Author/s:
Hayes, C;Palmer, V;Hamilton, B;Simons, C;Hopwood, M

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What nonpharmacological therapeutic interventions are provided to adolescents admitted to general mental health inpatient units? A descriptive review

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What non-pharmacological therapeutic interventions are provided to adolescents admitted to general mental health inpatient units? A descriptive review

(iii) **The full names of the authors.**

Claire Hayes, Dr. Victoria Palmer, A/Prof Bridget Hamilton, Dr Christine Simons and Professor Malcolm Hopwood.

(iv) **The authors' institutional affiliations at which the work was carried out.**

Claire Hayes: Department of Psychiatry, University of Melbourne. The Albert Road Clinic, Melbourne.

Victoria Palmer: Department of General Practice, University of Melbourne.

Christine Simons: Department of Psychiatry, University of Melbourne. The Albert Road Clinic, Melbourne.

Bridget Hamilton: Centre for Psychiatric Nursing, University of Melbourne.

Malcolm Hopwood: Department of Psychiatry, University of Melbourne. The Albert Road Clinic, Melbourne.

(v) **An authorship statement: in keeping with the latest guidelines of the International Committee of Medical Journal Editors, each author's contribution to the paper is to be quantified.**

Claire Hayes, Victoria Palmer, Bridget Hamilton, Christine Simons and Malcolm Hopwood designed the review. Claire Hayes undertook the descriptive review and drafted the article. Claire Hayes, Victoria Palmer, Bridget Hamilton, Christine Simons and Malcolm Hopwood reviewed the results, and revised the article. All authors read drafts regularly. All authors read and approved the final version of the manuscript.

(vi) **The full postal and email address, plus telephone number, of the author to whom correspondence about the manuscript should be sent.**

Claire Hayes, Suite A, Albert Road Clinic, 31 Albert Road, Melbourne, 3004, Victoria, Australia. (03) 9256 8331. Email: chayes2@student.unimelb.edu.au. Telephone Number: 0412 930 568

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MISS CLAIRE HAYES (Orcid ID : 0000-0003-2908-9304)

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1 Introduction

Inpatient hospitalisation is an important component of psychiatric services, serving the highest risk and most vulnerable individuals in the mental health delivery system (Sams et al. 2016, Zeshan et al. 2018). In the last few decades, inpatient care has undergone fundamental changes, predominantly driven by deinstitutionalisation policy initiatives and greater emphasis on community-based services (Zeshan et al. 2018). Decreasing length of stay is a common policy and practice directive internationally, largely to reduce costs and encourage independent functioning outside of the hospital environment **(Baeza et al. 2018, Green et al. 2007,** Zeshan et al. 2018). Furthermore, more alternatives are now available within community settings, such as short-term prevention and recovery centres. This suggests that the role of the inpatient unit in mental health care is continuing to change to meet individual, policy and practice demands (Stanton et al. 2017). **Such changes have direct implications for mental health nursing.**

Researchers and clinicians are reporting increasing rates of mental illness across the lifespan (Bor et al. 2014, Case and Deaton 2015, Padayachey et al. 2017). According to Schroeder et al. (2010), depressive disorders are predicted to be a leading cause of disability by 2020. Internationally, adolescents in particular are experiencing increasing rates of mental illness (Australian Institute of Health and Welfare 2018, Bitsko et al. 2018, Lawrence D et al. 2015, Patalay and Fitzsimons 2017). A nationwide study found that 14% of Australian adolescents have emotional or behavioural problems, with many of these having long-term mental

health conditions (Australian Institute of Health and Welfare 2018, Lawrence D et al. 2015). The study found that the proportion of young people likely to have a serious mental illness rose from 18.7% in 2012 to 22.8% in 2016 (Australian Institute of Health and Welfare 2018). Similarly, the Millennium Cohort Study in the United Kingdom (UK) found that nearly one quarter (24%) of female adolescents aged 14 reported suffering from high level symptoms of depression (Patalay and Fitzsimons 2017). In the United States (US), Mojtabai et al. (2016) found that major depressive episodes rose from 8.7% in 2005 to 11.3% in 2014 for adolescents in different socioeconomic groups. These statistics emphasise the need for early intervention, access to necessary care and appropriate interventions.

In terms of access to care, many countries continue to struggle with the limited number of adolescent inpatient beds to meet the demand (Buchanan 2014, Geller and Biebel 2006, Kadvany 2015, Mackee 2018, Merrillees 2014). Although one could argue that 'too many beds' is not the solution, it is important to recognise the high acuity of adolescents admitted to inpatient care (Rosen et al. 2012). One Canadian study sample found that 87% of admitted adolescents had thoughts of injuring themselves prior to admission, 77% did engage in non-suicidal self-injury (NSSI), and 67% had made an attempt to end their life prior to admission (Preyde et al. 2014). This is recognised internationally with an increasing number of adolescents admitted to inpatient care with suicidal ideation, attempts and NSSI (Esposito-Smythers et al. 2006, Hanssen-Bauer et al. 2011, Plemmons et al. 2018). These statistics represent a high-risk population, particularly when a suicide attempt is a key risk factor for death by suicide (Goñi-Sarriés et al. 2018, World Health Organization 2018). Despite adolescents being a high-risk population, **little is known about** inpatient units.

