review of integrated care in youth mental health

This report was prepared by:

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Contents

Executive summary

Background

This Youth Integrated Mental Health Evidence Review was comissioned by the headspace National Youth Mental Health Foundation and carried out by the Mindgardens Neuroscience Network (Mindgardens) in collaboration with the Population Child Health Research Group, Univerity of New South Wales. The review assessed current integrated care models, and their effectiveness in improving mental health in young people (12-25 years). Integrated care models aim to minimise barriers experienced by young people seeking mental healthcare. Such models have shown positive preliminary results, and are associated with reduced mental health symptom severity.

Scope of Review

The aim of this review was to describe current definitions of integrated care, explore peer-reviewed research and relevant grey literature on different integrated care models for youth mental health (YMH), and assess whether such models were associated with improved mental health clinical outcomes for adolescents and young adults aged 12-25.

Methods

We undertook a review of peer-reviewed, English language research literature from January 2001 - October 2021 using PubMed, SCOPUS, and PsycINFO databases to locate reviews, systematic reviews, meta-analyses, and studies evaluating models of integrated mental health care for children and young people aged 12-25 years. Over 2000 titles/abstracts were screened for relevance. We identified 15 additional articles as part of a search of grey literature and through reference lists of sources located in databases. In total, 109 full text articles were reviewed. Of these, 36 articles discussed in detail and/or evaluated integrated care models in YMH.

To identify approaches recommended by state and/or national health departments, or integrated care models that had been developed globally we reviewed relevant grey literature. The sources we reviewed included the websites of the Australian government health departments in addition to the websites of integrated care models in the United Kingdom (UK), Canada, the United States (US), and New Zealand.

Findings

Numerous terms have been used interchangeably to describe integrated care, including collaborative, coordinated, and continuing care. This adds to the difficulty in reaching a consensus on what integrated care is. In addition, integration has been categorized in relation to *levels* and *components*. For the purpose of our review, *levels* refer to how integrated a model is, and the *components* of integration relate to the features that are commonly incorporated into integrated models of care. We drew on Heath and colleagues (2013) framework that outlined six intensity levels of integrated care. The first two levels focus on communication and fall under the categorisation 'Coordinated Care', which involves minimal or basic collaboration at a distance. The second two levels focus on geographical proximity and fall under 'Co-located Care', which involves on-site collaboration, with level four requiring some degree of system integration. The final two levels focus on practice change and are categorised under 'Integrated Care', which involves close/full collaboration leading to a completely transformed integrated practice.

Key findings from this review build on the recent evidence to practice guide (Bartholomeusz & Randell, 2022) which mapped core components of integrated care from stakeholder interviews around the Resilient Health Care framework developed by Hodgins et al (Hodgins et al., 2021) from the WHO health system building blocks (World Health Organization, 2010). The framework includes integration elements related to service delivery, health workforce, health information systems and communication, products and technology, and health finance with two elements cross cutting the framework: the values of integrated YMH and governance, leadership, and policy. We have mapped the existing literature to the components of integration to understand how these elements contribute to integrated care (Table 1).

Table 1: Levels and components of Integration (Adapted from Heath, Wise Romero, & Reynolds, 2013).*

	Coordinated	Co-Located	Integrated
Service delivery	Separate screening, treatment plans, and evidence based practices.	Agree on specific screening. Separate service plans informed by some shared knowledge. Some shared EBPs and training.	Consistent screenings across disciplines. Shared treatment planning. EBPs and training shared across system.
Health Workforce	Multidisciplinary workforce. No appreciation of each other's culture. View each other as outside resources.	Multidisciplinary workforce. Some appreciation of each other's role. One discipline overshadows others.	Multidisciplinary workforce. In-depth appreciation of roles and culture. Shared sense of ownership of model.
Information Systems and Communication / Products and technology	Separate facilities. Separate systems. Communicate rarely.	Co-location. Separate systems. Communicate occasionally.	Co-location. Shared systems. Face-to-Face consultation. Regular formal and informal meetings and communication.
Finance	Separate funding. Limited sharing of resources. Separate billing practices.	Separate funding but may share grants. Some sharing of costs. Separate billing due to system barriers.	Integrated funding from multiple sources of revenue. Resources shared and allocated. Billing maximised for integrated model and single billing structure.
Leadership, governance, and policy / Values	No shared vision. Limited shared leadership. Limited provider buy-into collaboration.	Some shared vision. Organisation leaders support integration nominally. Some buy-in to integration but not consistent across all providers.	Documented shared vision clearly communicated. Organisation leaders strongly support integration. Integrated care and all components embraced by providers.

*A more complete version of the table can be found on pages 18.

