0.7$; see appendix 2e for correlation matrix), the analysis for these variables was repeated whilst controlling for each other. When controlling for depression, the association between insomnia severity and anxiety reduced to a small, non-significant effect (β=-0.10, 95% CI=-0.26, 0.05, p=0.19). When controlling for anxiety, the association between insomnia severity and depression reduced from a large to a small effect which remained significant (β=-0.23, 95% CI=-0.37, -0.09, p=0.002).

Hypothesis 2: *more severe insomnia will be associated with greater conduct and hyperactivity problems*

Medium, significant, associations were observed between greater insomnia severity and worse hyperactivity and conduct problems.

Hypothesis 3: *more severe insomnia will be associated with more severe psychotic experiences, self-harm and educational difficulties*

A medium to large significant association was observed between greater insomnia severity and greater levels of self-harm, with insomnia severity explaining 24% of the variance for this item (Table 3). A medium, significant association was observed between greater insomnia severity and a self-reported difficulty keeping up with educational attainment. Lastly, a medium, significant association was observed between greater insomnia severity and psychotic experiences.

Hypothesis 4: *more severe insomnia will be associated with a longer admission*

The association between insomnia severity and admission length was of negligible effect size and non-significant.

Table 3: *Regression analysis: mental health variables and admission length*

Outcome	**n**	**Beta**	**95% CI**	β	**95% CI**	R^2	p [a]
Anxiety	99	-1.53	-2.05, -1.00	-0.51	-0.68, -0.33	0.26	**<0.001**
Depression [b]	99	-0.47	-0.60, -0.33	-0.56	-0.73, -0.40	0.32	**<0.001**
Conduct problems	98	-0.08	-0.13, -0.03	-0.30	-0.49, -0.10	0.09	**0.003**
Hyperactivity	99	-0.13	-0.18, -0.07	-0.43	-0.61, -0.24	0.18	**<0.001**
Self-harm	97	-0.09	-0.12, -0.06	-0.49	-0.67, -0.31	0.24	**<0.001**

Educational difficulties	97	-0.06	-0.09, -0.03	-0.36	-0.54, -0.17	0.13	**<0.001**
Psychotic experiences	96	-0.06	-0.09, -0.02	-0.32	-0.51, -0.12	0.10	**0.002**
Admission Length	100	0.34	-0.97, 1.66	0.05	-0.15, 0.26	0.01	0.604

[a] Significant results following Hochberg's adjustment highlighted in bold (*see Appendix 2f*). [b] Excluding sleep item. [c] Analyses controlled for days between admission and completion of ROMs.

Hierarchical Multiple Regression

As shown in Table 4 age was not significant, however, model 2 indicates the inclusion of mental health variables accounted for 34.2% of variance in sleep, with depression accounting for the majority, followed by self-harm.

Table 4: *Hierarchical multiple regression analysis: predicting sleep from age and psychiatric symptoms*

	Model 1					**Model 2**				
		95% CI for B					95% CI for B			
Variable	B	LL	UL	SE B	β	B	LL	UL	SE B	β
Constant	19.07	0.11	38.03	9.55		29.90	13.95	45.84	8.02	
Age	-0.51	-1.38	1.08	0.62	-0.03	-0.10	-1.12	0.91	0.51	-0.02
Anxiety						-0.10	-0.14	0.04	0.05	-0.14
Depression						-0.32	-0.70	0.06	0.19	-0.26
Self-harm						-1.02	-2.21	0.17	0.60	-0.19
Psychotic Experiences						-0.39	-1.46	0.67	0.54	-0.07
Conduct						-0.45	-1.22	0.31	0.39	-0.12
Hyperactivity						-0.15	-0.91	0.61	0.38	-0.05

R^2	0.001	0.39
F	0.06	7.91*
Adj R^2	-0.01	0.34
F Change	0.06	9.22*

Note: * P<0.001

Study Two

Method

Design

Study 2 was a qualitative analysis of clinician perspectives elicited through a focus group and individual interviews. This was a pragmatic exploratory study to supplement and contextualise the findings from study 1. The study sought to elicit the views of clinicians on the experience of sleep for patients on the ward.

Participants

Eight clinicians from an adolescent inpatient ward participated in a focus group during the weekly nursing team meeting. A brief statement was issued to all clinicians informing them of the topic for discussion prior to the meeting. Clinicians who participated included nurses, health care assistants and occupational therapists. Two additional individual interviews were conducted with a Psychiatrist and a Clinical Psychologist to gain a diversity of professional perspectives. In total, 7 clinicians were female and 3 male. The majority (n=9) had worked on the ward for over a year.

Procedure

A semi-structured interview schedule was developed and used for the focus group and interviews (see Appendix 2g). The interview was developed with reference to the available literature on sleep on acute wards (Sheaves et al., 2018) which identified challenges associated with sleep in this context. Researchers also endeavoured to gain an understanding of the ward context through discussions with staff members and service users. Example questions were trialled with key staff members from whom feedback was sought. Questions explored a) barriers and facilitators to sleep on the ward, b) impact of sleep problems and c) typical treatment approaches for young people's sleep difficulties. Additional questions in the individual interviews explored the appropriateness of delivering a brief CBTi intervention on the ward. Interviews had a mean duration of 29 min (range = 23–34, SD=5.26). All interviews were led by LJ (trainee clinical psychologist), with BS (clinical psychologist specialising in sleep and severe mental illness) co-facilitating the focus group. Interviews were audio recorded and transcribed verbatim.

Data Analysis

The qualitative analysis adopted a realist approach reporting on the experiences, meaning and reality of participants (Braun & Clarke, 2006). The primary researcher (LJ) acknowledged her own position of approaching this research as a mother of an adolescent and with experience working in CAMHS and hence an awareness of the sleep difficulties that can be experienced by this population. Regular supervision meetings with BS and JB were used to discuss data analysis as well as to consider their position and relationship with the data, as well as that of their supervisors as sleep researchers, could influence analysis. A qualitative research logbook was utilised to keep records of personal reflections and to ensure a transparent record of decision making.

Coding and analysis were led by the first author (LJ), following guidance from Braun and Clarke (2006), using NVivo 12 (QSR International Pty Ltd, 2018) to facilitate the process. To ensure familiarisation with the data (stage 1) LJ transcribed all the interviews and the transcripts were read and re-read. Data was analysed using a data driven approach and initial codes were generated (stage 2) through a deductive process based on the overall structure of the interview schedule. Data from all the interviews were reviewed collectively and grouped into potential themes (stage 3). As analysis progressed these themes were regularly reviewed and refined by LJ. Second coding of the data was undertaken by BS after which themes were discussed and refined. Data analysis continued until no new codable themes could be identified. A thematic map was generated and checked to ensure it represented the accounts (stage 4). The accepted themes and supporting quotes were detailed in a code book (Appendix 2i) and subsequently reviewed by JB and refined until consensus was reached (stage 5). Participants were not asked for comment on the finalised themes due to restrictions on accessing the ward imposed as a result of the Covid-19 pandemic, therefore triangulation of the data was not achieve; however they were provided with a summary of the study's findings. A concise version of the results can be found below with a selection of illustrative quotes (stage 6; see appendix 2j for a comprehensive version of the qualitative results.)

Results

Clinician perspectives of sleep problems in adolescent inpatients were represented by three superordinate themes, each with subthemes (Figure 1). The three themes reflected 1) sleep on an inpatient unit, 2) the impact of sleep disruption on patients, and 3) typical management of sleep problems by clinicians.

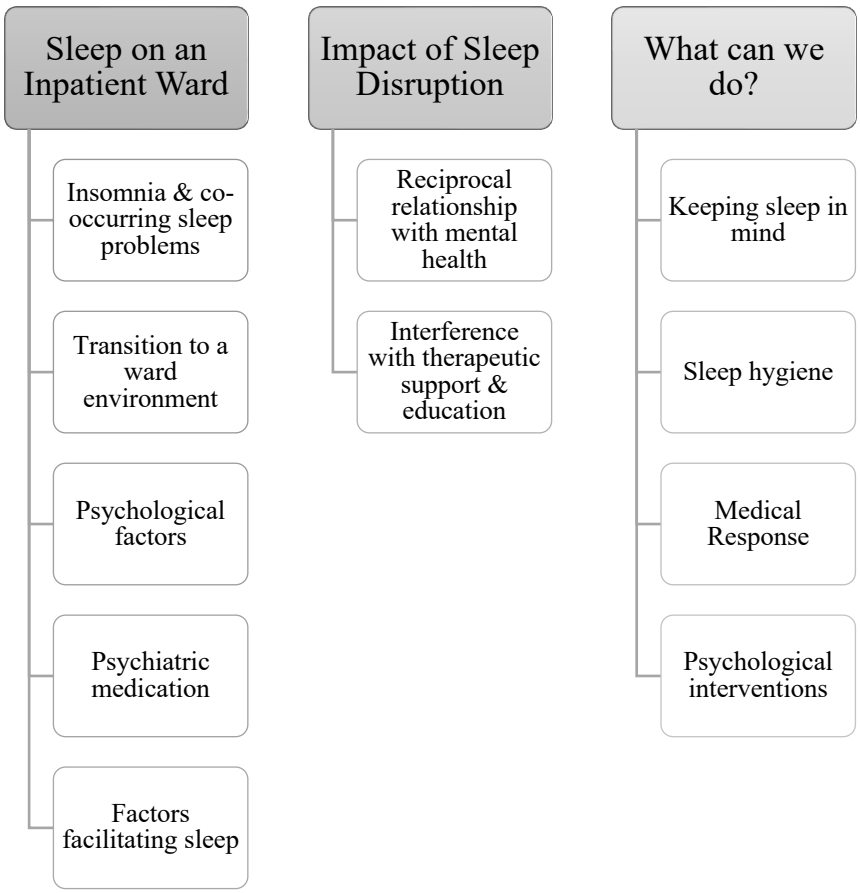

Figure 1: Thematic map

Sleep on an inpatient ward

"It's remarkable how little sleep some people / patients actually have" (P9)

Insomnia symptoms were clearly described, and clinicians commented on short total sleep times with "as little as 4 hours per night" (P9) observed during night-time checks. Excessive daytime sleeping was also noted, either to compensate for lack of sleep at night or possibly reflective of circadian dysregulation or hypersomnia. Sleep problems were often noted to pre-exist the index admission, but the transition to hospital was also noted as a trigger, or exacerbated sleep disruption.

"First thing I think of when I think of sleep here is that it's probably quite disrupted just because of the observations […], as a very minimum the young people are checked on every 30 minutes" (P4)

Clinicians identified a number of factors which influenced sleep on the ward. It was suggested that the hospital environment could be disruptive for sleep, particularly for certain groups, such as adolescents with autism. Environmental factors, such as noise, temperature, and lighting could all impact sleep, in addition to adjusting to being away from home and around other "young people who are distressed." (P10). Night-time safety checks were highlighted as being disruptive - especially in the context of pre-existing sleep problems - but there could be discrepancies between patient reports of being disturbed and clinicians observing them to be asleep. For some young people, it was acknowledged that psychiatric medications could adversely impact their sleep. There were also clear psychological factors that could interfere with natural sleep processes, such as sleeping during the day as an "avoidance technique" or engaging in anxious rituals or ruminations which are "coming more at night-time" (P1).

Despite these barriers, clinicians also highlighted ways that the ward environment could promote sleep. This included the daily routines and structure that helped to regulate a "basic day/night cycle" (P4), and an element of safety, stability, and privacy that may have been missing at home. Other patients' role modelling good sleep practice was seen as a positive factor, as was the availability of clinicians for support in regulating distress and reducing hyperarousal before bedtime.

Impact of Sleep Disruption

Consistent with the emerging evidence base there was recognition of a reciprocal relationship between sleep problems and mental health difficulties (Freeman et al., 2020) such as depression, bipolar disorder, psychosis, OCD, and eating disorders. Sleep disturbance was identified as "one of the things that's keeping them, exacerbating their illness," and that as "sleep improves, their mental state improves quite significantly" (P7). There was a general belief that if patients had improved sleep, they would be better able to engage with the therapy and support on offer.

What can we do?

"The first step is assessing what the issues are, why are they sleeping poorly" (P7)

The caring, considerate approach of the nursing staff to managing sleep problems was highlighted in all accounts. Clinicians described trying to minimise the disruption of safety checks, taking time to assess sleep difficulties through observations, and assisting with "winding young people down" (P10) in preparation for sleep. Sleep hygiene was a commonly used intervention which could be adapted "depending on what they need" (P2). More specific interventions included reviewing medication, and, in some cases, prescribing hypnotic medication - a practice thought to have increased over recent years. Other medical treatment included psychiatric medications with sedating properties (e.g., quetiapine), melatonin (i.e., a circadian regulator), and adjusting the timing of medication. Referral to a specialist sleep clinic was also possible when sleep "looked like a problem in its own right" (P9). Although psychological interventions were acknowledged to be helpful, limits on capacity meant this was not routinely offered. When considering the delivery of brief CBTi on the ward, it was

felt it would be helpful as long as it was appropriately adapted for the varying ages and ability of the patients.

Discussion

This study assessed the prevalence and clinical correlates of insomnia in an adolescent inpatient ward setting. Results showed that half of the sample scored in the clinical range for insomnia. This is significantly higher than in the general adolescent population where insomnia prevalence is estimated between 13.6% - 18.5% (Hysing et al, 2013). Insomnia symptoms were associated with a broad range of mental health symptoms in these patients, including more severe affective symptoms, behavioural problems, self-harm, and psychotic experiences. Young people with greater problems sleeping also tended to report more difficulties with education. These findings were consistent with reports from clinicians who observed sleep disruption as a common problem in the young people that interacted with their mental health problems. Clinicians also viewed sleep problems as interfering with the patients' access to therapeutic opportunities and education on the ward. Some aspects of the environment were regarded as disruptive to sleep (e.g. night time observations of patients), but clear benefits were noted too - for example, the regular ward routines which may act as a circadian regulator. Clinicians put care and effort into supporting young people to achieve better sleep by helping them to wind down and offering sleep hygiene advice. CBTi, the recommended first line treatment for insomnia, was however rarely offered. The high prevalence rates of insomnia and association with a range of psychiatric symptomatology indicate that sleep disruption is a significant problem in this population and may be a relevant treatment target. However, the benefits and limitations of the ward environment for sleep are an important consideration in adapting CBTi for this setting.