Inpatient units are known to be effective for the majority of adolescents in that they improve in at least one area of their symptomatology from admission to discharge (Reference removed for peer review. (Bettmann and Jasperson 2009). Inpatient units play an important role in meeting the complex needs of adolescents within the continuum of care. The primary purpose of an inpatient unit is to provide containment for adolescents and stabilise mental health symptoms (Tharayil et al. 2012). An admission to an inpatient

unit is an intense intervention for any adolescent, at a time in their life where they are particularly vulnerable. It is also the most critical time for appropriate and early intervention. However, the changing role of inpatient units and growing demands present many challenges for mental health nursing. Such challenges include the changing trends and presentations of adolescents being admitted to inpatient units (Swadi and Bobier 2005, Van Kessel 2012). It is imperative that mental health nurses are confident in the interventions they provide. Confidence and assurance in the delivery of care or any intervention coincides with effective containment for adolescents, and creating a confident culture.

Current literature indicates that there is no overarching exemplary model of care for adolescents admitted to general (non-disorder specific) inpatient units. This was observed in a recent systematic review, which examined the effectiveness of adolescent inpatient units and adolescent outcomes (Reference omitted for blinded review). The review found that several studies failed to report on important features of each inpatient unit, such as what non-pharmacological therapeutic interventions were delivered. Developing an exemplary model of care for adolescents involves not only understanding whether an inpatient unit is effective in terms of outcomes, but more about 'how' and 'why' it is effective.

A similar review by Indig et al. (2017) found that the ability to synthesise available evidence regarding inpatient care for adolescents was highly limited. These limitations were due to the variety of models of care and treatment interventions that the studies examined. This diversity included different intervention models, settings, treatment length and intensity as well as staffing profiles. Indig et al. (2017) found that some studies documented aspects of their model of care, although none reported collecting data relating to contextual factors. This included the various treatment components to determine the active ingredients for effective treatment. The review concluded suggesting that there was an inability to identify any studies which examined the key elements of an effective model of inpatient care. Furthermore, reviewers urged for further research evaluating a range of flexible and integrated inpatient models of care. Similarly, Bettmann and Jasperson (2009) claimed that there were significant deficits in the literature with few studies assessing specific programmatic elements.

Delaney (2006) described ten milieu interventions, which were considered particularly valuable for inpatient adolescent treatment. These were divided into three categories of behavioural, cognitive and affective. All were considered relevant to clinicians in their efforts to help adolescents achieve control over their feelings, behaviours and thoughts. The behavioural interventions consisted of promoting self-efficacy experiences, reinforcement techniques and interrupting patterned behaviour. Cognitive techniques included problem-solving, restructuring and linking mood-thought-behaviour. Finally, affective techniques were empathy, decreasing stimuli, teaching about affects and self-management of affects. Understanding these interventions is essential to assist mental health nurses in their endeavour to help adolescents in a crisis. Adolescents require an environment where clinicians intervene based on careful assessment. In addition, provide interventions grounded in a conceptually sound rationale (Delaney 2006).

Changes to mental health care in the last few decades have prompted the need for a current review of non-pharmacological therapeutic interventions for adolescents within inpatient settings. This is important as patient populations in general adolescent inpatient units are heterogenous in terms of mental health presentations and diagnoses, making the identification of a suitable 'model' or non-pharmacological therapeutic interventions particularly challenging. Establishing this literature base will provide guidance to inpatient units in optimising their service and more importantly, improve the admission experience for adolescents. This includes defining elements of the inpatient setting, which make up the model of care, including organisational structure, admission processes, provision and delivery of all interventions. Furthermore, a review of non-pharmacological therapeutic interventions can facilitate the development of an exemplary inpatient model of care for adolescents. To the researchers' knowledge, no review has been conducted which examines general (non-disorder specific) adolescent inpatient units and the non-pharmacological therapeutic interventions reported. This is a major gap in current research.

This descriptive review aims to build upon this research gap and contribute to the limited adolescent inpatient research base. This descriptive review aims to provides an objective foundation to inform an exemplary inpatient model of care currently being investigated (Reference omitted for blinded review). A descriptive review of non-pharmacological therapeutic interventions in contemporary practice is warranted, particularly to meet the changing demands of adolescent inpatient units. **Consequently, this review seeks to inform mental health clinicians, leaders and researchers. Furthermore, this review can inform those** who desire to develop an exemplary model of care for adolescents admitted to general (non-disorder specific) inpatient units.

1.1 Objectives

This review seeks to answer the following research question: What non-pharmacological therapeutic interventions are provided to adolescents admitted to general (non-disorder specific) adolescent mental health inpatient units?

2 Methods

2.1 Design

The search methodology for this review followed the **Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) Guidelines** (David et al. 2009, Moher et al. 2009). This review has been recorded in the International prospective register for systematic reviews (PROSPERO) with the registration id. CRD42017075786 (Booth et al. 2012).