Examples of fully integrated models of care included Foundry, a province-wide network of integrated health services designed for young people aged 12-24 years in British Columbia, Canada, located in both urban and rural communities. Beginning in 2015 with six centres, it has since grown to 11 centres, with another eight centres due to be operational by 2023. Foundry services include primary care (physical and sexual health), mental health, substance use, youth and family/caregiver peer support and social services (for employment, housing, income support), all provided under one roof. In the period of April 2018 to September 2020 Foundry provided over 100,000 services to young people (Zenone et al., 2021), however Foundry has yet to be rigorously evaluated.

Of the original 7156 papers identified from our search criteria, only five studies met our inclusion criteria for meta-analysis; all of these studies were from the US. None of the included studies could be considered a fully integrated model of care. Three studies were integrated at the lowest level, considered a coordinated model based on Heath and colleagues (2013) framework. The other two study models were mid-level integration or co-located. Within these studies, we found 'depression score' was the only outcome suitable for meta-analysis. There are no more than three studies on other outcomes: other mental health outcomes, quality of life, satisfaction with care, and improving health service delivery.

Five studies assessing the impact of integration on depressive symptoms were included in the meta-analysis. There was a total of 903 participants at baseline (441 in control and 462 in intervention) and 743 participants at the follow-up (355 in control and 388 in intervention). The mean age ranged from 11 to 17 years (SD ranges from 1.3 to 2.6), with female preponderance (72-79%) in four studies. All studies included at least one timepoint that assessed depressive symptoms at 4-6 months of follow up.

The pooled effect size of the integrated intervention relative to treatment as usual indicated integration was associated with a greater reduction in depressive symptoms relative to controls at 4-6 months, though the effect size was small to moderate (standardised mean difference = -0.271, 95% CI: -0.44 to -0.11, $p = 0.001$) (Figure 4). There was no significant between study heterogeneity (Q-statistics = 5.2, df (Q) = 4, p = 0.27 I2 = 23.1). An Egger's regression was non-significant (intercept -0.67, SE 1.65, t = 0.4, df = 3.0, p = 0.35).

In summary, the review highlighted the limited evidence assessing the impact of integrated care on the mental health of young people. Early results for care integration from the US are encouraging though require validation in non-US health systems and for a broader range of clinical presentations.

Next steps

Our review of the literature on integrated YMH provides an overview of the current evidence for comprehensive integrated, co-located services for mental and physical (including sexual) health, substance use, vocational and social support. We have demonstrated that that there is an urgent need for the development of youth integrated mental health pathways followed by robust evaluation of their impact, implementation, cost, and sustainability. Exemplar integrated mental health pathways for young people should be developed at a local level that can then be evaluated, adapted, and translated nationally. This will require the mapping of barriers and enablers to youth mental health and alcohol and other drug service integration, testing co-produced and evidence-based solutions to address service fragmentation, and providing recommendations to inform policy development with children, young people, and front-line clinicians.

1. Background

One in three (32%) Australians aged 12-25 years report high or very high levels of psychological distress; this is more than treble the rate a decade ago (Australian Institute of Health and Welfare, 2011; headspace & Brunton, 2018). In total, 11% of this population are currently seeking support from a mental health professional, with mental illness the leading contributor to disability-adjusted life years amongst people aged 0-24 years in high-income countries (Iyer et al., 2019; Platt et al., 2018). In total, 75% of mental health disorders appear between adolescence and young adulthood, with increased severity over time (Malla et al., 2016). These mental health disorders are associated with significant distress and long-term morbidity for young people and their families, as well as social and functional impairment across the lifespan. The transition from childhood to young adulthood (12–25 years) is a critical time to intervene in mental health (Lauerer, Marenakos, Gaffney, Ketron, & Huncik, 2018), and represents a key period in which to improve the trajectory and outcomes of young people suffering from mental health disorders (Fusar-Poli, 2019).

In recent decades, early intervention models of mental health care have been developed (Lauerer et al., 2018), initially specific to psychosis, in recognition that traditional treatment models were not specifically designed for young people and were associated with poor uptake of services, delay in first professional contact, treatment not being suitable for the stage of illness, untimely care; and issues with the age-based transitions in services (Callaly et al., 2009; Malla et al., 2016). Early intervention services for psychosis (EIP) have been widely adopted with success. However, psychosis is just one of many mental health conditions. There is now increased recognition that the unmet need for youth mental health care continues to be associated with high rates of mental distress, suicidality, and functional impairment (Hetrick et al., 2017).