The strongest associations were found between insomnia and both depression and anxiety. Further interrogation of the relationships revealed that when controlling for each other, a notable reduction was seen in the size of effects. This suggests that the associations are largely driven by variance which is common to both variables. Insomnia continued to predict depression whilst controlling for anxiety, but the significant association with anxiety was lost after controlling for depression. This is consistent with factor analytic studies showing that anxiety and depression are separable but overlapping clinical constructs in young people (Szabó, 2010). Encouragingly, treating insomnia can lessen both problems, with typically a slightly larger effect for depression than anxiety (Espie et al., 2019; Freeman et al., 2017). This is consistent with our multiple regression results showing depression accounting for the majority of the variance.

Given the inpatient setting, and associated high rates of risk events, the moderate to large association between insomnia severity and self-harm is noteworthy. Our result for self-harm extends previously reported associations between sleep disturbance and suicidal ideation in adolescent inpatients (Kaplan et al., 2014). Sleep treatments could be particularly relevant for this population.

Contrary to previous findings from the adult literature (Haynes et al., 2011), the study found no association between insomnia symptoms on admission and length of stay. However, adolescents typically have a significantly longer admission of 116 days (NHS England, 2014) compared to 49 days in adult acute settings (Wyatt et al., 2019). Adolescents frequently experience delays to discharge due to the lack of availability of suitable mental health or social care packages in the community (Frith, 2017). In circumstances where delays in

discharge are linked to reasons other than mental state, it follows that insomnia severity may have less of an impact on length of stay. These results indicate that a targeted intervention to improve sleep during admission may not necessarily lead to an earlier discharge.

Limitations

Several limitations must be acknowledged. The sample is not fully representative as it was limited by the availability of existing data. The findings may therefore misrepresent the true prevalence of insomnia in adolescent inpatient wards. However, the inclusion of any patient with complete sleep data, regardless of their reason for admission, mitigates this to some degree. Further research on other inpatient wards will be needed to determine the generalisability of the findings. Notably, some variables, including education difficulties and self-harm, were likely limited by the use of single items measures. In the case of psychotic experiences the item asks participant to rate multiple distinct psychotic experiences in just one item ("Have you been troubled by hearing voices, seeing things, suspicious or abnormal thoughts?"). Furthermore, the SCI cut off score for insomnia used in the study was validated in an adult population (Espie et al., 2014); it is not clear whether the cut off is equally appropriate for adolescents. The study also relied solely on the use of self-report measures. The results could perhaps be interpreted more robustly had they included additional measures such as parental reports. Parent reports have been shown to accurately identify specific anxiety disorders in children (Reardon et al., 2019); however it is not yet known if this could also apply to sleep disorders. Although clinician perspectives were obtained, triangulation of the qualitative data was not achieved and hence may not be a true representation of their views. The voice of the patients is also notably absent. Further research exploring the experience of sleep problems, from a first-person perspective, in an adolescent inpatients would therefore be valuable.

Although no causal inferences can be made from this cross-sectional study, it provides a valuable insight into the co-occurrence of sleep disruption and psychiatric symptoms in adolescent inpatients at the point of admission. Although we assess these relationships individually, they will not exist in isolation with different symptoms likely interacting in their association with sleep. From existing research, it is likely that some psychiatric symptoms have direct relationships with insomnia, whilst other variables are associated indirectly with insomnia via other mediating variables. For example, the association between sleep disruption and psychotic experiences is mediated by negative affect (Reeve et al., 2018). Examining these patterns of direct and indirect association would require a larger sample with greater power and a more sophisticated statistical analysis, such as network analysis (Borsboom & Cramer, 2013), which was beyond the scope of the present study.

Clinical Implications

The findings from this study highlight the importance of systematically assessing sleep problems in young people admitted to psychiatric inpatient setting. Insomnia is a treatable disorder which appears to be prevalent in this population. CBTi has been shown to be effective at improving insomnia and psychopathology symptoms in adolescents (de Bruin et al., 2018). An appropriate next step would be to adapt and test a CBTi intervention to assess its acceptability and gauge its efficacy for adolescent inpatients. Our findings suggest that clinicians would welcome such an intervention, given both their recognition of the negative sequalae of sleep disruption and already established interest in supporting young people to sleep better.

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Lay Summary

What was this project about?

Previous research tells us that adolescents experience difficulties with their sleep for a number of different reasons. This is especially so if they also have a mental health problem. However, sleep problems in adolescent inpatient settings have not been researched in much detail. This is important because sleep could be a potential treatment target which can also improve mental health symptoms. If this is the case, then it would support the introduction of an adapted sleep intervention which could be delivered on the unit.

What did we want to know?

1) How common is it for patients admitted to the Highfield unit to experience sleep problems (insomnia)?
2) Do more severe sleep problems lead to worse mental health symptoms?
3) If patients have sleep problems does it result in a longer stay on the unit?
4) What do clinicians think about the experience of sleep for patients on the unit?

How did we do it?

The project was split into two parts. Study 1 involved looking at data from Carenotes and also the routine outcome measures (ROMs) that patients complete when they are admitted to the unit. We collected data on a number of different mental health outcomes including depression, anxiety, conduct problems, hyperactivity, self-harm, educational difficulties, psychotic experiences and borderline traits. In Study 2 clinical staff were asked questions about the experience of sleep for young people on the unit in a focus group and also in some separate individual interviews.

What did we find?

Study 1

From the data we collected we found that:

- Half (50%) of the patients scored above the cut off for insomnia.
- Negative associations were found between insomnia and all the mental health symptoms – so lower sleep (insomnia) scores were associated with less severe mental health symptoms. The strongest relationships were with sleep and depression, and sleep and anxiety.
- Whether a patient had insomnia or not made no difference to the length of their stay on the unit.

Study 2

The interview and focus group responses revealed a very thoughtful approach by clinicians who were aware that sleep could be disturbed on the unit, particularly during the night-time safety checks. As well as noticing some of the things on the unit that got in the way of sleep, clinicians identified a number of things which they felt helped patients get better sleep – like feeling safer, having a regular routine, and the availability of staff for support.

What are the implications of this project?

- With support from the research team at the Department of Psychiatry, the unit could consider introducing a brief psychological intervention for sleep (CBT-i). This could be trialled initially in a small study to look at how practical this is to do and whether it makes a difference.
- We also think it will be important to find out more from the patients themselves about what they think sleeping is like on the unit.

Theoretically Driven Research Project

Title: Evaluating the efficacy of CBT for Health Anxiety and Obsessive Compulsive Disorder adapted for online delivery in the context of Covid-19

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Abstract

Background: The Covid-19 pandemic has had a negative impact on the populations mental health particularly for individuals with Health Anxiety (HA) and Obsessive Compulsive Disorder (OCD). This is in conjunction with a significant change in accessibility of face-to-face psychological services which have had to rapidly adapt to the remote delivery of therapy.

Aims: The study aimed to evaluate the effectiveness of evidence based CBT interventions for HA and OCD delivered via a blend of online therapist consultations interspersed with self-study reading materials. A secondary aim was to evaluate remote training workshops provided to therapists.

Method: Therapists attended 3 half day remote workshops after which consecutive participants with HA or OCD were assigned to therapists for treatment. Monthly expert supervision was provided. Patients completed routine outcome measures at each session and an idiosyncratic measure of preoccupation with Covid-19 at pre- and post-treatment.

Results: Significant and comparable improvements were observed on measures of anxiety, depression and social adjustment from pre- to post-treatment in both the HA (n=13) and OCD (n=20) groups. Disorder specific measures also showed significant improvements after treatment. The HA group showed greater levels of change the Covid-19 specific questionnaire. The training workshops were well received by therapists, who valued the monthly supervision sessions.

Conclusions: The results of the study are consistent with the online delivery of CBT for HA and OCD with the inclusion of additional self-study booklets being effective.

Key Words: Health Anxiety, Obsessive Compulsive Disorder, CBT, Online, IAPT, Self-help

Introduction

The Covid-19 pandemic has had a significant global impact and there are concerns regarding the potential repercussions on the population's mental health. Early studies have demonstrated a clinically significant increase in mental distress (Pierce et al., 2020) in the UK population. Women, younger people, socially disadvantaged individuals, and those with existing mental health problems are said to be at risk of worse mental health outcomes (O'Connor et al., 2021). Against a backdrop of uncertainty regarding the future, the pandemic has led to an understandable increase in anxiety particularly related to a) hygiene and contamination with 'microbes' and b) the possibility of falling ill. In those with specific vulnerabilities it is therefore unsurprising to find a generalised increase in stress and mental health difficulties, and there is growing evidence of increasing prevalence and / or exacerbation of symptoms particularly for individuals experiencing Health Anxiety (HA; Kibbey et al., 2020) and Obsessive Compulsive Disorder (OCD; Davide et al., 2020) focussed on contamination.

In addition to the negative affect on people's mental health and thus an increased prevalence, the pandemic has significantly impacted the delivery of psychological services. When the first lockdown was announced in March 2020 the subsequent restrictions resulted in the near disappearance of face-to-face therapy. Services sought to move to remote ways of delivering therapy such as via telephone and video calls. Within adult Increasing Access to Psychological Therapies (IAPT) services over the first 7 months of the pandemic, telephone consultations increased by 260% to account for 70% of appointments. Video conferencing also rose significantly from 2% to 17% of appointments, an increase of 850% (NHS Digital, 2021). Other mental health services anecdotally reported that very little face-to-face therapy was occurring, with staff having to work predominantly from home.

In the face of such challenging circumstances, a key issue is the extent to which services can continue to deliver evidence-based treatments without losing fidelity and effectiveness. Previous studies have demonstrated the effectiveness of a blend of face-to-face sessions with the provision of additional self-study booklets for panic disorder, OCD (Bolton et al., 2011; Clark et al., 1999) and HA (Tyrer et al., 2017). It has yet to be established whether or not a blend of online video-based consultations and additional reading materials would also be effective.

Alongside the impact on mental health of stress arising from Covid-19 and related restrictions, the specific characteristics of Covid-19 may mean that Health Anxiety and OCD might be elevated in some instances. There are a number of important similarities with regards to the cognitive models of understanding HA (Salkovskis et al., 2003) and OCD (Salkovskis, 1999) which have implications for their treatment (Salkovskis, 1996). Due to the longer-term nature of the feared consequences in each of the disorders, it is often impossible to 'disprove' the feared outcome. Instead the focus is on developing and evaluating less threatening explanations of the individual's problem rather than seeking to disconfirm the threats which drive the anxiety experienced. The two disorders also share several important processes presumed to be involved in the maintenance of these problems, including difficulties in obtaining certainty, general beliefs about personal responsibility, and the importance of safety seeking behaviours, particularly reassurance seeking, avoidance and checking behaviours. There is currently good evidence that Cognitive Behavioural Therapy (CBT) is an effective treatment for each of these disorders (Gava, et al., 2007; Olatunji et al., 2013; Thomson & Page, 2007). Further to this the CHAMP study (Tyrer et al., 2017) demonstrated that non-specialist therapists could be effectively trained in the delivery of CBT

for HA, with significant symptom improvements enduring up to 5 years follow-up compared to standard care. These findings have since been built upon with remotely delivered (telephone or videoconferencing) CBT for HA showing greater improvements in HA symptoms compared to treatment as usual, maintained at 12-month follow-up (Morriss et al., 2019).

When considering the specific components of treatment which are likely to effect change, within HA the focus is predominantly on cognitive strategies (Salkovskis et al., 2003), whilst for OCD there is a balance between cognitive strategies and behavioural experiments (Salkovskis, 1999). When treating HA it is often not possible to fully disprove the patients belief that they are going to become seriously ill. However, for OCD it is sometimes possible to disprove such beliefs, e.g., that something bad will happen that day if the patient abstains from engaging in a compulsion. Treatment for both disorders require behavioural experiments focused on checking, attentional processes, and avoidance. In the absence of the ability to directly undertake in vivo experiments (Salkovskis et al., 2003; Salkovskis, 1999), as was the case when lockdown was imposed, then perhaps increasing the cognitive element, through the provision of self-study booklets with self-directed behavioural experiments would have beneficial effects. It is however important that we evaluate whether these new ways of working and delivering therapy are effective in helping people to overcome their difficulties. In particular, the management of HA and OCD would benefit from a better understanding of the impact of the ongoing pandemic and consideration of how to adapt existing evidence-based treatments given the continuing restrictions regarding social distancing. In view of the underlying similarities between the understanding and treatment of these problems if a blended approach to treatment could be demonstrated as effective, it may be possible to extend this work to develop a transdiagnostic / problem specific approach to

treatment, as has been proposed for Medically Unexplained Symptoms (MUS; Salkovskis et al., 2016).

Present study

The primary aim of the study was to evaluate the effectiveness of CBT interventions for HA and OCD delivered via a blend of online therapist consultations interspersed with self-study reading materials between sessions. It was hypothesised that the delivery of online CBT with additional self-study materials for HA or OCD would result in lower levels of anxiety and depression and improved functional ability. It was further hypothesised that the intervention would result in lower scores on participants Anxiety Disorder Specific Measure (ADSM). The adaptation to remote consultations occurred at very short notice and was necessary for services due to Covid-19 restrictions. The study therefore takes the form of two open trials. The project was deemed a service evaluation of routinely collected data and hence no ethical review was required. A secondary aim was to compare HA and OCD in terms of self-reported reactions to Covid-19. Thirdly we sought to evaluate the training workshops provided to therapists.

Method

Service context

Therapists from five IAPT services (Oxfordshire, Buckinghamshire, Berkshire, Nottinghamshire & Milton Keynes) were involved in the study. IAPT services provide short-term evidence based psychological therapies to adults in England for common mental health problems including anxiety and depression. The service evaluation was registered with the research and development departments for each Trust (see Appendix 3a).

Therapist training & supervision

Therapists were all qualified high intensity CBT Therapists with a minimum of 1-year post-qualification experience. Therapists attended three half day workshops, via Microsoft Teams, for training on the treatment of HA and OCD led by PS and VB (clinical psychologists). Workshops included examples specific to Covid-19, ways to adapt treatment to online delivery, and an introduction to the additional patient reading materials. Sessions were recorded for therapists unable to attend. Continuing professional development certificates were issued to therapists for each workshop. Monthly supervision of 1 hour duration with PS was offered to all therapists involved in the study to discuss cases and review use of the reading materials.