2.2 Information sources

A literature search was performed in the following electronic databases: MEDLINE (Medical journals), EMBASE, ERIC (Education Resources Information Centre) CINAHL (Cumulative Index to Nursing and Allied Health) and PsycINFO. Each database was accessed on the 16th March 2018.

2.3 Search terms

Searches were conducted using subject headings (MeSH terms) and text words within abstracts and titles. The search terms used in each database are as follows: **Adolescents: ([adolescen* OR "young person*" OR "youth*" OR "young adult*" OR teen* or child*] AND [inpatient* OR "in-patient*" OR adolescent* OR patient* OR "service user*"] Inpatient setting: ["mental health setting*" OR "inpatient unit*" OR in-patient unit*" OR hospital* OR admission* OR "mental health service*" OR "psychiatric" OR "mental health*" OR "generic" OR "generic inpatient unit*" OR "general" OR "general inpatient unit*"] Non-pharmacological interventions: ["Intervention*" OR "Therap*" OR "Treat*" OR "group*" OR "group therap*" OR "programme*" OR "Individual*" OR "family*" OR "psychoed*" OR "milieu*"].** Only peer-reviewed journals were included in the results. Reference lists of selected studies were manually searched to ensure all relevant studies were included. When required, we contacted study authors to confirm eligibility and/or to acquire data.

2.4 Eligibility and study selection

Studies were included if the inpatient unit was general, thus not solely focussed on specialty areas such as substance abuse or eating disorder units. Only studies focused on reporting inpatient non-pharmacological therapeutic interventions were included. Inclusion criteria also comprised of studies written in English, published between January 2000 and March 2018 and with participants between the mean ages of 12 and 25. The purpose of limiting the years was to ensure results were relevant to contemporary practice and provided an updated review. The inclusion criteria were not limited by study design. Studies were excluded if the setting was solely residential, community, outpatient and/or forensic settings. **The rationale for excluding such settings was to establish a more succinct account of general (non-disorder specific) inpatient units for adolescents.** Furthermore, studies detailing pharmacological interventions alone were excluded.

2.5 Data collection process

The initial search utilising the search terms was undertaken. Results were retrieved and transferred to an Endnote X7 database (Clarivate Analytics 2015). Using Endnote's function, duplicate entries were identified and removed (*n*=185). Remaining articles were organised alphabetically and manually checked to identify any missing duplicates. Following this process, a further 837 papers were removed as they did not the meet inclusion criteria. Abstracts and titles were searched and screened against eligibility criteria for inclusion. Following inspection, a further 58 papers were removed for not meeting the inclusion criteria. This occurred in such instances where participants were outside the mean age or the inpatient units were disorder specific. The PRISMA flow diagram for inclusion is illustrated in Figure 1.

Insert Figure 1 here

3 Results

The search strategy resulted in the identification of 1O studies for inclusion (see Figure 1).

3.1 Study characteristics

The general study characteristics are presented in Table 1. The majority of studies were published over six years ago (n=6), with the most recent publication in 2017 (n=1). Three studies were from New Zealand (n=3) and by the same authors. Remaining studies were from Australia (n=2), United States (n=2) and Canada (n=1). Locations were unknown for the remaining two studies. The corresponding authors were contacted via email to establish which country their research was conducted. One corresponding author replied reporting that their study was conducted in the UK. All of the studies did not explicitly state whether the inpatient units were publicly or privately funded. Most of the studies were empirical, prospective, pre/post evaluation studies (n=4) and quality improvement evaluations (n=4). Two studies were of a case study design (n=1), whilst one was descriptive (n=1); these are considered separately. Five studies used a quantitative approach, whilst the remaining were

qualitative (n=2), mixed-methods (n=1), and the remaining two studies were descriptive and a case study.

Insert Table 1 here

3.2 Quality appraisal

For this review, the quality of the included studies were appraised using the National Institutes of Health (2014) assessment tool. Based on this assessment, the quality of studies was considered poor to fair. However, due to the scarcity of research in this area, all studies were included in the review. The results of the quality appraisal are demonstrated in Table 2. Biases of several studies related to blinding issues and sample size. Only two studies listed the selection criteria for their study. Despite the poor-fair quality of studies, this review sought to identify the non-pharmacological therapeutic interventions to inform future adolescent models of inpatient care. The review did not include an evaluation of how interventions were measured given the gaps within the literature base. Therefore, issues such as blinding of participants or sample size was not discussed in this review.

Insert Table 2 here

3.3 Non-pharmacological therapeutic interventions

The non-pharmacological therapeutic interventions have been organised under the following headings: Reflection, discharge and recovery interventions, Education and skills interventions, Therapy model interventions, Creative expression interventions, Sensory modulation interventions, Physical health interventions, Individual support interventions, Mindfulness interventions, Family/support-based interventions, and Pet therapy interventions.