Health services in many countries are facing an unprecedented demand for mental health care for young people (Hu et al., 2022; Kalb et al., 2019; Mercado, Holland, Leemis, Stone, & Wang, 2017; Perera et al., 2018). In the face of such demand, it can be challenging for health services to deliver high-quality mental health care, which is effective and evidence-based; safe and person-centred. The World Health Organisation (WHO) further stipulates that, to achieve high quality care, health services must also be timely, equitable and efficient, maximising the benefits of available resources; and integrated across the lifespan (WHO, 2022). Major barriers to quality care include shortages of specialist trained workforce, which results in lack of access to timely assessment, unclear referral pathways, and thus a failure to deliver evidence-based interventions. The delivery of evidence-based care is further challenged by a limited health systems evidence-base in Youth Mental Health (YMH) care (Hawke et al., 2019). Delineation between services (e.g. Specialist Alcohol and Other Drugs (AOD) or psychosis services) has made the delivery of evidence-based interventions more feasible. However, mediating the training of a specialist workforce with advanced skills in assessment and delivery of interventions via use of clinical care pathways has led to an increase in fragmentation.

The delivery of high-quality mental health care to young people and their families, faces additional challenges, at an individual and family level. Existing models of mental health care have been associated with significant gaps in access to timely assessment and developmentally appropriate, evidence-based treatment (Lawrence et al., 2016; Reardon et al., 2017) a finding which was highlighted in the Australian governmental investigations and reports, such as the Royal Commission into Victoria's Mental Health System and the Productivity Commission's 2020 Inquiry into Mental health. Many young people and their families experience dissatisfaction and confusion in their interactions with the mental health system, describing a lack of person-centred care, where their preferences and needs are not addressed (Royal Commission into Victoria's Mental Health System, 2021). Consumers of YMH care describe difficulty with engaging in services that are not orientated towards young people, as well as geographical and financial barriers to accessing care, and a lack of provision of crisis care, resulting in unsafe treatment (Burkhart, Asogwa, Muzaffar, & Gabriel, 2020). Youth mental health services are often divided by age (paediatric to adult), disorder (eg psychosis, personality disorder, drug and alcohol), setting (primary, emergency department, crisis level, specialist community mental health, non-government organisations (NGO)), and discipline (e.g. psychiatric, primary care, clinical psychology, social work). This fragmentation between services leads to duplication and potentially unnecessary transitions in care, wasting limited resources and increasing the risk of consumer non-engagement. Service fragmentation poses challenges for young people accessing and navigating different siloed services and limits opportunities for cross service communication and collaboration (Western Australian Association for Mental Health, 2018).

In Australia, there has been significant investment and reform in YMH services through the development of the headspace primary care platform of services. Established in 2006, the headspace Network includes over 150 centres which aim to provide holistic care for young people 12-25 years with mild to moderate mental health disorders. headspace continues to grow with funding commitments in the 2021 Federal Budget to expand and enhance the headspace centre network over the next four years. The model was unique in its focus on bringing together primary care, alcohol and other drugs (AOD), vocational support as well as mental health care in a free, youth friendly, easy access platform. The addition in 2013 of 6 (soon to be 8) headspace Early Psychosis centres (hEP) within the headspace framework expanded the reach of these services to first episode psychosis (FEP) and ultra-high risk of psychosis (UHR). The addition of the Youth Enhanced Service (YES) from 2017, added the opportunity for more complex young people to be seen through this service, although not all of the YES services operate through the headspace platform. Whilst these enhanced, government funded services have led to a greatly increased number of young people being able to be seen (Hetrick et al., 2017), there are variations in the way each headspace site are linked with other YMH service providers, such as state funded services and NGO's, including some of the YES services. This is compounded by a lack of evidence of optimal integration approaches.

The challenges to YMH service delivery seen globally have encouraged interest in whole-system reform and greater integration of care. There remains a shortage of child and adolescent psychiatrists, which has led to the development of collaborative models involving paediatricians, primary care professionals and child psychiatry. There have also been moves to develop a specific training program for YMH specialists including psychiatrists and targeted training courses for clinicians. The development of integrated care models is one approach to address the current crisis in care (Benton, Boyd, & Njoroge, 2021). An integrated YMH care system has the potential to reach a greater number of young people, and their families with high-quality and evidence-based care and improve mental health outcomes (de Voursney & Huang, 2016). Potential benefits of integrated care include 'better health and wellbeing and a better experience for patients and service users, their carers and families' (Department of Health, 2013). However, recent research has underscored the need to examine how best to design, staff, and evaluate different models of integrated care for YMH.

This review aims to explore current literature around definitions, core components, and evidence on the effectiveness of integrated models of care for children and young people with mental health conditions.

2. Methods

2.1 Aims

The review aimed to:

1. Define and summarise the literature on integrated models of mental healthcare for children and young people.
2. Evaluate the effectiveness of integrated models of youth mental healthcare in enhancing mental health outcomes, quality of life, satisfaction with care, and improving health service delivery in young people aged 12-25 years.

2.2 Included studies

To be included in our review, studies were:

- Peer-reviewed and grey literature from January 2001 – October 2021;
- Systematic and/or scoping reviews that assess integrated mental healthcare for children and young people;
- Studies evaluating models of integrated mental healthcare for children and young people using intervention and comparator groups (included in meta-analysis);
- Studies involving community-based settings;
- Studies involving participants aged 12-25 years, who have been diagnosed with at least one mental health condition, including Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactive Disorder (ADHD); and
- English language.