Patient materials

Separate supplementary booklets were developed for HA and OCD each comprising of 6 individual modules (see Table 1 for module headings.) The HA booklet was adapted from materials used in previous HA trials (Seivewright et al., 2008; Tyrer et al., 2014). The OCD booklets were developed by the study team based on CBT for OCD (Bream et al., 2017) and were reviewed by experts with experience from OCD-UK.

Table 1: *Module headings for HA and OCD patient booklets*

Health Anxiety	Obsessive Compulsive Disorder
What is Health Anxiety?	What is Obsessive Compulsive Disorder?
How is Health Anxiety best treated?	How is OCD best treated?
Separating physical sensations and illness	What the thoughts mean to you
Why Health Anxiety doesn't go away on its own	The vicious flower – Why OCD doesn't go away on its own
The importance of what you think	The importance of what you do
The importance of what you do	Theory A Theory B and choosing to change

Design

The study was an open trial using treatment outcome data from consecutive cases taken from the routine waitlist from patients who gave written consent for their anonymous data to be used for the purposes of service evaluation.

Participants

Participants had all been referred and accepted for psychological treatment in IAPT. Participants were required to be aged 18 years and over; with their main presenting problem as either HA or OCD (as indicated by scoring above the IAPT threshold for caseness on the relevant measures detailed below). Participants taking medication were required to have been on a stable dose for a minimum of 4 weeks.

Measures

Health Anxiety Inventory – Short Week (HAI-18)

The HAI-18 is an 18 item self-report instrument designed to measure health anxiety. Items are rated on a 4-point scale and combined to give an overall total; higher scores indicate greater severity of symptoms. A total score of 18 or above is the current IAPT clinical threshold for the presence of health anxiety (NHS England, 2018). The questionnaire is reliable (r=0.90), with high internal consistency (α=0.95) and is sensitive to treatment effects over time (Salkovskis et al., 2002).

Obsessive-Compulsive Inventory (OCI)

The OCI is a 42 item self-report questionnaire comprising 7 sub-scales including washing, checking, doubting, ordering, obsessions, hoarding and neutralising. Items are scored on a 5-point scale (0-4) with greater scores indicating increased frequency and associated level of

distress. Within IAPT a score of 40 or above indicates caseness for OCD (NHS England, 2018). The measure has good reliability and internal consistency (α=0.86 – 0.95; Foa et al., 1998).

Generalised Anxiety Disorder Scale (GAD-7)

The GAD-7 is a brief 7 item anxiety scale, shown to be a reliable (r=0.83) and valid (α=0.92) tool for screening for anxiety disorders, particularly GAD and for assessing severity (Spitzer et al., 2006). Items are scored on a 4-point scale (0-3) with greater scores indicating greater severity of symptoms. A score of 10 points or more is indicative of the presence of GAD (Spitzer et al., 2006), however within IAPT services a clinical threshold of 8 or above is used (NHS England, 2018).

Patient Health Questionnaire (PHQ-9)

The PHQ9 is a widely used brief 9-item measure of depression (Kroenke, Spitzer, & Williams, 2001). Items are rated based over the past 2-weeks using a 4-point scale (0-3) with greater scores indicating greater severity of symptoms. The measure has been shown to be reliable (α=0.89) and valid in clinical populations (Kroenke et al., 2001). IAPT uses a cut-off score of 10 or above for caseness (NHS England, 2018).

Work & Social Adjustment Scale (WSAS)

The WSAS is a valid (α=0.79 - α=0.94) and reliable, simple self-report measure of functional impairment (Mundt et al., 2002). Items are rated on an 8-point scale (0-8) covering the domains of work (if applicable), home management, social leisure activities, private leisure activities, and family and relationships. Higher scores indicate greater severity of functional impairment.

Covid-19 Scale

A self-report 3-item idiosyncratic measure was devised (see appendix 3b) to assess how much participants thoughts had been affected by Covid-19. Questions related to how much they had been preoccupied with thoughts of Covid-19, and how worried they were that Covid-19 could cause themselves or others harm. Participants were asked to rate the extent they agreed with the items during the past 2 weeks on a 0-100 scale, where 0 indicated it was not at all true for them whilst 100 indicated it was completely true for them.

Therapist feedback

Feedback from therapists was sought at 3 time points via Qualtrics survey. Firstly, prior to the training workshops to establish baseline knowledge of therapists and their confidence in treating HA and OCD. Secondly, post-workshop to examine how helpful therapists found them. Finally, after completion of initial cases to collate feedback on clinical application of skills learnt during workshops, usefulness of client facing materials, and observations on clinical presentation of cases. The full range of questions can be found in appendix 3d.

Procedure

Participants were assigned to therapists' caseloads from the routine waitlist as per service guidelines. Prior to starting treatment participants were asked to provide written consent for their anonymous data to be used for the purpose of service evaluation. In cases where individuals declined, their treatment continued as usual.

At the start and end of treatment participants completed the full battery of measures including the SHAI, OCI and idiosyncratic Covid-19 measure, plus the Minimum Dataset (MDS), comprising of the PHQ9, GAD7 and WSAS. The MDS and relevant Anxiety

Disorder Specific Measure (ADSM), either the SHAI or OCI, depending on presenting problem, were completed at every other treatment session.

Therapists delivered the standard CBT intervention via online video conferencing (Microsoft Teams), with the addition of providing participants with modules from the relevant supplementary booklets during treatment. The first module was generally given out after session 1, with subsequent modules being provided at the therapists' discretion, depending on the stage of treatment.

Statistical Analysis

Statistical analyses were undertaken using SPSS for Mac (Version 27). Parametric analyses were conducted where appropriate. Due to the low sample size for the HA group careful attention was paid to tests of normality.

Workshops

Visual inspection of the data confirmed it met the assumption of normality and hence considered appropriate for parametric analysis. Paired sample t-tests were used to analyse repeated measures. Our primary outcome was how confident therapists felt that they could engage participants with treatment using an online format with p set at 0.05. Secondary outcomes, therapists understanding of HA/OCD, and their confidence in helping someone with HA/OCD, were adjusted using Bonferroni correction, therefore p set at 0.025. All non-repeated measures are reported descriptively.

Participant data

Baseline MDS measures were analysed using independent samples t-tests. A mixed model ANOVA was used to analyse baseline Covid scale scores according to diagnosis group. Box's test of equality of covariance matrices and Levene's test of equality of error variances were negative. Mauchly's test of sphericity was not significant, so an Epsilon adjustment was not carried out.

Treatment outcomes

Missing data was managed conservatively using last observation carried forward (9/135 data points). For two participants missing baseline MDS scores their session one scores were brought forward. Pre-post GAD7 and PHQ9 scale scores were analysed using a mixed model ANOVA with diagnosis as a between-subjects factor. A one-way ANOVA was used to analyse pre-post WSAS scores, again with diagnosis group as a between-subjects factor. In each case Box's test of equality of covariance matrices and Levene's test of homogeneity of variance was non-significant. Pre-post comparisons of SHAI and OCI scores were conducted using paired sample t-tests. Whilst the initial intention was to conduct a parametric analysis of pre-post Covid Scale sores, due to missing data resulting in small sample sizes a non-parametric approach was taken comparing change scores with Mann-Whitney U test.

Therapist feedback

Data from therapist feedback questionnaires is reported descriptively.

Results

Therapist demographics

Nineteen therapists attended the HA and OCD workshops, see table 2 for demographic data. Of the 19 who attended the training, 16 subsequently went on to complete cases in the study. During data collection 3 therapists left the study: 1 retired after completing 1 case; 2 moved to different services and had completed 1 and 2 cases respectively.

Table 2: *Therapist demographics*

Gender, *n* (%)	Female	17 (89.5)
	Male	2 (10.5)
Age, mean (SD) years		43.68 (9.80)
Highest Qualification, *n* (%)	BSc	1 (5.3)
	MSc	4 (21.1)
	MA	4 (21.1)
	PGDip	5 (26.3)
	DClinPsy	4 (21.1)
	PhD Health Psychology	1 (5.3)
Years CBT Experience, mean (SD), range		8.74 (5.94), 1 - 20
Years since completed training, mean (SD)		7.28 (5.10)
Working pattern, *n* (%)	Full time	15 (78.9)
	Part time	4 (21.1)
Attitude towards evidence-based treatment (max. 100 for importance), mean (SD)		82.95 (13.60)

Health Anxiety Workshop

Prior to attending the workshop therapists used a 0-100 scale to rate their overall confidence in using CBT for HA (M=65.95, SD=16.34), and their ability to engage people with HA when they met with them in person (M=70.16, SD=19.29). Therapists' confidence engaging people with HA online improved significantly after attendance at the training workshop ($t_{(18)}$=-3.41, p<0.005). There were also significant improvements in their reported understanding of HA ($t_{(18)}$=-3.50, p<0.005) and their confidence that they could help people with HA ($t_{(18)}$=-4.56, p<0.001). Therapists rated the workshops as being useful in relation to their work directly with people with HA (M=85.53, SD=16.71) and that they improved their general knowledge about the subject (M=82.68, SD=20.08).

Obsessive Compulsive Disorder Workshop

Before the OCD workshop therapists rated their overall confidence using CBT for OCD as M=64.53 (SD=18.94) on a scale of 0-100. They rated their ability to engage people with OCD face-to-face as M=68.87 (SD=17.70). Confidence engaging people with OCD online improved significantly after the workshop ($t_{(14)}$=-5.51, p<0.001). Significant improvements were also observed for therapists understanding of OCD ($t_{(14)}$=-3.59, p<0.005), and therapist confidence in being able to help people with OCD ($t_{(14)}$=-4.75, p<0.001). After the workshops therapists rated the content as being useful in relation to their work directly with people with OCD (M=88.87, SD=13.40), and that it had improved their general knowledge of the subject (M=88.07, SD=14.63).

Participants

Thirty-three participants consented for inclusion in the study (HA=13, OCD=20), see Table 3 for demographic data split by diagnosis. The majority of the sample were white British,

single, and employed full time. There were no significant differences between groups for age ($t_{(31)}$=-0.33, p=0.75), gender ($X^2(1)$=0.68, p=0.46), or medication status ($X^2(1)$=1.22, p=0.46). Approximately half the HA group and 41.2% of the OCD group had previously received treatment for their disorder.

Table 3: *Participant demographics*

		Health Anxiety	**Obsessive Compulsive Disorder**
Age, mean (SD) years		29.31 (8.24)	30.6 (12.66)
Gender, *n* (%)	Female	8 (61.5%)	15 (75%)
	Male	5 (38.5%)	5 (25%)
Ethnicity, *n* (%)	White British	9 (75%)	17 (85%)
	Asian British	-	2 (10%)
	White & Black Caribbean	-	1 (5%)
	White other	2 (16.7%)	-
	Unknown	1 (8.3%)	-
Employment status, *n* (%)	Unemployed	-	1 (5.6%)
	Employed FT	7 (58.3%)	7 (38.9%)
	Employed PT	1 (8.3%)	3 (16.7%)
	Student	3 (25%)	5 (27.8%)
	Retired	-	1 (5.6%)
	Home maker / carer	1 (8.3%)	1 (5.6%)
Marital status, *n* (%)	Single	4 (57.1%	7 (58.3%)
	Married	1 (14.3%)	2 (16.7%)
	Separated	-	1 (8.3%)
	Co-habiting	2 (28.6%)	2 (16.7%)

Received previous treatment, *n* (%)	7 (53.8%)	7 (41.2%)
Medication, *n* (%)	5 (38.5%)	10 (58.8%)

Baseline measures

There were no significant differences between groups at baseline for GAD7 ($t_{(31)}$=-0.77, p=0.45), PHQ9 ($t_{(31)}$=-0.45, p=0.66), or WSAS ($t_{(30)}$=-1.29, p=0.21), see Table 4.

Table 4: *Mean scores of baseline measures for HA and OCD groups*

	HA		OCD	
	n	Mean (SD)	*n*	Mean (SD)
GAD7	13	12.85 (5.19)	20	14.20 (4.74)
PHQ9	13	10.77 (5.33)	20	11.55 (4.59)
WSAS	13	14.77 (7.96)	19	18.58 (8.39)
Covid – Preoccupation	13	63.85 (30.77)	17	40.41 (32.76)
Covid – Worry harm to self	13	76.92 (27.50)	17	34.12 (31.98)
Covid – Worry harm to others	13	74.23 (22.99)	17	66.41 (28.69)

Table 4 shows the mean and standard deviation for baseline scores on the Covid-19 scale. There was a significant main effect of Covid scale, $F_{(2,56)}$=14.18, p<0.001, and diagnosis $F_{(1,28)}$=6.02, p=0.02. These main effects were modified by a significant Covid scale by diagnosis interaction, $F_{(2,56)}$=11.64, p<0.001, indicating the groups were responding differently on some items. Simple main effects revealed that the HA group scored significantly higher than the OCD group on item 2 of the Covid scale ("I have worried about the potential harm Covid-19 could cause me"), $t_{(28)}$=3.85, p<0.001.

Treatment outcomes

The mixed model ANOVA of GAD7 and PHQ9 scores revealed a main effect of scale, $F_{(1,29)}$=4.49, p=0.04, indicating scores on each measure were different irrespective of when completed. There was a main effect of time, $F_{(1,29)}$=53.14, p<0.001, with post-treatment scores significantly lower than pre-treatment scores. The main effect of diagnosis was not significant, $F_{(1,29)}$=1.92, p=0.18. Neither the scale by diagnosis ($F_{(1,29)}$=0.70, p=0.41), or time by diagnosis ($F_{(1,29)}$=1.14, p=0.29) interaction was significant. The interaction between scale and time was significant, $F_{(1,29)}$=10.30, p=0.003. Simple main effects analysis revealed that scores on the GAD7 at pre-treatment (M=13.58, SD=5.04) were significantly higher than PHQ9 scores (M=10.97, SD=4.85), $t_{(30)}$=3.10, *p*=0.004, but they were not significantly different at post-treatment (GAD7 M=6.00, SD=4.67; PHQ9 M=5.77, SD=4.78), $t_{(30)}$=3.40, *p*=0.69. Overall participants in both the HA and OCD group showed significant improvements on GAD7 and PHQ9 scores from pre- to post-treatment.