Reflection, discharge and recovery interventions

Narrative discharge letter

Bobier et al. (2009a) assessed the potential value of letter writing "with" adolescents rather than "about" them. One assigned primary nurse initiated the letter process, depending on the rapport between the clinician and adolescent. Letters were written in collaboration with the Multidisciplinary Team (MDT) and adolescent. The writing process began following the initial crisis stage of admission and up to one week prior to discharge. A provisional draft was discussed with the adolescent prior to discharge. Letters included important information regarding the adolescent's admission, progress, difficulties and successes. Letters were used together with individual care plans to describe the overall treatment as well as management plan, which were discussed in clinical review meetings. Letters aimed to include the adolescent, be supportive and reflective, as well as objective.

Early warning signs journal

Adolescents admitted to an inpatient unit generated an account of their own personal journal to learn from and prevent future relapse episodes **(Walker and Kelly 2011).** Adolescents were encouraged to utilise their journal and discuss the content with their primary nurse. The purpose was to reflect on their personal early warning signs of deterioration, as well as develop healthy coping strategies. Clinicians helped adolescents distinguish between regular adolescent identity development and early signs of relapse. The journal was used to identify and focus on current issues in the adolescents' life and the management of any associated stress. To structure the early signs of relapse, a 3-step initiative was used.

In the first step, adolescents identified personal deterioration symptoms from a set of cards. Adolescents were encouraged to cut out pictures as visual aids in identifying these symptoms. The use of pictures was particularly useful for adolescents with learning difficulties. Adolescents explored these signs in the context of thinking, feelings and behaviours. *Thinking*: Observing changes related to thoughts regarding others and frequency of these thoughts. *Feelings*: Observing feelings such as irritability. *Behaviours*:

Recognising changes in behaviour such as energy, sleep and eating patterns. In the second step, adolescents were encouraged to develop of a timeline of important events leading to being referred to mental health services. The early warning signs were then linked with these prompting events, paying close attention to the thoughts, feelings and behaviours. An example was observing a timeline with dates and events, such as "went to mum's engagement party, exams at school, visit to father's house. Admission to inpatient unit 12/11/2006". Adolescents were then encouraged to explore thoughts, feelings, behaviours. In the third step, adolescents shared their potential prompting events or stressors and how they coped with these. The creative aspect of the journal was reinforced to engage and motivate the adolescent. One example was listing helpful activities in the journal such as listening to songs on the iPod, progressive muscle relaxation, talking to friends and playing basketball. The intervention aimed to help adolescents understand their mental illness and explore various avenues of recovery to maximise their potentials.

Education and skills interventions

Nurse-led interventions

Bobier et al. (2009b) investigated a range of nurse-led interventions and whether they demonstrated outcome improvements in the real-world setting. To quantify nursing interventions, an intervention inventory was established from the inpatient unit's existing programme and activities, as well as extensive involvement from the MDT. Education and skills-based interventions described by Bobier et al. (2009b) included the following: illness education, relationship education, stress management education, anger management, relaxation, problem-solving skills training and self-awareness education. No further information was provided in terms of each of these non-pharmacological interventions.

Psychoeducational suicide prevention group

Esposito-Smythers et al. (2006) examined a psychoeducational suicide prevention group for adolescents with suicidal ideation and intent. The 60-minute group was facilitated by a psychologist and pre-doctoral interns in psychology. Groups ranged in size from two to six people. On commencement of the group, adolescents were provided with a 15-page

manual, which was used as a guide. The aim of this group was to provide education on adolescent suicide and help adolescents understand their prompting stressors. Furthermore, the group aimed to assist adolescents in exploring helpful coping strategies to alleviate suicidal thoughts and behaviours. The group aimed to assess the rate of suicidal behaviours, impulsivity, prompting stressors and risk of future suicide attempts amongst adolescents. Furthermore, the group explored help seeking behaviours for suicidal thoughts, as well as how to respond to someone who is unsupportive when suicidal thoughts are expressed (e.g., "trying to get attention").

Adolescents were encouraged to use their manual to record their personal prompting stressors for suicidal thoughts and behaviours. It was optional for adolescents to share these with the group. To explore helpful coping strategies, adolescents were encouraged to develop their own personal "safety list" and "reasons to live list". It was also optional for adolescents to share their own with others in the group. Adolescents were encouraged to take the manual home and review both lists if suicidal thoughts re-emerged.

Psychoeducation group

Swadi et al. (2010) also endorsed the use of psychoeducation in terms of targeting individual adolescent needs and using various sources (Swadi et al. 2010). Such sources included verbal interactions, videos, games and educational handouts. The group aimed to enhance adolescents' awareness and create more insight in terms of coping strategies for wellness. Psychoeducation was also endorsed by Bobier et al. (2009b) in their investigation of nurse-led interventions. No further information was provided in terms of how psychoeducation was facilitated other than being nurse-led.

Therapy model interventions

Dialectical behaviour therapy (DBT)

Katz et al. (2004) evaluated an adolescent inpatient DBT programme, which was modified from the DBT model developed by Miller et al. (1997). The DBT programme ran for two

weeks and comprised of ten daily, manualised skills training sessions. Adolescents were also seen twice per week for individual DBT psychotherapy. During these sessions, diary cards were reviewed, and behavioural and solution analyses were conducted. The programme had a DBT milieu with all staff trained in DBT for skills generalisation.