2.3 Excluded studies

Our review excluded studies involving participants with a substance use disorder, as a review of this literature already exists (Bartholomeusz, 2021). Studies where participants did not receive any component of the model were excluded.

2.4 Search terms

Paediatric group:

pediatric* OR paediatric* OR teen* OR adolescen* OR pubescent OR "young people" OR youth* OR pubert* OR "young adult".

Mental health condition:

"mental health*" OR "mental disorders" OR "mental health services*".

Integrated care model:

"integrat*" OR "integrated care" OR "colocat*" OR "care coordination" OR "collaborative care" OR "coordinated care" OR "horizontal integration" OR "vertical integration" OR "longitudinal integration" OR "virtual integration" OR "medical home" OR "health services*" OR "delivery of health care*".
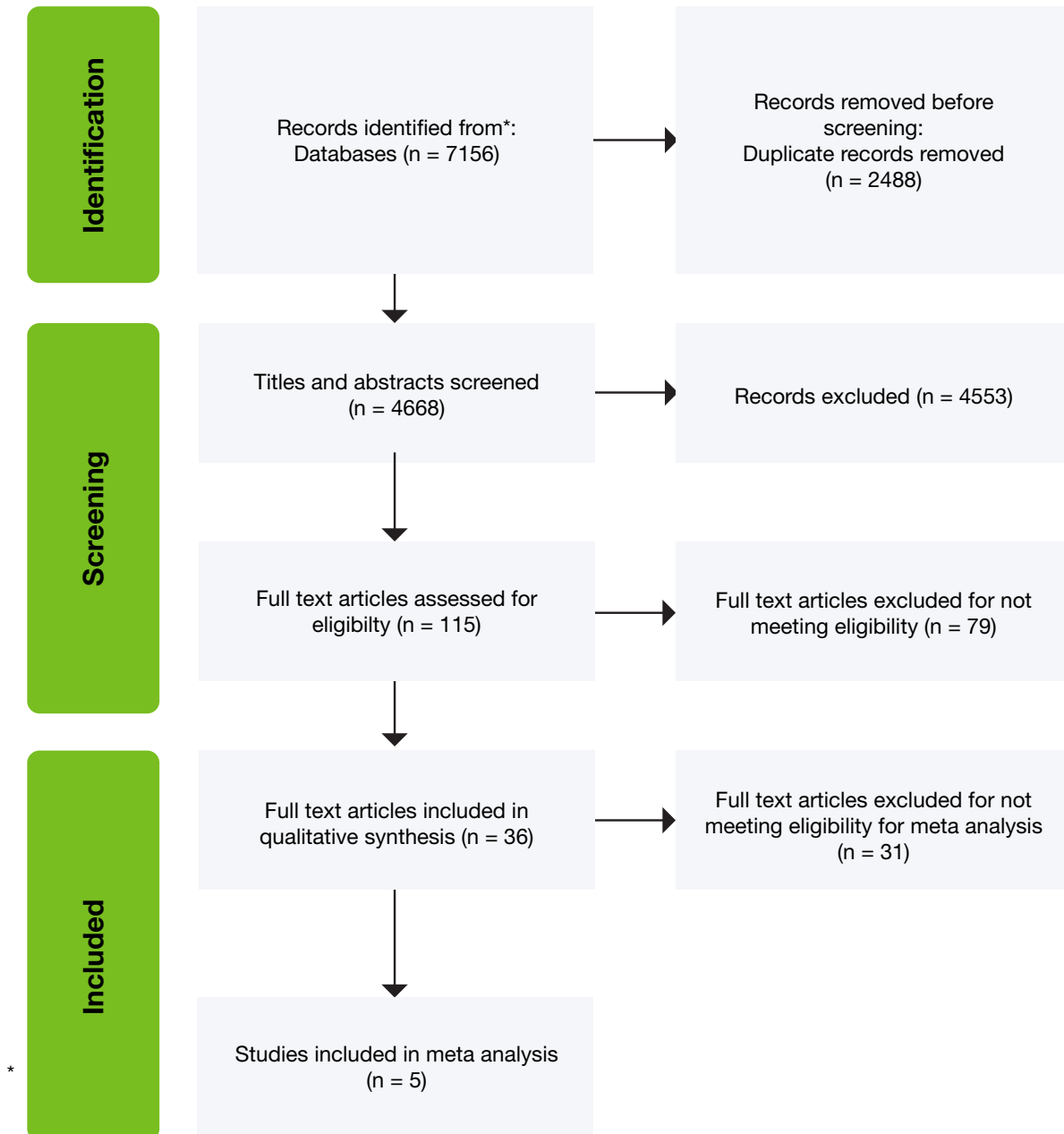
We also reviewed the websites of any named integrated care models identified in the research or grey literature for additional information on their service delivery model, and any information provided on the integrated approach the service had adopted.