Analysis of the WSAS revealed a main effect of time, $F_{(1,29)}$=33.13, p<0.001. Mean scores for both the HA and OCD group were significantly lower at post-treatment (HA Pre: M=14.77, SD=7.96; Post: M=7.23, SD=7.32; OCD Pre: M=17.72, SD=7.73; Post: M=9.28, SD=7.12). The main effect of diagnosis was not significant, $F_{(1,29)}$=1.12, p=0.30, nor was the interaction, $F_{(1,29)}$=0.11, p=0.75.

Scores on the SHAI for participants within the HA group dropped significantly from pre (M=35.15, SD=6.83) to post (M=17.23, SD=7.75) treatment, $t_{(12)}$= 5.71, *p*=<0.001, *d*=2.45. OCI scores for the OCD group also reduced significantly from pre (M=66.20, SD=23.31) to post (M=30.10, SD=13.20) treatment, $t_{(9)}$= 5.02, *p*=<0.001, *d*=1.91.

Taken together, all of these analyses indicate that both groups improved to a broadly comparable extent.

As the sample sizes for those completing the covid specific scale both before and after treatment was small, this was analysed on the basis of a non-parametric comparison of change scores. Change scores for level of preoccupation with Covid-19 from pre- to post-treatment in the HA group (median=47.5, range=10-65) were greater than the OCD group (median=9, range=-30-67), U=24.00, p=0.02. For worry about Covid-19 potentially harming themselves change scores were again statistical different in the HA group (median=50, range=15-85) compared to the OCD group (median= 5, range=-20-50), U=10.50, p=0.001. On the final question concerning the potential of Covid-19 causing harm to others the change scores were higher for the HA group (median=55, range=13-90) than the OCD group (median=30, range=-16-75), U=26.50, p=0.043. This suggests that the HA group may have been more adversely impacted by Covid-19 and that treatment ameliorated this for that group.

Therapist Feedback

Feedback provided by therapists (n=15) after completion of at least one case showed that they found the workshops helpful at the time, M=8.53 (SD=1.30) out of 10. Therapists felt the workshops prepared them well for the clinical work, M=7.60 (SD=1.35), and they found the regular supervision sessions helpful, M=8.80 (SD=1.08). The provision of additional reading materials for patients was rated as beneficial by therapists, M=7.87 (SD=1.81).

Discussion

The present study aimed to evaluate the effectiveness of CBT interventions for HA and OCD delivered via a blend of online therapist consultations interspersed with self-study reading materials between sessions. Results were positive with individuals in both the HA and OCD group showing significant and substantial improvements across all MDS measures from pre- to post- treatment. Reductions in disorder specific measures (SHAI and OCI) for each group also indicated significant improvement during the course of the intervention. These results are consistent with previous trials which have demonstrated large effects on HA and OCD symptoms in response to CBT (Gava et al., 2007; Olatunji et al., 2013; Thomson & Page, 2007). Thus whilst this study used online therapist consultations, the results are consistent with previous research on face-to-face CBT which demonstrated that the addition of self-study materials is an effective intervention for both OCD (Bolton et al., 2011), and HA (Tyrer et al., 2017).

The study was also interested in the impact of Covid-19 on these particular groups due to the emerging evidence of increased prevalence and distress for individuals with HA (Kibbey et al., 2020) and OCD (Davide et al., 2020). Interestingly at the start of treatment the HA group were more preoccupied by Covid-19 and more concerned about the potential for it to cause harm to themselves and others. The finding that change scores on these questions were greater for the HA group is perhaps a reflection of their greater opportunity for change (although there were some missing data). The finding that the HA group scored significantly higher on item 2 (concerned about potential harm to self from Covid-19) relative to the OCD group fits with the cognitive-behavioural understanding of the disorder in that individuals are prone to misinterpret information as evidence that they have, or are likely to develop a serious illness (Salkovskis et al., 2003).

The training workshops provided to therapists were well received and met their objectives. After completion of the workshops therapists reported that they felt more confident working with HA and OCD, and felt they prepared them well to work clinically. Therapists approved of the provision of self-study booklets and responded favourably to the regular supervision. Previous work has emphasised the importance of on-going supervision for learning and applying CBT skills (Grey et al., 2008; Mannix et al., 2006), and this highlights the importance of therapists being provided with adequate opportunities to continue to develop their skills.

Limitations

The study is not without limitations which should be acknowledged. The study was uncontrolled and the sample size, particularly for the HA group, was relatively small for parametric analysis of the data and hence special attention was given to tests of normality. It would have been preferable for the study to be conducted as a series of single-case studies, as was the original intention. However, the data provided by services was not robust enough and so the study therefore focussed on group statistical change as opposed to the level of individual change. There were some instances of missing data points, especially at post-treatment, however this was a relatively small proportion (6.67%). The more conservative strategy of last observation carried forward was employed to deal with the missing data as opposed to the multiple imputation method as it was not felt possible to assume that data missing was at random. Previous work has demonstrated that patients who disengage from IAPT services are likely to be progressing less well (Clark, 2011). The study also encountered some difficulties with questionnaire completion, particularly for the ADSM. This was due to limitations of the IAPT computer system which automatically sends outcome

measures to patients prior to their appointment. Unfortunately, only one ADSM can be assigned to the automated system and therefore we were reliant on therapists completing additional measures during the session. As a result, the secondary ADSM measure (either SHAI or OCI) was sometimes missed at either pre- or post-treatment contributing to the small samples for comparison. It should also be noted that the sample lacked diversity with most individuals in both groups identifying as White British (HA=75%, OCD=85%), however this was generally reflective of the demographics in the areas where data was collected.

Clinical Implications

The findings from the study provide support for the effectiveness of the online delivery of treatment with the inclusion of additional self-study booklets. This is important as whilst there is currently a trend towards resuming face-to-face therapy, it is likely that there will continue to be a blend of consultation mediums used by services.

Future Research

Whilst this study was designed to evaluate the effectiveness of online CBT with self-study booklets it would be beneficial to examine how these materials could be incorporated into face-to-face therapy now that there is some relaxation to the lockdown measures. A comparison study of face-to-face therapy with either the inclusion or exclusion of the booklets would be able to provide this.

Although efforts were made to obtain feedback on the booklets from experts by experience, unfortunately it was not possible to gain feedback from participants in the study. Any future studies using this approach should aim to obtain patient feedback to gauge

acceptability of the treatment approach and the usefulness of the booklet content. Additionally, with regards to the Covid scale it would be beneficial to conduct a comparison with healthy controls to see if, and how, the findings differ. For example, given how prevalent Covid-19 has been within the news it is possible that the levels of preoccupation are similar across the general population.

On the basis of the study's results, in that on the majority of measures there were no exceptionally large differences in terms of outcomes, future studies could potentially explore the application of a transdiagnostic approach, as has been proposed for MUS (Salkovskis et al., 2016). Some of the materials which target the transdiagnostic processes which maintain both disorders could be combined. This could include elements focussed on difficulties obtaining certainty and the role of safety seeking behaviours, particularly, reassurance seeking, avoidance, and checking, which are shared across both HA and OCD. This would require careful consideration to ensure that it would not be at the cost of cognitive specificity, for example, the greater concern of individuals with OCD regarding their sense of responsibility to prevent harm coming to others. As with all interventions, it would be vital to ensure that any approach began with a thorough assessment and individual formulation which would allow the patient and therapist to form a shared understanding of the problem. From there a modular approach, similar to the structure of the self-study booklets, could be beneficial as it would allow therapy to be individualised to the patient. The content could be used flexibly such that components which do not fit with the individual's formulation would not have to be used. A point of caution though, given some of the results, particularly related to concerns regarding Covid-19 appear specific to the HA group, it may not be appropriate to adopt such an approach whilst Covid-19 remains prevalent.

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Executive Summary

Background: The Covid-19 pandemic has had a significant global impact and there are concerns regarding the potential effects on the population's mental health. Given the high levels of uncertainty that people have had to live with it is unsurprising that there has been an increase in worries related to cleanliness / contamination and the possibility of falling ill. This is particularly the case for individual's experiencing Health Anxiety (HA) and Obsessive Compulsive Disorder (OCD). During this time there has also been a significant change to the way that traditional psychological therapies have been delivered, with the majority of services delivering therapy remotely, either through telephone or video consultations. The treatment with the strongest evidence base for both HA and OCD is Cognitive Behavioural Therapy (CBT). The treatment for both HA and OCD normally requires the use of behavioural experiments to test out a patient's beliefs about their actions e.g. checking, avoiding things etc with the support of their therapist. However, the opportunity for such experiments during therapy was severely limited once lockdown was introduced. It was therefore suggested that increasing the cognitive and self-help elements of therapy, through the provision of self-study booklets and encouragement of self-directed behavioural experiments might be effective. Previous studies on panic disorder, OCD and HA have found a combination of face-to-face CBT sessions with the addition of self-study booklets to be effective. It is important to know if a blend of video consultations and self-study booklets would be effective.

The present study therefore aimed to find out how well CBT for HA and OCD, delivered through a combination of video consultations and additional self-study booklets, performed at

helping to reduce HA and OCD symptoms in patients. The study also wanted to assess the helpfulness of training workshops that were provided to therapists.

Method: The study involved therapists from five Increasing Access to Psychological Therapies (IAPT) services and involved a number of stages. The first stage was to develop the self-study booklets to be provided to patients. The second stage was to invite therapists to three online training workshops. During the workshops therapists were given a refresher course on the standard CBT treatment for HA and OCD. They were also provided with strategies for adapting their therapy for remote delivery and introduced to the content of the booklets. Once this was complete the final stage was for patients from the routine waitlist to be assigned to the therapists' caseload for treatment. Monthly specialist supervision was offered to all therapists involved for the duration of the study.

At the start of treatment patients were asked to complete a number of self-report questionnaires rating their anxiety, depression, adjustment, HA and OCD symptoms. They were also asked to complete a short questionnaire about how much their thoughts had been focussed on Covid-19. At each of their treatment sessions they repeated the anxiety, depression, and adjustment measure, as well as either the HA or OCD measure depending on their main presenting problem. At the end of treatment all of the self-report questionnaires were completed again. Completion of both the HA and OCD measures, irrespective of diagnosis, allowed for a comparison between the groups to see if they were impacted differently.

Results: The study recruited 33 patients; 13 had a primary diagnosis of HA, and 20 had a primary diagnosis of OCD. Before starting treatment there were no differences between

groups on baseline measures with patients scoring at high levels of anxiety and depression, and low adjustment. At pre-treatment people in the HA group had higher scores on one of the Covid scale items, “I have worried about the potential harm Covid-19 could cause me”, than the OCD group. The groups did not significantly differ on the remaining two items (“I have been preoccupied with thoughts about Covid-19” and “I have worried about the potential harm Covid-19 could cause other people”) with both groups scoring similarly high.

Overall people in both the HA and OCD groups showed substantial and significant improvement on measures of anxiety, depression, and adjustment over the course of treatment. For people with HA their symptoms reduced significantly after completing treatment with similar reductions in symptoms also being seen for the OCD group. Concerns about Covid-19 reduced for both groups over the course of treatment. The HA initially had higher scores than the OCD group, however both groups ended up at similar levels.

The training workshops were well received by therapist who after attending felt more confident about engaging people with HA and OCD with online treatment. Therapists also felt more knowledgeable about each of the disorders and believed the workshops had prepared them well for their direct work with patients. Therapists rated both the provision of the self-study booklets and the regular supervision sessions as very helpful.

Conclusions: The results of the study are consistent with the online delivery of CBT for HA and OCD with the inclusion of additional self-study booklets being effective. In future it will be important to directly compare the use of booklets with face-to-face therapy to ascertain its effectiveness.

Connecting Narrative

Prior to starting the doctorate I had relatively little experience conducting clinically focussed research. This meant it was initially a daunting task, however I was very keen to develop my knowledge and skills. Throughout the process, from generating ideas through to implementing projects, I was grateful for the support and expertise of my supervisors and I deliberately chose supervisors with strong research backgrounds from whom I could learn. The process was additionally complicated by the fact that the world was struck by the Covid-19 pandemic which had far reaching consequences and had a significant impact on my research, particularly the Theoretically Driven Research Project (TDRP).

TDRP: Having always been interested in the treatment of Obsessive Compulsive Disorder (OCD) this was an area I was keen to explore for my TDRP and through discussion with Prof. Paul Salkovskis we identified an appropriate research question based on patients responses to behavioural experiments during therapy. However, as a result of the pandemic, prior to submitting the study protocol for ethical review it became apparent that the project would no longer be feasible as it relied on individuals receiving face to face therapy, which had all ceased. It was therefore necessary to devise a completely new project which would be achievable in the context of the pandemic. The new study focussed on evaluating how services were adapting their treatment of specific disorders, OCD and Health Anxiety (HA), to online platforms and whether incorporating additional self-study booklets would be beneficial to treatment outcomes. Whilst having to start again was difficult, and resulted in me falling behind on deadlines, it was good to know that the project was clinically relevant

and could be of real benefit to the services involved. The fact that five separate services signed up to the project illustrated that this was an important area to address, however it was a challenge to navigate the many different processes and departments across the different Trusts. The fact that all meetings were required to take place remotely was also difficult and at times required additional effort to maintain and nurture working relationships with those involved. The process of data collection was relatively straightforward with the implementation of robust procedures to ensure that we followed information governance policies. The only negative of this was that I was very much reliant on others sending through the anonymous data and that this was not always as high a priority for others as it was to me. Time constraints towards the end of the project also meant that some outstanding cases who were yet to complete treatment were unable to be included in the final data analysis as I had to draw a line under data collection to complete my thesis. Positively, the study was being followed up by a fellow trainee who would see it through to completion.

Service Improvement Project (SIP): The idea for my SIP came through discussion with a lecturer, Dr Bryony Sheaves, who spoke about sleep and the evidence base for Cognitive Behavioural Therapy for Insomnia (CBTi). Having previously worked in Child and Adolescent Mental Health services (CAMHS) I was curious to know about the effectiveness of the treatment in adolescents. When I spoke with Dr Sheaves after the lecture it became apparent that the evidence was quite sparse. This discussion in turn led to a collaboration with Dr Jessica Bird who had more experience working with adolescents and established links with the local inpatient unit. Due to the diligent work of staff on the unit there was a wealth of service held data, specifically including an insomnia measure, which we sought approval to access for the project. Intuitively sleep is such an important factor in individuals lives, we are all aware of how a poor night's sleep impacts us the following day, so I was

grateful for the opportunity to explore this issue in a particularly vulnerable population who until this point had been largely underrepresented in the literature.