A regular DBT consultation meeting took place for all staff. This was important to ensure adherence to the model, as well as enhance staff motivation in helping adolescents with challenging behaviours. A DBT expert was consulted during the study to assess the programme. Treatment as Usual (TAU) consisted of psychodynamic psychotherapy weekly and a psycho-dynamically oriented milieu. No formal behaviour therapy was utilised as part of TAU. Regular meetings took place amongst the TAU team to discuss any management issues on the ward. Staff on both units did not differ in experience. For both DBT and TAU, family assessments were organised, as well as brief crisis intervention and psychoeducation for families. Upon discharge, all adolescents, regardless of whether they were in the DBT or TAU programme were discharged to community and outpatient support systems. Sams et al. (2016) also reported DBT as a non-pharmacological therapeutic intervention, which involved teaching adolescents DBT skills in a structured group setting.

Acceptance and commitment therapy (ACT)

Sams et al. (2016) reported that a pilot of ACT groups was being conducted with adolescents, facilitated by trained staff. Further details about size of groups, length of delivery and so forth were not provided.

Cognitive behaviour therapy (CBT)

Sams et al. (2016) reported on CBT modules. Therapy packets were created to help adolescents develop coping skills for their individual problems. These contained educational information and activities for skill building to help adolescents develop and utilise CBT skills to alleviate symptoms. Sams et al. (2016) also identified the principles of a cognitive-behavioural model known as Collaborate Problem Solving (CPS). CPS is a family based

intervention built on the assumption that "children do well if they can" (Greene et al. 2003). The CPS model suggests that some individuals with challenging clinical issues may lack the necessary cognitive capacity to manage certain emotions such as frustration. Overcoming some of these emotions often depend on flexibility and adaptability. Therefore, key factors of this approach include identifying cognitive difficulties and intense responses to situations, which can lead to challenging behaviour. For this intervention, formal didactic training was conducted amongst staff, as well as weekly consultation meetings, coaching and mentoring.

Creative expression interventions

Reading and storytelling group

Killick and Bowkett (2015) described a one-hour non-compulsory reading aloud and storytelling group for young people aged 12 to 17. It is uncertain whether this included breaks. A clinical psychologist facilitated the groups. Group sizes ranged from two to eight, with five being the norm. Large books were read over a period of several weeks if necessary. The stories prompted thoughts, feelings and encouraged discussion amongst the group. The group aimed to help young people feel part of a community, team and a sense of belonging. Various games or riddles were used as warm up exercises. Adolescents often picked books based on movies they had seen. Common books included: Smoke and Mirrors or Romeo and Juliet- and targeted a younger audience. The themes were discussed and how adolescents responded to what they read and heard. When reading Shakespeare, adolescents explored the possible meanings in certain words, either contained in the story or generated by their peers in the group. Group members expressed how they were able to relate to certain stories. For instance, relating to a certain distressed character in a book and how they felt when they were bullied in the past. Killick and Bowkett (2015) claim that they wanted to design a group that was helpful without being labelled "therapeutic" or "educational". The aim of the group was for adolescents to explore thoughts, feelings and experiences in an alternative way. The group also encouraged problem-solving when spending time working out what Shakespeare meant. Rather than being intellectual, the purpose of the group was trying to understand the feelings, which characters were experiencing more than the precise interpretation of words. It is uncertain as to whether adolescents received a copy of the book following the group.

Music therapy programme

Patterson et al. (2015) assessed the feasibility of delivering a music therapy programme on an adolescent inpatient unit. The group comprised of sessions in which various active (song-writing, recording, singing, improvisation,) and receptive (listening, lyric analysis, relaxation) techniques were adopted depending on adolescent preferences (set by the group at the beginning of sessions). Groups were held weekly as part of the structured programme and was a core component of treatment. Although adolescents could decline to attend or be excluded if participation was clinically contraindicated, attendance was strongly encouraged. A single-session approach was used. The registered music therapist encouraged adolescents to recognise internal resources and achieve 'therapeutic closure' each session. The duration and format of the music therapy programme was unclear.

Narrative therapy exercise

Sams et al. (2016) described strength-based care. Strength-based care was built upon the idea that an individual's skills, interests and support systems are essential for designing effective treatment plans (Laursen 2003, Saleebey 2009). Simply, strength-based care strives to "identify what is going well, do more of it, and build on it" (Barwick 2004). Sams et al. (2016) described the consolidation of a strength-based approach with a traditional, medical model of mental health care. This framework encouraged the exploration of individual skills, relationships, goals, strengths and family communication in the inpatient setting.

Sams et al. (2016) identified narrative therapy in their strength-based care framework. Adolescents worked with clinicians on a one to one basis to develop a strength-based recovery narrative. Once this was achieved, adolescents were encouraged to share their narrative with their family. The narrative therapy exercise was adopted if the adolescent's treating team considered it to be beneficial. A psychology or medical student met with the adolescent to gather information (usually between one and two sessions of one to two hours each). Following the review, the narrative was discussed with the adolescent, with opportunities for revisions in terms of therapeutic reflection. Adolescents were encouraged

to share their narrative in family sessions. As such, the clinician facilitates a family therapy session whereby the adolescent reads the narrative to their family. This creates a powerful experience for the adolescent of processing the emotions and reactions of their family members.