2.5 Identification of studies

Titles/abstracts were screened for relevance by one author (CM). The full-text of articles that were identified as potentially relevant after screening were reviewed by two authors to determine eligibility (GG, CM). Disagreements were resolved by consensus. Two authors carried out data extraction where studies met the inclusion criteria for the meta-analysis (CM, MH). See Figure 1 for PRISMA flow chart.

Figure 1: PRISMA flow chart

Identification

Records identified from*:
Databases (n = 7156)

Records removed before screening:
Duplicate records removed
(n = 2488)

Screening

Titles and abstracts screened
(n = 4668)

Records excluded (n = 4553)

Full text articles assessed for eligibilty (n = 115)

Full text articles excluded for not meeting eligibility (n = 79)

Included

Full text articles included in qualitative synthesis (n = 36)

Full text articles excluded for not meeting eligibility for meta analysis
(n = 31)

Studies included in meta analysis
(n = 5)

*

3. Findings

3.1 Defining integrated mental health care

The first aim of review was to define and summarise the literature on integrated YMH care. In this section, we assess how integrated YMH has been defined and describe the common features of integrated YMH. Over the years, numerous terms have been used interchangeably to describe integrated care, including collaborative, coordinated, and continuing care adding to the difficulty in reaching a consensus on what integrated care is. Additionally, integration has been categorized in relation to levels and components. For the purpose of our review, *levels* refer to how integrated a model is, and the *components* of integration relate to the features that are commonly incorporated into integrated models of care.

Integrated care is defined by the WHO as health services organised and managed so that people receive the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money (WHO, 2008). In Australia, the New South Wales Health Strategic Framework for Integrated Health defined integrated care as:

> the conduct of activities and reform targeted towards the provision of seamless, effective and efficient care that responds to all of a person's health and social care needs, across physical and mental health, in partnership with the person, their carers and family. Integrating care involves developing a system which provides the right care in the right place at the right time, and ensures the delivery of healthcare is cost-effective. (NSW Health Strategic Framework for Integrating Care, 2018)

Integration of care can be defined as "process-based", "user-led", or "health systems-based". The health systems-based perspective used by the WHO posits that integrated care is achieved through alignment of all health system functions and effective change management. This includes organisational, functional, service, or clinical integration. Though this definition is comprehensive it lacks specificity on what constitutes integrated care. Integration has also been conceptualised in paediatrics as "vertical, horizontal, and longitudinal" (WHO, 2016; Wolfe, Satherley, Scotney, Newham, & Lingam, 2020). Vertical integration involves integration between primary, secondary and tertiary care, for instance, general practitioners working effectively with secondary care providers, mental health professionals, and specialist services. Horizontal integration is integration across sectors, for instance, between health and education sectors or health and social care. An example of horizontal integration is Aboriginal Community Controlled Health Organisations (ACCHOs). ACCHOs are primary health care services initiated and operated by local Aboriginal communities. Rather than focus solely on biomedical care, ACCHOs aim to deliver holistic, comprehensive, and culturally appropriate care and focus on social factors such as racism, housing, income insecurity and employment (NACCHO, 2020; Pearson et al., 2020). Finally, longitudinal integration involves integration of services across the lifespan, which is important at key times of developmental transition, especially between paediatric and adult services. In the Australian context, integration is further complicated by the involvement of private and public sector bodies in mental health care, funded by different governmental and non-governmental organisations as well as state and federally funded health services. (Figure 2).