Critical Review of the Literature: The process of developing an appropriate research question to address was quite the balancing act to ensure that there were enough papers for a thorough review, but that it was not too many as to make it unmanageable. The original idea built on the work of my SIP in terms of considering the evidence base for CBTi in adolescents. Due to the various delays in my research, I started this project later than initially anticipated, by which point a very similar review had already been published. The decision was therefore taken to also look at the impact of CBTi on co-occurring psychiatric symptoms, as in the adult literature there was growing evidence that treating insomnia could also improve a range of mental health symptoms. Whilst there is a wealth of published material regarding how to conduct systematic reviews, the fact that my review included both controlled and uncontrolled studies meant finding an appropriate tool to use for quality appraisal was quite a challenge with multiple options available. Regular discussions with my supervisors helped me to stay on track and to ensure that the research questions were held in mind at each stage of the process.

Overall, the process of completing research has been both challenging and rewarding, at times feeling akin to a juggling act. I feel that I have developed many skills which will stand me in good stead for qualified life and I will actively seek out opportunities to engage in clinical research in future.

Acknowledgments

There are so many people to whom I owe a debt of gratitude for helping me through this process. I would like to thank my main research project supervisors, Prof. Paul Salkovskis and Dr Victoria Bream for their unfailing support and encouragement, especially during the times when things were not looking so rosy. You always had faith that I would get through it, and thankfully it looks like you were right. I am also incredibly grateful to Dr Bryony Sheaves and Dr Jessica Bird for all their support with both my service improvement project and my systematic review. They both played a significant role in my development as a researcher and have both been so incredibly generous with their time and expertise. Special thanks also to Myra Cooper and Louise Johns for their continued support and encouragement throughout my time on the course.

To all the services, both staff and patients, who have played a role in my research I will be forever grateful. This research simply would not have been possible without you. I hope my efforts to publish the results of this work goes some way to say thank you.

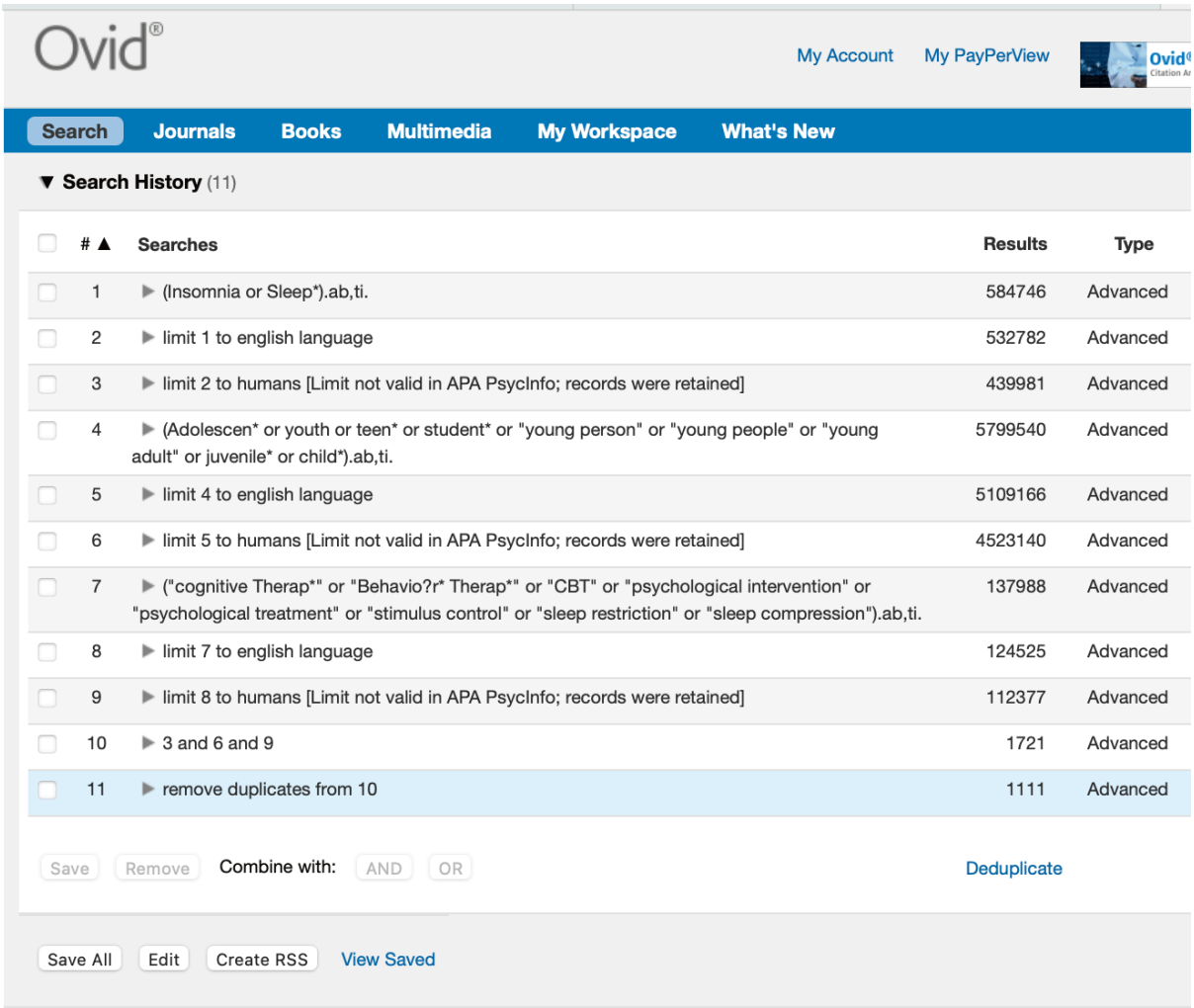
To my fellow 'Covid-Cohort', this may not have been the training experience we were expecting but you have made it special, and I could not have asked for a better group of people to share the journey with.

Lastly, but by no means least, I would like to thank my family and friends for standing by me through the ups and downs of training. Fritz, you have been my rock and without your support with the children (and the cooking) I think I'd still be writing this up. To my children, Grace and Oliver, you never fail to make me smile and spending time with you has always helped to keep things in perspective. Zelda you are the best study buddy and I have appreciated your company during the marathon hours at the computer. A special thanks also to Christina for helping me keep my sanity (and fitness), by making sure we still went running with the dogs for some much-needed fresh air.

Appendices

Appendix 1a: Ovid Search strategy

Search strategy used on Ovid to search PsychINFO, Medline and EMBASE databases.



Ovid®

My Account | My PayPerView

Search | Journals | Books | Multimedia | My Workspace | What's New

▼ Search History (11)

# ▲	Searches	Results	Type
1	▶ (Insomnia or Sleep*).ab,ti.	584746	Advanced
2	▶ limit 1 to english language	532782	Advanced
3	▶ limit 2 to humans [Limit not valid in APA PsycInfo; records were retained]	439981	Advanced
4	▶ (Adolescen* or youth or teen* or student* or "young person" or "young people" or "young adult" or juvenile* or child*).ab,ti.	5799540	Advanced
5	▶ limit 4 to english language	5109166	Advanced
6	▶ limit 5 to humans [Limit not valid in APA PsycInfo; records were retained]	4523140	Advanced
7	▶ ("cognitive Therap*" or "Behavio?r* Therap*" or "CBT" or "psychological intervention" or "psychological treatment" or "stimulus control" or "sleep restriction" or "sleep compression").ab,ti.	137988	Advanced
8	▶ limit 7 to english language	124525	Advanced
9	▶ limit 8 to humans [Limit not valid in APA PsycInfo; records were retained]	112377	Advanced
10	▶ 3 and 6 and 9	1721	Advanced
11	▶ remove duplicates from 10	1111	Advanced

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Appendix 1b: Prisma Checklist

Section/topic	#	*Checklist item*	*Reported on page #*
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	8
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	9
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	13
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	13
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	14, 15
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	13, 14
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	118
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	15
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	17

Section/topic	#	*Checklist item*	*Reported on page #*
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	122
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	17
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n/a
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	n/a
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	17
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n/a
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	16
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	19, 20
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome-level assessment (see Item 12).	21-23
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.	31-34
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n/a
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	21
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n/a

Section/topic	#	*Checklist item*	*Reported on page #*
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., health care providers, users, and policy makers).	37
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).	41
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	42
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	n/a

Appendix 1c: Data Extraction Form

Reference citation (Title / Author / year)		Location in text / source
METHOD		
Aim of the study		
Study Design		
Inclusion / Exclusion criteria		
Recruitment procedure		
PARTICIPANTS		
Population / setting		
Total N		
Age		
Sex		
Race / Ethnicity		
Medication status (specific to sleep)		
Comorbidities		
INTERVENTIONS		
Intervention groups (and n)		
CBT-I intervention: *Components (sufficient for replication?)*		
Who delivered intervention?		
Number of sessions/duration • Sessions received? • Tx window / how many sessions part of intervention package? • How many sessions deemed full dose?		
Inclusion of any adaptations specific to adolescent population?		
Control/Comparison (if present) Intervention:		
Who delivered intervention? • *Consider if part of research trial or routine clinical practice*		
Content		
Number of sessions/duration		
SLEEP OUTCOMES		
Outcome name		
Is outcome / tool validated?	☐ Yes ☐ No ☐ Unclear	
Is outcome / tool validated for use with adolescents?	☐ Yes ☐ No ☐ Unclear	

Time points reported		
MENTAL HEALTH OUTCOMES		
Outcome name		
Is outcome / tool validated?	☐ Yes ☐ No ☐ Unclear	
Is outcome / tool validated for use with adolescents?	☐ Yes ☐ No ☐ Unclear	
Time points reported		
OTHER RELEVANT OUTCOMES e.g. acceptability		
Outcome name		
Is outcome / tool validated?	☐ Yes ☐ No ☐ Unclear	
Time points reported		
RESULTS		
Missing participants		
Sleep Outcomes: Summary key results: M & SD continuous data, p values, effect sizes, CIs		
Mental Health Outcomes: Summary key results: M & SD continuous data, p values, effect sizes, Cis		
Other Outcomes: Summary key results: M & SD continuous data, p values, effect sizes, Cis		
OTHER		
Key conclusions of study		
Strengths		
Limitations		
Correspondence required for further study information? (*from who / what / when)*		

Completed by:	
Date:	

Form adapted from the Data collection form for intervention reviews: RCTs and non-RCTs (Cochrane Collaboration, 2014).

Appendix 1e: Instructions for authors, Psychological Medicine

Submission of manuscripts: Manuscripts should be submitted online via our manuscript submission and tracking site, http://www.editorialmanager.com/psm/.

Generally papers should not have text more than 4500 words in length (excluding abstract, tables/figures and references) and should not have more than a combined total of 5 tables and/or figures. Papers shorter than these limits are encouraged. For papers of unusual importance the editors may waive these requirements. Articles require a structured abstract of no more than 250 words including the headings: Background; Methods; Results; Conclusions. Review Articles require an unstructured abstract of no more than 250 words. The name of an author to whom correspondence should be sent must be indicated and a full postal address given in the footnote. Any acknowledgements should be placed at the end of the text (before the References section).

Contributors should also note the following:

1. S.I. units should be used throughout in text, figures and tables.
2. Authors should spell out in full any abbreviations used in their manuscripts.
3. Foreign quotations and phrases should be followed by a translation.
4. If necessary, guidelines for statistical presentation may be found in: **Altman DG., Gore SM, Gardner, MJ. Pocock SJ.** (1983). Statistical guidelines for contributors to medical journals. *British Medical Journal* **286**, 1489-1493.

References

The guidelines set forth in the *Publication Manual of the American Psychological Association* (6th ed.) should be used in the text and a complete list of References cited given at the end of the article.

Figures and tables

Only essential figures and tables should be included and should be provided in black and white except in exceptional circumstances, eg PET scan images etc.

All wording within submitted figures must be Arial, point size 8.

Please ensure that your figures are saved at final publication size (please see the latest issue of the journal for column widths) and are in our recommended file formats.

Online Supplementary Material: Note that supplementary material is published 'as is', with no further production performed.

Required Statements

Acknowledgements

You may acknowledge individuals or organisations that provided advice, support (non-financial). Formal financial support and funding should be listed in the following section.

Financial support

Authors must include a Funding Statement in their manuscript. Within this statement please provide details of the sources of financial support for all authors, including grant numbers. Where no specific funding has been provided for research, you should include the following statement:

"Funding Statement: This research received no specific grant from any funding agency, commercial or not-for-profit sectors."

Conflicts of Interest

Authors are required to include a Conflicts of Interest declaration in their manuscript. Conflicts of Interest are situations that could be perceived to exert an undue influence on an author's presentation of their work. If the manuscript has multiple authors, the author submitting the manuscript must include Conflicts of Interest declarations relevant to all contributing authors. If no Conflicts of Interest exist, your declaration should state "Conflicts of Interest: None".

Ethical standards

Where research involves human and/or animal experimentation, the following statements should be included (as applicable): "*The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008*." and "*The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional guides on the care and use of laboratory animals*."

Appendix 2a: Confirmation of R&D and GDPR approval

R&D Approval

Laura,

I am pleased to confirm this proposal has been approved and has been added to our local audit plan. It is logged under audit number 69. Please also see suggestion below about linking in with Vaughan Thomas and their project. The Modern Matron there is Carol Gee.