The narrative therapy exercise challenged the clinician to generate a hopeful narrative. Throughout this narrative lens, the aim was to engage adolescents with more empathy and creativity. The narrative was written for the adolescent but also encouraged them to share the narrative with their family. Therefore, the clinician had the challenge of creating a strength-based narrative, which united the various viewpoints of the adolescent and their family.

Artistic activities

Bobier et al. (2009b) identified artistic activities as a non-pharmacological therapeutic intervention. No further details were provided in terms of what the artistic activities were or how they were facilitated.

Sensory modulation intervention

West et al. (2017) described the use of a sensory room. Sensory rooms aim to create positive change via sensory avenues, using various tools which work with the senses (West et al. 2017). The primary aim is to help adolescents regulate their emotions. Therefore, sensory rooms are often suggested for de-escalation purposes, and to reduce the need for seclusion. Occupational therapists (OTs) encouraged adolescents to use various sensory equipment tools such as tactile objects, including stress balls or fluffy toys, weighted blankets-commonly, rocking chairs and sensory oils for calming. Adolescents identified the most helpful equipment for modulating their emotions. This was extremely useful for clinicians when tailoring treatment and individual crisis plans. Adolescents were able to take equipment home or to school to help manage their symptoms. Sensory room sessions were conducted by the MDT who had all been supervised and trained by a senior OT. Training

involved identifying signs of distress, assessing an adolescent's sensory threshold and tolerance to sensory stimulation. Each session was held when an adolescent sought access to the room or it was clinically indicated at the time (e.g., adolescent who appeared distressed). Adolescents were always accompanied by a staff member to ensure safety and guide treatment. The duration of sensory room sessions was unclear.

Physical health and individual support intervention

Bobier et al. (2009b) in their account of nurse-led interventions, identified sporting as one of their non-pharmacological interventions. No further information was provided in relation to what type of sport was used or how the intervention was conducted. Similarly, individual support was also identified with no further details.

Mindfulness interventions

One of the interventions included in the strength-based care framework described by Sams et al. (2016) was the iMatter group. This group was structured, focusing on mindfulness skills. The group was a manualised, mindfulness-based programme created to improve mindful attention and relaxation skills with adolescents. The iMatter manual was developed by the unit's psychology trainees, nursing leaders and psychologist. The manual was constructed based on various resources and aimed to provide adolescents with the opportunity to learn and practice helpful strategies. Some of these included relaxation, mindfulness and simple yoga exercises. Several activities took place within the following segments: A: Mindful meditation, B: Mindful movements such as yoga poses, C: Mindfulness activities such as mindful walking, D: Breathing exercises and E: Closing activities. Careful attention was paid to the design of the group room. The purpose was to promote a relaxing environment, with the use of calming music and soothing scents. The duration of the group was unclear.

Family/support-based intervention

The strength-based care described by Sams et al. (2016) identified family movie therapy as a non-pharmacological therapeutic intervention. This intervention used enticing movies for adolescents as a therapeutic prompt for discussing confronting issues. The aim was to improve communication and relationship skills between adolescents and their families. Once adolescents received their initial assessment, a movie was "prescribed" to watch with their family. Goals of the intervention were to improve communication skills, reflective listening, validation, and application of the movie's content to their own family crisis. Following the movie, families then met with the therapist for a 60 to 90-minute session to process their responses to the movie and practice communication skills.

Pet therapy intervention

Sams et al. (2016) endorsed animal-assisted therapy. Animal-assisted therapy involved weekly one-hour therapy dog visits for adolescents. Adolescents learnt more about the dogs, as they interacted with their owners. Sessions began with introductions and collecting information regarding each adolescent's level of comfort with animals. Most sessions consisted of adolescents stroking the animals and observing them perform tricks. Adolescents were permitted to ask the owners about the therapy dogs and share information about their own pets.

4 Discussion

This review aimed to identify non-pharmacological therapeutic interventions for young people admitted to general (non-disorder specific) adolescent mental health inpatient units. The review identified 10 studies conducted across five countries and found 23 non-pharmacological therapeutic interventions, which were reported. These interventions were classified under nine headings for clarification purposes, although some interventions tend to overlap. Although not every reported non-pharmacological therapeutic intervention would have been identified in this review, it was surprising to find so few studies, particularly for such a vulnerable population.

Although 23 non-pharmacological therapeutic interventions were identified, this included two studies, which listed a range of interventions (Bobier et al. 2009b, Sams et al. 2016). Bobier et al. (2009b) listed 10 of the interventions, whilst Sams et al. (2016) described 7. The overall paucity of information is surprising given how regular non-pharmacological interventions are a critical component of adolescent inpatient care. Furthermore, these non-pharmacological therapeutic interventions provide an essential element for articulating exemplary models of care.