Figure 2: Intra-sectoral and inter-sectoral integration for child health (Wolfe, Mandeville, Harrison, & Lingam, 2017)
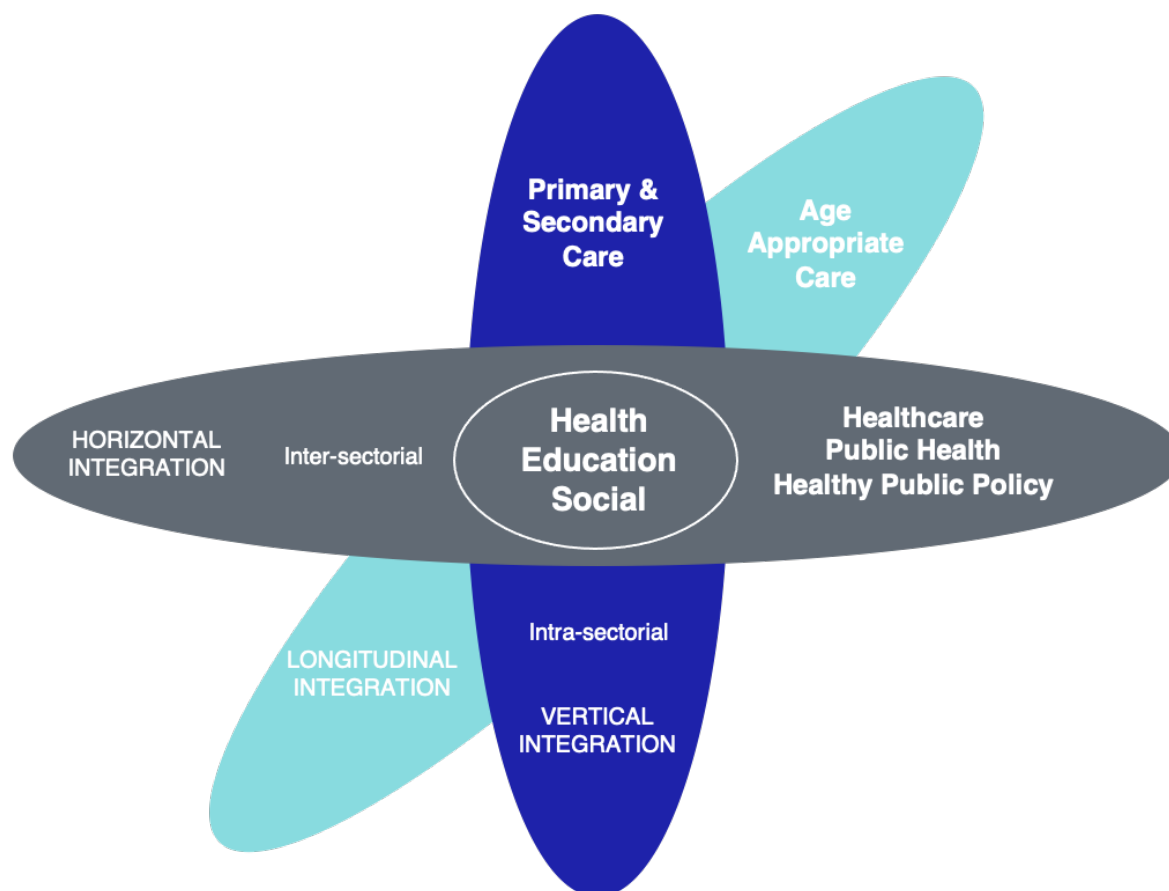
One comprehensive and frequently cited model of integration is the Rainbow Model of Integrated Care (RMIC) (Valentijn, Schepman, Opheij, & Bruijnzeels, 2013). The RMIC distinguishes 'four dimensions that play inter-connected roles on the macro- (system integration), meso- (organisational, professional) and micro-level (clinical integration)' (Valentijn et al., 2015, p. 2). This model also considers two supporting dimensions that enable connectivity between the micro, meso, and macro contexts. These are functional integration relating to key activities that support integration and normative integration relating to developing and maintaining a common frame of reference.

3.1.1 Levels of Integration

Integrated care has been conceptualised as being on a continuum (Brown, Moore, MacGregor, & Lucey, 2021; Doherty, McDaniel, & Baird, 1996; Getch & Lute, 2019; Heath et al., 2013; Kodish, Richardson, & Schlesinger, 2019; Kolko & Perrin, 2014). Heath and colleagues outlined six intensity levels of integrated care (Table 3: Levels and components of Integration (Adapted from Heath et al., 2013). The first two levels focus on communication and fall under the categorisation 'Coordinated Care', which involves minimal or basic collaboration at a distance. The second two levels focus on geographical proximity and fall under 'Co-located Care', which involves on-site collaboration, and at level four

some degree of system integration. The final two levels focus on practice change and are categorised under 'Integrated Care', which involves close/full collaboration leading to a completely transformed integrated practice (Heath et al., 2013). Therefore, many health professionals and researchers consider lower levels (i.e., coordinated and co-located care) to be forms of integrated care, and view 'fully integrated care' as the final point along a continuum. Heath and colleagues (2013) describe the incremental steps of integration where components are added to increase the level of integration. As such, it would suggest that co-location (described as 'same facilities') is necessary for a fully integrated model according to this framework for care integration.

Text Box 1: Levels and components of integration

For the purpose of our review, levels refer to how integrated a model is, and the components of integration relate to the features that are commonly incorporated into integrated models of care.

3.1.2 Core components of integration

Across the studies included in our review, we coded commonly identified elements of integrated care. A large range of integrated care models have been implemented in youth mental health, ranging from the less integrated, co-ordinated care interventions to fully integrated models of care. The success of early psychosis models and services spurred the development and implementation of broader integrated treatment models for young people, which brought together mental health, physical health and social services (Fusar-Poli, 2019). Numerous specialised youth integrated care services that address physical and mental health issues and, in some instances, also social issues are in operation today around the globe. While Australia pioneered the change towards new models of mental health care for young people by creating the headspace model (headspace, 2020; Rickwood, Paraskakis, et al., 2019), many other countries have developed their own models of integrated care based on their populations' needs/ demographics and government funding structures.