Kind Regards,
Tracey

Quality and Clinical Standards Facilitator
Oxford Health NHS Foundation Trust
AG Palmer House, Response Building I Littlemore Mental Health Centre I Littlemore I Oxford I OX4 4SU
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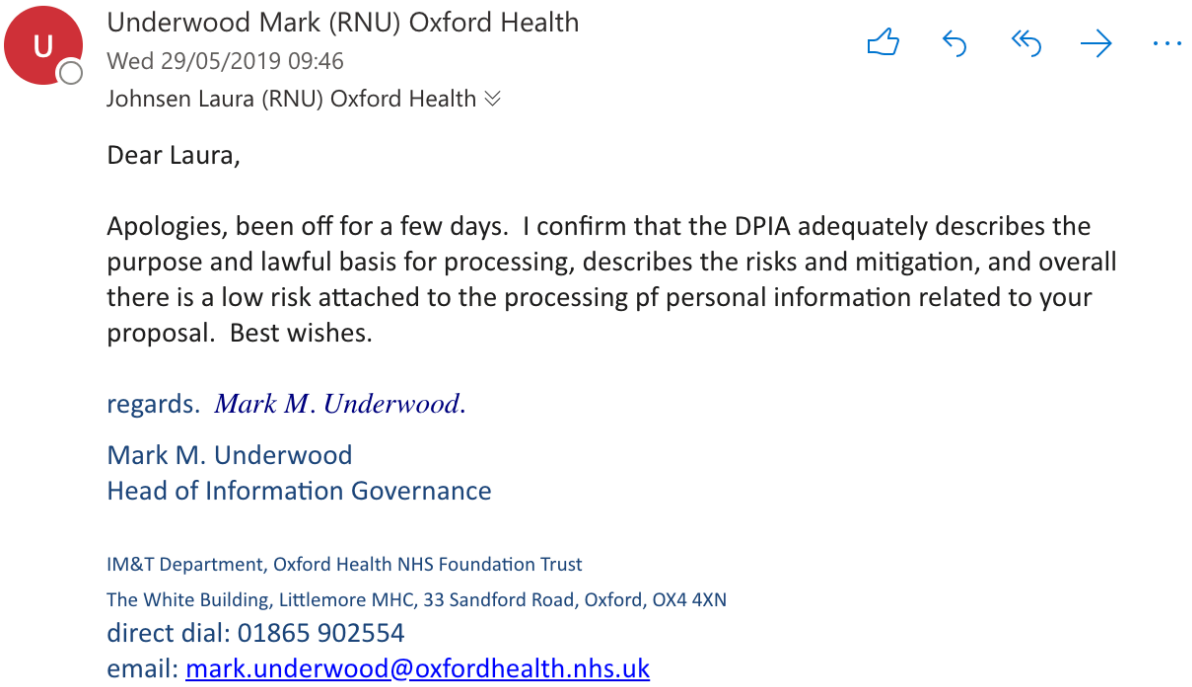
Email: tracey.cooke@oxfordhealth.nhs.uk

GDPR Approval



Underwood Mark (RNU) Oxford Health
Wed 29/05/2019 09:46
Johnsen Laura (RNU) Oxford Health

Dear Laura,

Apologies, been off for a few days. I confirm that the DPIA adequately describes the purpose and lawful basis for processing, describes the risks and mitigation, and overall there is a low risk attached to the processing pf personal information related to your proposal. Best wishes.

regards. *Mark M. Underwood.*

Mark M. Underwood
Head of Information Governance

IM&T Department, Oxford Health NHS Foundation Trust
The White Building, Littlemore MHC, 33 Sandford Road, Oxford, OX4 4XN
direct dial: 01865 902554
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Appendix 2b: Coding Guidelines for presenting problems / reason for admission

- Categories of problem descriptors are provided in the spreadsheet with clear headings. Where possible selections should be restricted to the headings provided.

- Primary source of presenting problem/reason for referral should be obtained from CareNotes. If a diagnosis was recorded, related to the relevant admission or indicating a lifelong disorder, it will be recorded in the first and second column of the spreadsheet (Dx1 & Dx2). Use the list below to identify the relevant diagnosis and select the relevant category on the spreadsheet.

  1=Anxiety
  2=Depression
  3=Eating disorder
  4=PTSD
  5=OCD
  6=ASD
  7=ADHD
  8=Disturbance of activity & attention
  9=Hyperkinetic conduct disorder
  10=Unspecified nonorganic psychosis
  11=Bipolar affective disorder, unspecified
  12=Mixed anxiety & depressive disorder
  13=Acute stress reaction
  14=panic disorder
  15=Adjustment disorders
  16=Unstable Personality Disorder
  17=Other gender identity disorder
  18=Asperger's syndrome
  19=Personal history of Self harm
  20=Schizoaffective disorder
  21=Probs related to alleged physical abuse of child
  22=Mental & behave disorder due to cannabinoids, psychotic disorder
  23=Reactive attachment disorder of childhood

- If any lifelong disorders (ASD, ADHD) are identified in referral information, but have not been recorded on CareNotes, these should be recorded in the relevant column on the spreadsheet.

- Individuals can have more than one problem descriptor selected, however those selected, beyond lifelong disorders e.g. ASD, ADHD, should be relevant to the 'reason for admission.' For example, if a family are unable to cope with the young person at home, this is not necessarily a 'family relationship issue' but is likely a result of the severity of their mental health symptoms, such as, severe OCD involving multiple rituals which would be indicated in the reason for referral.

- Single 'non-specific' symptoms which could be relevant to a number of different disorders should **not** be categorised e.g. poor concentration or restlessness is not enough evidence of

ADHD. Similarly, a simple statement of 'weight loss' or 'reduced appetite'; unless in conjunction with a CareNotes diagnosis of an eating disorder or additional reference to impairment of physical health, should not be categorised.

- The category of 'Suicide Attempt' should only be used when a clear attempt has been made e.g. specific reference to an overdose or use of ligature. Suicidal ideation alone should not be recorded in this category.

- Suicidal ideation should be recorded under the category of 'Emotion dysregulation / Self-harm.'

- 'Urge to self-harm' is not sufficient to warrant being categorised. Statements should be more explicit and indicate actual self-harm e.g. 'self-harm,' 'regular self-harm,' 'serious self-harm' etc.

- A diagnosis of Emotional Unstable Personality Disorder (EUPD) should be recorded under the category of 'Emotion dysregulation / Self-harm.'

- Specific reference to sleep difficulties should be categorised under 'sleep problems.'

- There is no upper limit to the number of problem descriptors which can be selected.

- Table A1 below can be referred to for guidance purposes:

***Table 2b*:** Example descriptors and coding guidelines.

CareNotes Diagnosis:	**Reason for referral:**	**Spreadsheet Categories:**
None	Weight stabilisation required, impairment in physical health	Eating Disorder
Depression	Emotional instability, suicidal ideation & significant self-harm	Anxiety / Depression Emotion dysregulation / Self-harm
OCD	Rituals impacting on eating / drinking and school attendance. Parents exhausted, unable to cope	OCD
Eating Disorder	Significant weight loss, severe anorexic cognitions. Low mood. Diagnosis of ASD	Eating Disorder Anxiety / Depression ASD
Depression	Severe anxiety and depression, significant overdose.	Anxiety / Depression Suicide attempt

Appendix 2c: Table of tests of normality, skewness and kurtosis

Table 2c: *Tests of normality (Shapiro-Wilk), skewness and kurtosis*

Variable	N	Pro-rated	Mean (SD)	SW statistic	df	p	Skewness	z score	Kurtosis	z score
Sleep	100	5	16.57 (8.31)	0.97	100	0.011	0.19	0.81	-0.94	1.97
Anxiety	99	8	51.43 (25.09)	0.98	99	0.21	0.14	0.57	-0.75	1.55
Depression	99	2	17.08 (7.46)	0.97	99	0.012	-0.31	1.28	-0.76	1.59
Conduct	98		2.42 (2.13)	0.90	98	<0.001	0.99	4.07	0.60	1.23
Hyperactivity	99	1	5.20 (2.49)	0.97	99	0.010	-0.30	-1.22	-0.42	-0.87
Self-harm	97		1.76 (1.55)	0.84	97	<0.001	0.13	0.53	-1.50	-3.09
Educational abilities	97		2.42 (1.36)	0.88	97	<0.001	-0.46	-1.86	-0.95	-1.95
Psychotic experiences	96		1.41 (1.49)	0.81	96	<0.001	0.56	2.26	-1.19	-2.43
Borderline Personality Traits	14		74.5 (21.34)	0.96	12	0.66	-0.15	-0.26	-1.11	-0.97
Length of admission	100		81.32 (53.45)	0.90	100	0.000	1.32	5.49	2.47	5.17

Note: Missing items were prorated if less than 20%.

Appendix 2d: Participant ethnicity data

Table C1: Participant ethnicity as recorded on patient electronic record

Ethnicity	***n***	**%**
White British	81	81
Asian / Asian British	6	6
Mixed Black & White (African / Caribbean)	3	3
Mixed (Any other background)	2	2
Black / Black British	2	2
Other ethnic group	2	2
White-Gypsy/Romany	1	1
Missing	3	3

Appendix 2e: Correlation matrix

Table 2e**:** *Correlation matrix of sleep and mental health variables*

	Sleep	Depression	Anxiety	Conduct	Hyperactivity	Self-Harm	Educational Ability
Sleep	--						
Depression	-0.56**	--					
Anxiety	-0.51**	0.77**	--				
Conduct	-0.30**	0.28**	0.19	--			
Hyperactivity	-0.43**	0.55**	0.49**	0.48**	--		
Self-Harm	-0.49**	0.64**	0.47**	0.30**	0.41**	--	
Educational Ability	-0.36**	0.47**	0.43**	-0.05	0.23*	0.20	--
Psychotic Experiences	-0.32**	0.36**	0.43**	0.17	0.35**	0.29**	0.07

Note:
**. Correlation significant at the 0.01 level (2-tailed); *. Correlation significant at the 0.05 level (2-tailed)

Appendix 2f: Hochberg step-up adjustment

Hochberg Step-Up Adjustment

With regards to the statistical analysis undertaken, the study adopted a conservative approach by presenting both the uncorrected and corrected p values, employing the Hochberg step-up method to control familywise error rate. This is despite some arguments against adjusting for multiple comparisons, highlighting a weakness in this approach whereby the interpretation of a finding is dependent on the number of tests conducted (Perneger, 1998).

The Hochberg adjustment is a method for controlling familywise error rate when conducting multiple comparisons. It is a step-up method which computes significance levels based on the P value rank. Unadjusted p-values are ranked from largest to smallest and adjusted according to the formula $\alpha' = \alpha / (k - i + 1)$.

$\alpha = 0.05$
K = 8 (Total number of tests)
i = rank

Comparisons start with the least significant (largest) p-value, and each p-value is compared to the adjusted value until you reach a p-value that is lower ($p < \alpha'$) after which the adjustment stops and all subsequent hypotheses are deemed to be rejected at α level see Table D1.

Table E1: Table showing Hochberg step-up procedure

Outcome Variable	***p* value**	**Rank**	**Adjusted α^a**	**Null Hypothesis Rejected? (N/Y)**
Admission length	0.60	1	0.0063	N
Conduct problems	0.0031	2	0.0071	Y
Psychotic experiences	0.0016	3	0.0083	Y
Education	0.00034	4	0.010	Y
Hyperactivity	0.0000102	5	0.013	Y
Self-harm	0.0000004	6	0.017	Y
Anxiety	<0.001	7	0.025	Y
Depression	<0.001	8	0.050	

Appendix 2g: Focus group interview questions

Clinician Focus Group - Questions

Broad aim: What are clinicians' views on how sleep impacts the unit?

Reminder: There are no right or wrong answers. It's ok if people have different ideas, we're interested to hear many perspectives…etc.

All Staff:

1) From your own observations what are the young people's experience of sleep on the unit? (5 mins)

Next we're going to think about how the environment of the unit can either help / hinder sleep. We'll start with some of the potential challenges….

2) Is there anything about the unit that gets in the way of sleep? (5 mins)

3) Is there anything on the unit that you feel helps with sleep? (5 mins)

4) What usually happens on the unit if a YP has a problem with their sleep? (5 mins)

5) What do you think it would be like on the unit if the young people were sleeping better? (5 mins)
    - Benefits of this….?

Prompts to consider how to include multiple perspectives:
- Do you think those views are shared with everyone on the unit?
- Are there any different opinions?
- What do other people think?

Additional Information and questions for individual interviews only:

Best practice treatment guidelines would recommend offering a course of CBT as the first line intervention for insomnia, however this is rarely available across mental health settings irrespective of the population.

Given the best practice guidelines I would like you to consider how this could potentially be implemented on the unit. For the purposes of these final few questions please imagine that we are in an ideal world and that there are no issues with regards to funding, resources etc or any of the other potential barriers.

6) What would be your thoughts on a CBT for insomnia intervention being offered on the unit over a brief 3 – 4 week period?
7) Are there any adaptations that you think would need to be included for it to be delivered on the unit?
8) Who do you think would be best placed to deliver such an intervention?

Appendix 2h: SIP information and FAQ

FOCUS GROUP INFORMATION SHEET

Our project is interested in learning about the experience of sleep for young people on the Highfield Unit.

We would like to learn more about staff views on the impact of sleep on the unit and how it is currently managed by asking some questions about sleep.

Key Points:

- Taking part in the focus group is entirely voluntary and you only have to contribute is you feel comfortable to do so.
- We will not use any personal information about staff members who take part.
- We plan to audio-record the discussion in addition to taking written notes. The audio recording will be transcribed (by researcher) and then subsequently deleted.

What will happen to the results of this project?

- We plan to write up the findings of our project for publication and may include direct quotations from the focus group, however these will be kept completely anonymous.
- We will share our findings with the staff team once the project is complete

Who is organising the project?
The project is being organised in collaboration with the University of Oxford and Oxford Health NHS Foundation Trust.

Who has reviewed the project?
The project has been reviewed and approved by the University of Oxford (Clinical Psychology Training Course) and Oxford Health Research and Development team.

If you would like any further information, please contact:
Laura Johnsen (Trainee Clinical Psychologist): laura.johnsen@hmc.ox.ac.uk

Thank you for reading this information.
Please turn over for further information and our 'Frequently Asked Questions'

FOCUS GROUP Frequently Asked Questions

What information will you hold about me?

- None. We will not keep any personal information about staff members taking part in the focus group. We will only record the total number of staff members who participated and their gender.

Can I change my mind about taking part?

- Unfortunately, it will not be possible to withdraw at a later stage as no personal information is recorded and quotes used will be anonymous. Therefore, we will not be able to identify individual participants once transcription has occurred.

How will you manage the data?

- We will use an Encrypted Dictaphone for the audio-recording of the focus group.
- Once transcribed the data will be stored on a Trust encrypted memory stick and will be backed up on a University of Oxford service using a secure VPN network connection.

What will happen to the results of this project?

- The project will be written up to contribute to my thesis for a Doctorate in Clinical Psychology
- We plan to write up the findings of our project for publication and may include direct quotations from the focus group, however these will be kept completely anonymous.
- We will share our findings with the staff team once the project is complete.