Whilst this review specifically sought to identify and understand non-pharmacological therapeutic interventions, some descriptions were poor. The limited descriptions of non-pharmacological therapeutic interventions make interpretation challenging. Furthermore, studies lack clarity and consistency when reporting non-pharmacological therapeutic interventions, particularly in terms of their delivery. More elaborate descriptions of these interventions could help mental health stakeholders establish whether an intervention can be applied to their inpatient setting. For instance, availability of resources when considering the implementation of a sensory room. On a practical level, more elaborate descriptions would be useful for adolescent programme developers, striving for excellence by establishing what is currently being utilised in general (non-disorder specific) adolescent inpatient units.

The psychoeducation intervention lists 'tools', such as 'video resources' and 'games' to improve awareness for adolescents. These descriptions are vague, failing to answer simple questions adolescents, clinicians or managers might have, such as 'What type of video resources or games?' Or, are there specific questions that can be used to facilitate discussions? Although these questions might appear punitive, developing a safe and successful adolescent inpatient model of care is not without its challenges. More information can help those interested in developing a programme, ultimately improving the short and long-term mental health outcomes. Furthermore, improve the quality of care for adolescents and their families.

It is important to acknowledge that most of the interventions identified in this review have their own associated body of literature, such as DBT and Sensory Modulation (Blackburn et al. 2016, Bobier et al. 2015, McDonell et al. 2010, Von Auer et al. 2015). Whilst these studies are available, many target specific diagnoses, such as DBT for Borderline Personality Disorder or Sensory Modulation for Anorexia Nervosa (Brand-Gothelf et al. 2016, Heider et al. 2017, Palmer et al. 2003). Other studies focus on the interventions within specific settings such as eating or substance disorder units (Abdelkarim et al. 2017, Warner et al. 2013). Furthermore, many of these studies are based on adult populations and outpatient settings (Abdelkarim et al. 2017, Kleindienst et al. 2008). Although this research is vital, attention needs to be paid to the complex needs of adolescents and range of diagnoses when admitted to general (non-disorder specific) inpatient units.

It is difficult to decipher the 'gold standard model of care' for adolescent general inpatient units, particularly with the limited research. For a 'best of both worlds' approach, an inpatient unit might need to incorporate several of the non-pharmacological therapeutic interventions described, however, more research needs to be conducted. Furthermore, more research is required to examine these non-pharmacological therapeutic interventions and how they interrelate to mental health outcomes, particularly from adolescent and caregiver perspectives, the voice of these stakeholders is currently absent (Varol F et al. 2010). **However, the challenges of conducting and publishing research in 'real world settings' need to be acknowledged. These challenges often relate to limited funding and time, access to adolescents and inpatient units as well as publication biases.** A key strength of this review is that it allowed for increased insight into the different non-pharmacological therapeutic interventions. However, there are limitations to consider.

4.1 Limitations

The eligibility criteria excluded articles not written in English; thus, non-pharmacological therapeutic interventions in general (non-disorder specific) adolescent inpatient units for other cultures were excluded. The studies included in this review all have methodological

limitations**, such as small sample sizes and lack of patient blinding.** However, the purpose of this review was to identify what non-pharmacological therapeutic interventions were reported **from general (non-disorder specific) inpatient units.** This study excluded disorder-specific settings and hence might have removed promising non-pharmacological therapeutic interventions in alternative settings, such as eating disorder inpatient units, which may have had information, which coincides with general (non-disorder specific) adolescent inpatient units. The varying settings also need to be considered in this review in terms of limited generalisability. **However, this review aimed to assist those wishing to understand which non-pharmacological therapeutic interventions are currently reported for adolescents in general (non-disorder specific) adolescent inpatient units.**

5 Conclusion

This review provides current relevant data in an area with little research. The extreme dearth of data from developing countries, compounded by inconsistencies in the descriptions and reporting creates gaps in our knowledge base concerning general (non-disorder specific) adolescent inpatient units. There is a critical need for additional research on non-pharmacological therapeutic interventions in these inpatient settings. Furthermore, more elaborate descriptions in how these non-pharmacological therapeutic interventions are delivered is also required. More detailed descriptions will help mental health key stakeholders identify whether they have the necessary resources to implement such interventions in practice.

Current research fails to identify the 'ideal' or 'exemplary' inpatient model of care for adolescents admitted to general (non-disorder specific) inpatient units. This descriptive review provides one source, which can be utilised in establishing an exemplary model of care. Furthermore, this review can guide healthcare decision making and inform priorities for future research (Bennett and Duda 2016). Finally, this review provides more accessible and objective information to inform research, policy, and practice, and calls for clinicians to disseminate their non-pharmacological therapeutic interventions on general (non-disorder specific) adolescent inpatient units.

6 Relevance for clinical practice

This descriptive review has identified the non-pharmacological therapeutic interventions being reported in general adolescent inpatient units. This has implications for practice, particularly in terms of understanding adolescent inpatient units and service delivery. The results of this review enhance mental health nurses' knowledge of what is being delivered in contemporary inpatient units. This can encourage discussion amongst adolescent inpatient clinicians attempting to decipher the most important non-pharmacological therapeutic interventions.