From our review, we developed a framework of key components of care integration including multidisciplinary teams, communication and shared data systems, shared location, shared vision and role distinctions, shared or compatible financing, shared resources and training, and unified governance. This aligns with the findings from a recent Orygen report (Bartholomeusz & Randell, 2022), based on survey of YMH stakeholders, who categorised the core components of integrated care using a framework adapted from the WHO health system building blocks (World Health Organization, 2010) and from Hodgins et al (Hodgins et al., 2021) (Figure 3).

Expanding on this model, adapted from work by headspace, we have mapped the components of integration to the WHO health services building blocks as shown in Figure 3. Case examples are illustrated in text boxes.

Figure 3: Core components of integrated care. Framework adapted from (Hodgins et al., 2021) taken from (Bartholomeusz & Randell, 2022).
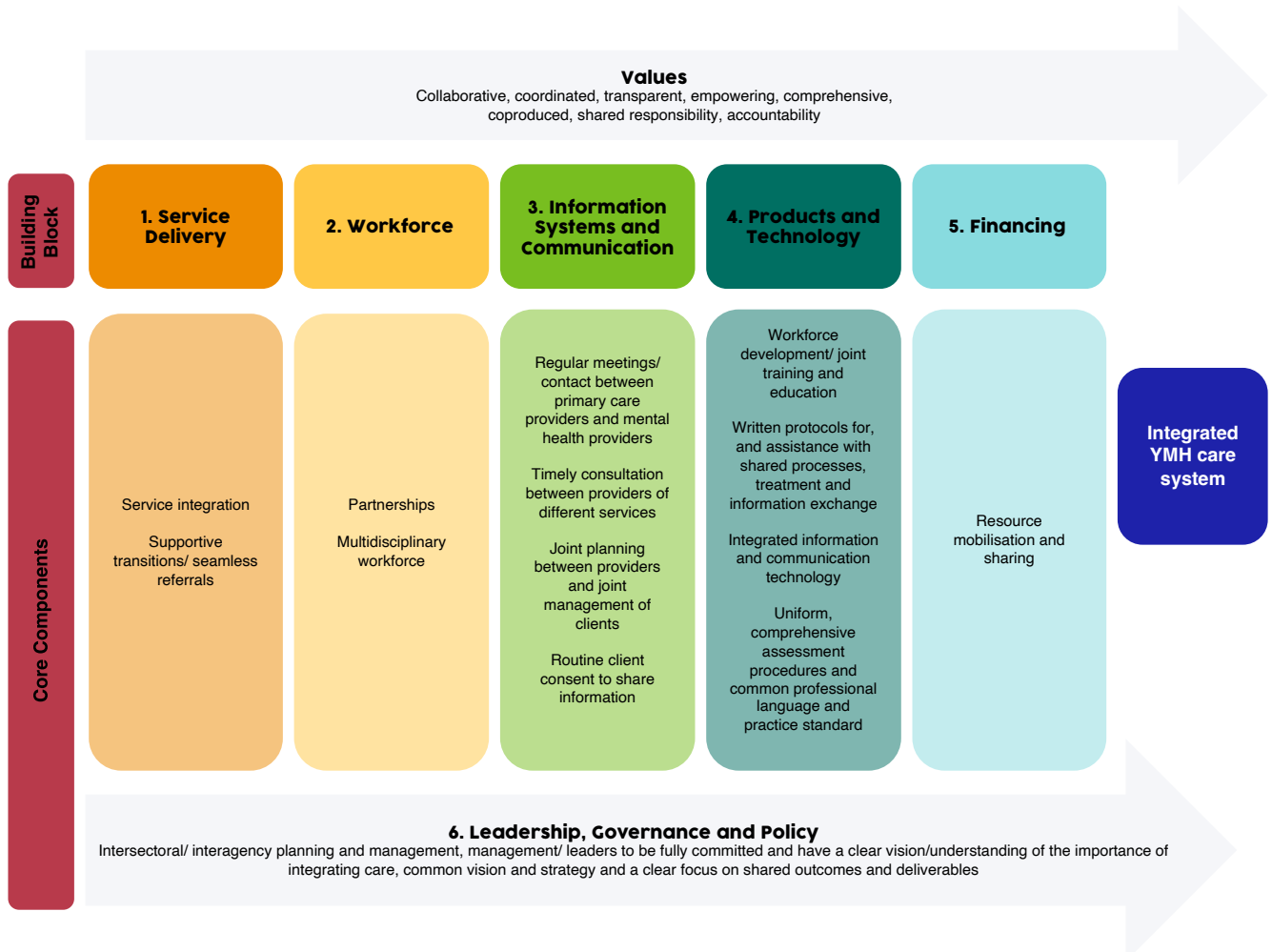
Service delivery