If you would like any further information, please contact:

Laura Johnsen (Trainee Clinical Psychologist): laura.johnsen@hmc.ox.ac.uk

Project Supervisors

University of Oxford Internal Supervisor:
Professor Paul Salkovskis: paul.salkovskis@hmc.ox.ac.uk

University of Oxford / Oxford Health Foundation Trust External Supervisors:
Bryony Sheaves (Clinical Psychologist): bryony.sheaves@psych.ox.ac.uk
Jesscia Bird (Clinical Psychologist): Jessica.bird@psych.ox.ac.uk

Appendix 2i: Code Book

Sleep on an Inpatient Unit
Clinician observations of sleep presentations. General factors specifically related to the unit environment which impact on sleep / wakefulness. Can affect either the duration or quality of sleep.

- **Insomnia and co-occurring sleep problems:** Different sleep presentations observed by clinicians
- **The ward environment:** Factors relating to the specific unit environment which can have a detrimental impact on sleep including impact of regular night-time observations / safety checks.
- **Psychological factors:** How mental health symptoms can negatively influence natural sleep processes
- **Psychiatric Medication:** Factors relating to medical treatment which could negatively impact on sleep e.g. medication, assessment etc.
- **Factors Facilitating Sleep**: Specific factors relating to the unit environment which help to promote positive sleep experiences.

Impact of Sleep Disruption:
Observations from clinicians on how sleep problems effect the young people with regards to mental health, engagement and general functioning.

- **Reciprocal relationship with mental health:** The effect that is witnessed by staff on young people's psychological well-being – change in mental health symptoms etc. Sleep as both a contributory and maintaining factor in mental health symptoms.
- **Interference with therapeutic opportunities:** What has been noticed in relation to the young people's ability to engage in education, therapy, with staff etc.

What can we do?:
What are the different ways that the unit responds to sleep difficulties in the young people on the unit.

- **Keeping sleep in mind:** Interventions from nursing staff to help support positive sleep experience. Emphasis of the thoughtful / considerate / caring approach of staff.
- **Sleep Hygiene:** References to sleep hygiene and changes to environment to help facilitate sleep.
- **Medical response:** Treatment approaches which relate to medication, or referral for specific treatment to target sleep.

Psychological Interventions: Specific psychological interventions (CBT) to address sleep difficulties. Also includes what adaptations would be required in order to implement CBT and some potential barriers.

Appendix 2j: Supplementary Results – Qualitative Analysis

Sleep on an inpatient ward

Clinicians identified a variety of factors which influenced, both positively and negatively, sleep on the ward (see Table 2i1). These were represented by five subthemes: insomnia and co-occurring sleep problems, transition to a ward environment, psychological factors, psychiatric medication and factors facilitating sleep.

Insomnia & co-occurring sleep problems

Clinicians observed several different sleep presentations amongst the patients on the ward. The level of sleep disturbance for some patients was described as *"shocking"*, and, in some young people, sleep time was *"as little as 4 hours per night" (P9).* Other accounts highlighted daytime sleeping as prevalent, with patients *"who will be falling asleep in the main lounge when it's actually quite busy*" (P1). However, sleep on the ward was said to differ according to the pre-existing quality of patients' sleep, which could vary widely. Indeed, clinicians made several references to patients arriving with longstanding sleep problems, and that these difficulties were often *"not made better by coming into hospital."* (P9).

Transition to a ward environment

There was general acknowledgement that *"being in, you know, quite an unnatural environment"* (P4) on the ward could impact young people's sleep, but that there was a lot of individual variability. This adjustment to a new environment, away from home, was more challenging for some patient groups than others, for example those with autism. Clinicians were conscious that sleep could be affected by a variety of environmental factors on the ward (e.g. noise, lighting, and heating) that were often out of their control. Clinicians also recognised that other patients in distress could disturb people's sleep: *"other young people who are distressed, self-harming, screaming - that can happen in the night, that's obviously going to interfere in other young people's sleep"* (P10). All clinicians shared the view that nightly safety checks, which occurred at least every 30 minutes, disrupted patients sleep. The checks were thought to be particularly disruptive for patients *"if their sleep is poor to start off with."* (P7). There was a sense of inevitability that the checks would have a negative impact on sleep: *"if they're not awake when you go in, they will wake up"* (P8). However, there was uncertainty over exactly how patients experience the checks as there could be discrepancies between patient reports and clinicians observations: *"some young people will complain of a really poor night's sleep, but you haven't seen them look like they're awake"* (P3). Whilst nursing staff had not expressly sought the views of patients regarding the checks, they assumed "*they must feel really bad"* (P3). One clinician commented that *"patients complain about it more often"* in reference to a change in the observation policy from every hour to every half-hour at night.

Psychological factors

Within the accounts there was reference to psychological factors which would likely disrupt natural sleep processes. Sleep was described as being used as an *"avoidance technique"* at times, to avoid confronting issues patients were finding difficult due to their complex mental health problems, and that some of the patients *"sleep a lot during the day"* (P1). Although not directly linked to sleep disruption in the clinicians accounts, it is well established that daytime sleeping reduces night-time sleep pressure and, so, makes it harder to sleep (Borbely, 1982). Daytime sleeping may further prevent patients from accessing important external cues (i.e.

zeitgebers), such as daylight and physical activity, that reset circadian rhythms and regulate arousal. There were also some mentions of cognitive factors that may lead to hyperarousal before bed, for example, engaging in rituals associated with OCD or autism, or ruminating on distressing thoughts which are *"coming more at night-time"* (P1).

Psychiatric medication can adversely impact sleep

Clinicians recognised that medication could adversely impact sleep *"young people on certain medication, it stimulates them, so again they find it difficult to sleep"* (P3). Clinicians also noted that some patients might be trialling a new medication on the ward which could take time to adjust to.

Factors facilitating sleep

Several factors related to the ward environment were thought to promote sleep for adolescent inpatients. There was some sense that *"people come here and their sleep improves rather than the opposite"* (P7). This was especially the case if patients were coming from an unstable home environment: *"the hope is that here feels a bit safer"* (P4). The fact that patients all have their own private bedrooms was also remarked on as a potential factor that benefited sleep, alongside 24-7 access to nursing support which could be reassuring and help to reduce hyperarousal before bedtime. There was strong agreement that the ward's routines and structures helped orientate patients to maintain a *"very basic day/night cycle"* (P4), and that although strict bedtimes were in place, these would be adjusted according to age. Seeing other young people on the ward role model good sleep practice and routines was also viewed as a positive factor, and one clincian mentioned past occasions when patients had *"actually thanking us for resetting you know, normal expectations"* about sleep (P9).

Table 2i1

Theme structure and illustrative quotes: Sleep on an inpatient ward

Sub-Theme	Illustrative Quotes
Insomnia & co-occurring sleep problems	"Especially if they have been depressed you notice that sleep can be quite problematic usually, quite a lot have initial insomnia" (P9) "We get some people who…sleep a lot during the day but they're up quite a lot during the night or they just sleep a lot in general" (P1) "We have quite a few young people who will be falling asleep in the main lounge when it's actually really busy" (P1) "Quite often young people with autism have had poor sleep for a very long time" (P3)
Transition to a ward environment	"Being in, you know, quite an unnatural environment" (P4) "Other young people who are distressed, self-harming, screaming, that can happen in the night, that's obviously going to interfere in other young people's sleep" (P10) "At night it can be quite disturbing when we're going around to do the checks" (P8) "Some young people will complain of a really poor night's sleep, but you haven't seen them look like they're awake" (P3)
Psychological Factors	"OCD is quite complex to think about at bedtime if people are carrying out rituals or have got things to do before bed." (P1) "It's coming more at night-time, it's been harder at night-time." (P1)
Psychiatric medication	"Young people on certain medication it stimulates them, so again they find it difficult to sleep" (P3)

Factors Facilitating Sleep	"I think generally people come here and their sleep improves rather than the opposite...we don't tend to get people come in and it gets worse." (P7) "Suppose we take it for granted that they do have their own rooms" (P4)

Impact of sleep disruption

Clinicians made a number of observations regarding the impact of sleep disruption on the patients. This related to both how it impacted their mental health, in addition to how it affected patients engagement and overall functioning on the ward (see Table 2i2). These were represented by two subthemes: reciprocal relationship with mental health, and interference with therapeutic opportunities.

Reciprocal relationship with mental health

Several clinicians reflected on a reciprocal relationship between sleep problems and a range of mental health difficulties, including depression, bipolar disorder, psychosis, anxiety, OCD, and eating disorders. Poor sleep was thought to maintain mental health problems, especially for conditions such as psychosis and bipolar where sleep disturbance was identified as *"one of the things that's keeping them, exacerbating their illness,"* and that as *"sleep improves, their mental state improves quite significantly."* (P7). However, the disorder itself was also thought to contribute to difficulties sleeping, for example: *"OCD is quite complex to think about at bedtime if people are carrying out rituals or have got things to do before bed"* (P1). Clinicians recognised that long-standing sleep disturbance was frequently associated with certain neurodevelopmental disorders, such as, autism and that it was *"remarkable how little sleep some people / patients actually have."* (P9).

Interfering with therapeutic support & education

There was a general view that if patients had better sleep then they could better engage with therapeutic support on the ward. Clinicians were mindful of how the ward could provide a more conducive environment for sleep, but that this was *"a frustrating time for the young person and for clinicians,"* as multiple other factors, including medication and diet etc. also have to be addressed. Whilst the more global benefits of good sleep such as better concentration were recognised, it was also hard to know if sleep was *"the only problem"* (P1) that prevented engagement with care.

Table 2i2

Theme structure and illustrative quotes: Impact of sleep disruption

Sub-Theme	Illustrative Quotes
Reciprocal relationship with mental health	"With psychosis and bipolar its really evident that as sleep improves their mental state improves quite significantly." (P7) "OCD is quite complex to think about at bedtime if people are carrying out rituals or have got things to do before bed." (P1)
Interfering with therapeutic support and education	"It can be a frustrating time for the young person and for clinicians to try to get them to such a level where they have a good sleep, good diet, and they're much more able to work with us." (P10) "Sometimes it does affect not only their ability to integrate and to relate on the unit but also to school" (P9)

What can we do?
The final theme captured the response of the ward in managing sleep problems and was represented by four subthemes: clinician's approach, sleep hygiene, medication, and psychological interventions (see Table 2i3).

Clinician's approach: keeping sleep in mind
The caring, considerate approach of the nursing staff to managing sleep problems was highlighted in all interviews. Clinicians were proactive in assessing difficulties with sleep through observations *"the first step is assessing what, what the issues are, why are they sleeping poorly, and then we'll plan from there."* (P7). It was observed how clinicians helped to prepare patients for sleep *"the nurses are very nurturing and you know have the wonderful ability of winding young people down"* (P10), whilst other clinicians shared their efforts to minimise the potential disruption from safety checks *"there's quite a lot of thought that goes around that in terms of how the nursing team will actually do that opening doors and shutting them."* (P1).

Sleep hygiene is the typical treatment approach
All clinicians came across as knowledgeable about good sleep hygiene practices *"people would try to talk with them about um sleep hygiene, preventative measures and things like that."* (P9). Clinicians described avoiding exercise and caffeine prior to bedtime and also mentioned factors such as reducing exposure to blue screens. Clinicians also related to adapting advice to the individual to ensure it met their specific needs *"we do work on sleep hygiene and what might help them to improve their sleep. We can do smaller or large depending on what they need."* (P2). It was felt by some that sleep hygiene was so comprehensively covered with patients that they could struggle to engage with it *"if I ever talk about it to the young people it's already coming out of their ears, I think they're bored of it to be honest"* - potentially indicating that sleep problems persist despite access to this type of intervention.

Medication changes or hypnotic medication
There was a strong sense that given the hospital setting, sleep disruption would often lead to a reassessment of medication *"usually the doctors tend to get involved if it's medication related… [if they are] sleeping too much or not enough then medication is altered according to that"* (P1). There was a suggestion that prescribing practices had changed over time and that it was now more common to address sleep difficulties with hypnotic medication. It was also acknowledged that in some cases, when sleep *"looked like a problem in its own right,"* then a referral to a specialist sleep clinic could also be made.

Psychological interventions: potentially helpful but a limited resource
It was recognised that psychological interventions could be a helpful approach to managing sleep difficulties *"there is CBT type programmes, sleep and Sleepio and things like that which would help"* (P9), but that there was a limit on the psychology resources available on the ward: *"I suppose CBT for sleep does happen on the rare occasion, depending on capacity"* (P10). The limits on resources, in addition to not knowing how long an admission would be, impacted on the interventions which would be delivered: *"we haven't got a huge amount of psychology time…so it's that window of opportunity"* (P10).

When asked specifically about introducing an adapted version of CBT-i to the ward, it was thought that this would be beneficial but recognised that alterations would be required to consider the wide age range and the fact that the patients *"are of varying ability."* (P9). When considering who would be best placed to deliver such an intervention, it was suggested that the

nursing team would be well placed to do so given their familiarity with the patients; however, it was also acknowledged that "*they haven't got the time."* (P10).

Table 2i3

Theme structure and illustrative quotes: What can we do?

Sub-Theme	Illustrative Quotes
Clinician's approach: keeping sleep in mind	"The first step is assessing what, what the issues are, why are they sleeping poorly, and then we'll plan from there." (P7) "The nurses are very nurturing and you know have the wonderful ability of winding young people down" (P10) "There's quite a lot of thought that goes around that in terms of how the nursing team will actually do that opening doors and shutting them." (P1)
Sleep hygiene is the typical treatment approach	"People would try to talk with them about um sleep hygiene, preventative measures and things like that." (P9) "We do work on sleep hygiene and what might help them to improve their sleep. We can do smaller or large depending on what they need." (P2)
Medication changes or hypnotic medication	"Usually the doctors tend to get involved if it's medication related…, sleeping too much or not enough then medication altered according to that, or added accorded to that." (P1) "There's been a change in practice there, I must say when I first came here we never prescribed hypnotics, never, not once" (P9)
Psychological intervention: potentially helpful but a limited resource	"There is CBT type programmes sleep and Sleepio and things like that which would help." (P9) [although not currently routinely offered] On adapting CBTi - "The children are of varying ability, we have to have ones with more pictorial things and straightforward and easy plain English." (P9)

Appendix 2k: Author Guidelines, The Journal of Child Psychology and Psychiatry

Notes for Contributors

General

Original articles

These should make an original contribution to empirical knowledge, to the heoretical understanding of the subject, or to the development of clinical research and practice. Adult data are not usually accepted for publication unless they bear directly on developmental issues in childhood and adolescence or the transition from adolescence to adulthood. Original articles should not exceed **6000 words**, including title page, abstract, references, tables, and figures; the total word count should be given on the title page of the manuscript. Limit tables and figures to 5 or fewer double-spaced manuscript pages. It is possible to submit additional tables or figures as an Appendix for an online-only version. We strongly encourage you to keep the length of the manuscript within the word limit.