The results of this review can prompt change in inpatient units in response to the changing needs of adolescents being admitted. For instance, implementing a sensory room because of the younger age group of adolescents being admitted. The results of this review can help mental health stakeholders establish what resources need to be in place in terms of staffing and resources to facilitate such changes. As well as meeting the changing needs of adolescents, results of this review can inform mental health stakeholders, particularly those in managerial positions. The results of this review are useful for mental health managers observing increasing rates of absenteeism amongst clinicians and burnout. Such observations can prompt necessary changes in service delivery to improve the quality of care, maintain staff and enhance continuity of care.

The results of this review make an important contribution to the research gap concerning adolescent inpatient units and descriptions of exemplary inpatient models of care. This review can inform researchers and clinicians alike wishing to develop and describe an exemplary inpatient model of care to guide current and future services.

ORCID

http://orcid.org/0000-0003-2908-9304

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Table 1 Characteristics of the included papers

Authors, year (country)	Study aim	Design	Sample size	Intervention
Bobier et al., 2009 (New Zealand)	Assess the usefulness of narrative discharge letters as rated by patients, family members, and professionals	Empirical Quantitative Evaluation	N=38	Narrative discharge letter
Bobier et al., 2009 (New Zealand)	Evaluate nursing and multi-disciplinary intervention.	Empirical Quantitative Prospective pre/post evaluation study using routine audit data.	N=46	Illness education Anger management Stress management education Relaxation Problem-solving skills Relationship education Self-awareness Sporting activity Art activity Individual support
Esposito Smythers et al., 2006 (United States)	Explore adolescents' perceptions, strengths and weaknesses of a psychoeducational suicide prevention group.	Retrospective Qualitative Evaluation	N=250	Psychoeducational suicide prevention group
Katz et al.,	Feasibility of Dialectical Behaviour	Empirical	N=62	Dialectical Behaviour Therapy

2004 (Canada)	Therapy for Suicidal Adolescent Inpatients	Quantitative Pre, post & 1 year follow-up		
Killick and Bowkett 2015 (?)	Describe a 'Reading and storytelling group'.	Not a study Description of a group	Not Available	Reading and storytelling group
Patterson et al., 2015 (Australia)	Assess the feasibility of delivering a music therapy program on adolescent inpatient units	Mixed methods evaluation.	N=43	Music therapy
Sams et al., 2016 (United States)	Describe the integration of a strength-based approach with a traditional, medical model of psychiatric care.	Empirical Quantitative. Pre/post evaluation. Ongoing quality improvement project.	N=71	iMatter Narrative therapy Dialectical Behaviour Therapy group Animal-assisted therapy Acceptance and commitment therapy Family movie therapy Cognitive behavioural modules
Swadi et al., 2010 (New Zealand)	Determine if patients receive psychoeducation according to unit philosophy	Prospective Quality assurance initiative	N=60	Psychoeducation
Walker and Kelly 2011 (United Kingdom)	Describe the introduction of an early warning signs journal in an adolescent inpatient unit	Case study	N=2	Early warning signs journal
West et al., 2017 (Australia)	Evaluation of the use and efficacy of a sensory room within an adolescent psychiatric inpatient unit	Empirical Quantitative Pre-post	N=112	Sensory room

Table 2 Risk of bias assessment

	Criteria/ Yes (Y), No, Unclear (U)									
	Bobier et al., 2009 (A)	Bobier et al., 2009 (B)	Esposito-Smythers et al., 2006	Katz et al., 2004	Killick and Bowkett, 2015	McFerran-Skewes and Sawyer, 2003	Patterson et al., 2015	Sams et al., 2016	Walker and Kelly, 2011	West et al., 2017
1. Was the study question or objective clearly stated?	Y	Y	Y	Y	N	Y	Y	N	N	Y
2. Were eligibility/selection criteria for the study population pre-specified and clearly described?	N	N	N	Y	N	Y	N	N	N	N
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Y	Y	Y	Y	Y	Y	Y	Y	U	Y
4. Were all eligible participants that met the pre-specified entry criteria enrolled?	N	N	Y	U	N	Y	U	U	U	U
5. Was the sample size sufficiently large to provide confidence in the findings?	N	N	Y	N	N/A	N	N	N	N	Y
6. Was the test/service/intervention clearly described and delivered consistently across the study population?	Y	N	Y	Y	N	U	Y	Y	Y	Y
7. Were the outcome measures pre-specified, clearly defined, valid, reliable, and assessed consistently across all study participants?	U	Y	N	Y	N	N	N	Y	N	Y
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?	N	N	N	N	N/A	N	N	N	U	N
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for	N	N	U	Y	N/A	U	N	U	U	U

in the analysis?										
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	U	Y	N	Y	N	N	N	Y	N	Y
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?	N	N	N	N	N	N	N	N	N	N
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	U	Y	Y	N	N	U	N	U	U	U
Quality Rating Good (G), Fair (F), Poor (P) Good= (0-2 No) Fair= (2-4 No) Poor= (4+ No)	P	P	P	F	P	P	P	P	P	F