Access to data and Data sharing

If the study includes original data, at least one author must confirm that he or she had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

All data must be made available on request of the editor-in-chief either before or after submission. Failure to do so before acceptance will result in rejection of the paper and after acceptance in retraction of the paper.

Ethics

Authors are reminded that the Journal adheres to the ethics of scientific publication as detailed in the ***Ethical principles of psychologists and code of conduct*** (American Psychological Association, 2010).

Conflict of interest

All submissions to JCPP require a declaration of interest from all authors.

Where there is no conflict of interest, this should also be stated.

Informed consent and ethics approval

Authors must ensure that all research meets these ethical guidelines and affirm that the research has received permission from a stated Research Ethics Committee (REC) or Institutional Review Board (IRB), including adherence to the legal requirements of the study county. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained and state the name of the REC, IRB or other body that provided ethical approval. When submitting a manuscript, the manuscript page number where these statements appear should be given.

Manuscript preparation and submission

Papers should be submitted online. For detailed instructions please go to: **http://mc.manuscriptcentral.com/jcpp_journal**. Previous users can check for an

existing account. New users should create a new account. Help with submitting online can be obtained from the Editorial Office at **publications@acamh.org**

1. The manuscript should be double spaced throughout, including references and tables. Pages should be numbered consecutively. The preferred file formats are MS Word or WordPerfect, and should be PC compatible. If using other packages the file should be saved as Rich Text Format or Text only.

2. Papers should be concise and written in English in a readily understandable style. Care should be taken to avoid racist or sexist language, and statistical presentation should be clear and unambiguous. The Journal follows the style recommendations given in the *Publication manual of the American Psychological Association* (5th edn., 2001).

3. The Journal is not able to offer a translation service, but, authors for whom English is a second language may choose to have their manuscript professionally edited before submission to improve the English. A list of independent suppliers of editing services can be found **here**. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

Layout
Title: The first page of the manuscript should give the title, name(s) and short address(es) of author(s), and an abbreviated title (for use as a running head) of up to 60 characters.

Abstract
The abstract should not exceed 300 words and should be structured in the following way with bold marked headings: Background; Methods; Results; Conclusions; Keywords; Abbreviations. The abbreviations will apply where authors are using acronyms for tests or abbreviations not in common usage.

Key points and relevance
All papers should include a text box at the end of the manuscript outlining the four or five key (bullet) points of the paper. These should briefly (80-120 words) outline what's known, what's new, and what's relevant.

Under the 'what's relevant' section we ask authors to describe the relevance of their work in one or more of the following domains - policy, clinical practice, educational practice, service development/delivery or recommendations for further science.

Headings
Articles and research reports should be set out in the conventional format: Methods, Results, Discussion and Conclusion. Descriptions of techniques and methods should only be given in detail when they are unfamiliar. There should be no more than three (clearly marked) levels of subheadings used in the text.

Acknowledgements
These should appear at the end of the main text, before the References.

Correspondence to
Full name, address, phone, fax and email details of the corresponding author should appear at the end of the main text, before the References.

References
The *JCPP* follows the text referencing style and reference list style detailed in the *Publication manual of the American Psychological Association* (5th edn.).

Tables and Figures
All Tables and Figures should appear at the end of main text and references, but have their intended position clearly indicated in the manuscript. They should be constructed so as to be intelligible without reference to the text. Any lettering or line work should be able to sustain reduction to the final size of reproduction. Tints and complex shading should be avoided and colour should not be used unless essential. Authors are encouraged to use patterns as opposed to tints in graphs. Authors will be able to access their proofs via Wiley Online Library. Figures should be originated in a drawing package and saved as TIFF, EPS, or PDF files. Further information about supplying electronic artwork can be found in the Wiley electronic artwork guidelines **here**.

Nomenclature and symbols
Each paper should be consistent within itself as to nomenclature, symbols and units. When referring to drugs, give generic names, not trade names. Greek characters should be clearly indicated.

Supporting Information
Examples of possible supporting material include intervention manuals, statistical analysis syntax, and experimental materials and qualitative transcripts.

1. If uploading with your manuscript please call the file 'supporting information' and reference it in the manuscript.
2. Include only those items - figures, images, tables etc that are relevant and referenced in the manuscript.
3. Label and cite the items presented in the supplementary materials as - FigS1, FigS2 etc and TableS1, TableS2 etc (as the case maybe) in their order of appearance.
4. Please note supporting files are uploaded with the final published manuscript as supplied, they are not typeset and not copy edited for style etc. Make sure you submit the most updated and corrected files after revision.
5. On publication your supporting information will be available alongside the final version of the manuscript online.
6. If uploading to a public repository please provide a link to supporting material and reference it in the manuscript. The materials must be original and not previously published. If previously published, please provide the necessary permissions. You may also display your supporting information on your own or an institutional website. Such posting is not subject to the journal's embargo data as specified in the copyright agreement. Supporting information is made free to access on publication.

Appendix 3a: Confirmation of R&D approval

- **Oxford Health Foundation Trust** – confirmation of project approval.

Laura,

Your audit proposal has now been approved.

Please see attached copy of an Audit Report Template in which will need to be completed and return once the project is complete.

Katie Rhodes
Senior Team Administrator
Buckinghamshire Mental Health Directorate
Oxford Health NHS Foundation Trust

- **Berkshire Health Foundation Trust** – confirmation of project approval.

Abi,

Thanks for completing your project registration via Datix, entitled "Evaluating the efficacy of CBT for Health Anxiety (HA) and OCD adapted for online delivery in the context of Covid-19" and for your completed planning documents. The project has now been approved by the Clinical Audit Department and allocated the ID number 7011. Please use this number in any correspondence to help us track the project.

The relevant Clinical Directors have been made aware of your project being undertaken within their Division. Please ensure that you liaise with the relevant Service Manager responsible for the service as they will need to be aware that you are undertaking this project within their area.

Once your audit has been completed, please send a copy of the project report and action plan to the Clinical Audit Department by the review date stated. It is also expected that the completed report and action plan should be sent to the divisional PSQ meeting relevant to the audit for monitoring.

Best regards, Claire.
Claire Newton
Clinical Effectiveness Facilitator
Berkshire Healthcare NHS Foundation Trust

- **Nottinghamshire Healthcare Foundation Trust** – confirmation of project approval.

Title: Evaluating the efficacy of CBT for Health Anxiety (HA) and Obsessive Compulsive Disorder (OCD) adapted for online delivery in the context of Covid-19 (SE2020/0036; EDGE ID 135030).

Service: Integrated Specialist Services, Let's Talk Wellbeing

Project Members: Kara Sturdy, Laura Johnsen (University of Oxford) & Paul Salkovskis (University of Oxford)

Thank you for your recent application to do a service evaluation. The Trust Research and Evidence Department has reviewed your application.

This email confirms that the project is approved, and you may start your project as soon as you are ready.

Please could you send Research and Evidence a copy of the final report once completed so we can add this to the portfolio of service evaluation projects. A template can be found at https://connect/research-and-evidence.

Best wishes

Martin

Dr Martin Clarke
Research & Evidence Fellow
Nottinghamshire Healthcare NHS Foundation Trust

Research & Evidence Department

- **Central and North West London NHS Foundation Trust** (Milton Keynes) – confirmation of project approval.

Subject: FW: Service evaluation project

Sharon

Steph has signed off the project – please can we be included in the final response.

Lisa Judd
Quality Governance Support

Quality Governance - Diggory Division

Appendix 3b: Covid-19 Scale

To be completed at baseline (treatment session 1) & final treatment session.

We are interested to know how much your thoughts have been affected by Covid-19. I will read out 3 statements and I would like you to indicate to what extent they have applied to you over the past TWO WEEKS.

The scale we will use is from 0 – 100 where 0 indicates not at all true for you, whilst 100 would be completely true.

(Record patient response as numerical value between 0-100 on the line indicated next to each question).

1) I have been preoccupied with thoughts about Covid-19 _____

2) I have worried about the potential harm Covid-19 could cause me _____

3) I have worried about the potential harm Covid-19 could cause other people _____

Appendix 3c: TDRP participant consent form

Your service logo here

The Oxford Institute of Clinical Psychology Training and Research
Isis Education Centre, Warneford Hospital
Oxford, OX3 7JX
Email: laura.johnsen@hmc.ox.ac.uk
Phone: +44 (0)1865 226 431

CONSENT FORM

Due to the current circumstances of Covid-19 we are having to adapt the way we deliver our services to ensure the safety of all our patients and staff.

We have therefore adapted our treatments for Health Anxiety and Obsessive Compulsive Disorder so that they are delivered through a combination of online therapist contact with materials to be read between sessions. The adapted programme is based on materials from treatments for Health Anxiety and Obsessive Compulsive Disorder which have previously been shown to be successful.

At present we believe this is the best available treatment, however it is important that we establish how effective it is when it is offered in this format. To help us understand whether the new method of delivery is effective we will be asking people to complete some additional questionnaire measures.

You do not have to be part of this service evaluation, and it will not affect your future treatment if you decide not to be part of the project.

If you have any questions about the project you can ask your therapist in the first instance, or they can direct you to an appropriate member of the wider team.

If you decide that you ***do*** wish to be a part of the service evaluation, we would be grateful if you would initial and sign the form below:

	If you agree, please initial box:
1. I have had the opportunity to have any questions answered.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.	
3. I understand that relevant sections of my medical notes and data collected during the project may be looked at by individuals from University of Oxford and the NHS Trust, where it is relevant to my	

taking part in the service evaluation. I give permission for these individuals to have access to my records.	
4. I agree to take part in this service evaluation.	

_____ _____

Name of Participant *Date*

_____ _____

Name of Person taking Consent *Date*

Appendix 3d: Therapist feedback questions

On a scale of 0-10, where 0 = not at all helpful and 10 = extremely helpful, please rate the following:

Workshops

1. How helpful did you find the training workshops at the time?
2. Having now applied what you have learned, how well did they prepare you for the clinical work?
3. Do you have any specific comments on what was included but not needed?
4. Do you have any specific comments on what was NOT included but needed?
5. Any other general comments on the training workshops?

Supervision

6. How helpful did you find the additional supervision sessions provided during the project?
7. Any additional comments regarding the supervision offered?

Client materials

8. How helpful did you find the provision of additional reading materials for clients?
9. Do you have any comments / thoughts on the Health Anxiety materials provided for clients?
10. Do you have any comments / thoughts on the OCD materials provided for clients?

Client experience

11. Did you receive any feedback from clients related to the project e.g., the materials provided (positive or negative)? (Yes / No)
12. If yes, please can you provide some details of the feedback received.

Other

13. During the course of the project have you noticed any differences in the presentation of Health Anxiety / Obsessive Compulsive Disorder clients in the context of the Covid-19 pandemic?
14. Is there any other feedback you would like to give related to the project?

Appendix 3e: Notes for authors, Behavioural and Cognitive Psychotherapy

Preparing your manuscript

Articles must be under 5,000 words at the point of submission, excluding references, tables and figures. Manuscripts describing more than one study may exceed no more than 6000 words but please make this clear in your cover letter. All submissions should be submitted via: http://mc.manuscriptcentral.com/babcp

Style Guide: The following should be included in all manuscripts:

Title page
This should be a separate file to the main text to ensure blind review. The title should phrase concisely the major issues. Author(s) to be given with departmental affiliations and addresses, grouped appropriately. A running head of no more than 40 characters should be indicated.

The following statements should be included on the title page:

Acknowledgements
You may acknowledge individuals or organizations that provided advice, support (non-financial).

Conflict of Interest
Authors should include a Conflicts of Interest declaration in their title page. Conflicts of Interest are situations that could be perceived to exert an undue influence on an author's presentation of their work. If the manuscript has multiple authors, the author submitting the title page must include Conflicts of Interest declarations relevant to all contributing authors. If no Conflicts of Interest exist, your declaration should state "Conflicts of Interest: None".

Data Availability Statement
This is a brief statement about whether the authors of an article have made the evidence supporting their findings available, and if so, where readers may access it. Please note that if you are not making your data publicly available, we ask you to state the reason why in your cover letter to the Editor.

Financial support
Please provide details of the sources of financial support for all authors, including grant numbers. Where no specific funding has been provided for research, please provide the following statement: "This research received no specific grant from any funding agency, commercial or not-for-profit sectors."

Main Text (anonymised with no author information)
This should be uploaded as a .doc file with the following running order. The following format is based on APA style which should be followed throughout: http://www.apastyle.org/

Abstract
Should consist of no more than 250 words and structured under the following five headings: Background, Aims, Method, Results, and Conclusions. Include up to six key words that describes the article.

Main Text
This should contain the sections **Introduction** (including overview and theoretical background), **Method** (participants, design, data analyses and Ethical Statement- see below), **Results** (described in detail with summary figures and tables), **Discussion**(including conclusions and limitations).

Ethical statements
All papers should include a statement indicating that authors have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the BABCP and BPS. Authors should also confirm if ethical approval was needed, by which organisation, and provide the relevant reference number. If no ethical approval was obtained, the authors should state what governance arrangements were in place (e.g. audit committee approval).

References
Please use APA style for the in-text citations and references. In the reference list there is an additional requirement that author names be listed in **bold face**. For example:

Tables and Figures
Manuscripts should usually not include more than five tables and/or figures. These should not be included in the body of the manuscript text but uploaded as individual files.

Use text anchors to show their intended position within the paper within the manuscript.

Numbered figure captions should be provided.

Tables should be provided in editable Word format. They should be numbered and given explanatory titles

Figures
Numbered figure captions should be provided.

Supplementary Information – Online only
Where unpublished material e.g. behaviour rating scales or therapy manuals are referred to in an article, copies should be submitted as an additional document (where copyright allows) to facilitate review. Supplementary files can be used to convey supporting or extra information to your study, however, the main manuscript should be able to 'stand-alone'. Supporting documents are reviewed but not copyedited on acceptance of the article. They can therefore be submitted in PDF format, and include figures and tables within the text. There is no word limit for supporting online information.