Integrated *service delivery* involved service integration where multiple services were managed and provided by one organisation/health service and supported transition/ seamless referrals i.e. proactively and personally linking young people with internal or external services and organising appropriate discharge. In our review of YMH models, service delivery was largely framed around the principles of continuity of care between screening, primary and mental health treatment services. These models involved avoiding unnecessary transitions of care particularly during key age or developmental transitions (i.e., childhood to adult services) (Iyer et al., 2019; O'Reilly et al., 2021). Care coordination was often used to facilitate greater continuity of care between services. Care coordinators provided support with accessing outside referrals, often via phone, and helped problem solve barriers as they arose. Where transitions to other services were necessary, care coordinators often provided extended handovers. Some integrated models were also able to provide crisis support 24 hours, 7 days a week (Iyer et al., 2019). However, many integrated YMH models continued to require outside referral in the case of crisis (Hetrick et al., 2017; Aileen O'Reilly et al., 2021). The intensity of care coordination, in terms of frequency and duration over the course of the intervention varied. Weekly contact was most common, with few studies describing either twice weekly contact (Richardson et al., 2014), or fortnightly contact.

Another feature of service delivery for integrated YMH is screening. The use of standardised screening tools was more commonly described in services that integrated primary care with specialist YMH care. This was particularly the case in the USA, where models used brief screening measures, for example the PHQ-2, to determine which young people should receive in-depth assessment (Richardson et al., 2014; Wright et al., 2016). Shippee et al (2018) described use of the PHQ-9A measure to screen adolescents aged 12-17 years at 'well-child' visits and refer for further assessment when indicated. Integrated YMH interventions with soft entry and self-referral tended not to use screening as they aimed to provide services to all young people who were looking for help.

Text Box 2: Foundry

Foundry is a province-wide network of integrated health services designed for young people aged 12-24 years in British Columbia, Canada, located in both urban and rural communities. Beginning in 2015 with six centres, it has since grown to 11 centres, with another eight centres due to be operational by 2023. Foundry services include primary care (physical and sexual health), mental health, substance use, youth and family/caregiver peer support and social services (for employment, housing, income support), all provided under one roof. In the period of April 2018 to September 2020 Foundry provided over 100,000 services to young people. (Zenone et al., 2021)

Health Workforce

Integrated health workforces involved internal multidisciplinary workforces of providers working together who are trained and skilled in different professions and partnerships with external organisations, such as other mental health services, primary care, AOD services, research entities and other sectors like education or justice. In our review of the literature, the composition and functionality of integrated workforces varied. These compositions were sometimes determined by governing bodies, as was the case with the original headspace model, which stipulated that alcohol and other drug, physical health and vocational assistance services should be provided in addition to mental health services (Rickwood, Van Dyke, & Telford, 2015). However, many integrated YMH models also allowed for a degree of autonomy and flexibility in how multidisciplinary care was implemented at a local or regional level, as population need and workforce capacity varied significantly between sites (Mathias et al., 2021). In Australia, the UK and Ireland, integrated YMH services, such as headspace, were designed to include psychologists, social workers, youth workers, alcohol and drug counsellors, general practitioners and psychiatrists (Rickwood et al., 2015). While not necessarily mutually exclusive, some highly integrated services incorporate team members that have 'blur[ed] and blend[ed]' roles. Individual clinicians within the team may be involved in delivering multiple components of the intervention as required by the individual client (Asarnow et al., 2005). In the US, team-based care commonly includes a primary care physician, and either a social worker, psychologist, or mental health nurse, and a psychiatrist in a consultation role (Rapp, Chavira, Sugar, & Asarnow, 2017).

Health Information Systems and Communication

Health information systems and communication related to regular meetings and informal and formal contact between providers of different services, joint planning, and data systems accessible by providers of different services. Shared communication was described as the cornerstone of most integrated interventions, with shared treatment plans and regular communication, either formally through team meetings or informally, in-person or via phone or electronic medical record. In highly integrated services, communication and information systems were integrated through a shared electronic medical record. This allowed clinicians to easily refer and receive timely feedback on assessments and treatment plans from other team members (Grimes et al., 2018). Co-location appeared to facilitate better communication between services via increased opportunity for in-person communication between clinicians and 'warm hand-offs' (Shippee et al., 2018). Some models used a shared clinical register to track individual outcomes and facilitate follow up post-treatment. Clinical registries were often managed by care coordinators and were sometimes integrated with electronic health records or online platforms to help centralise patient data (Richardson et al., 2014; Shippee et al., 2018). In Canada, the Frayme platform (frayme.ca) is an online platform that connects organisations with the aim of bolstering future implementation of integrated YMH services by providing clarity regarding the core components of integration (Halsall et al., 2020). This platform allows different providers to learn best practice tips to implement integrated care.

Text Box 3: Forward Thinking Birmingham

Forward Thinking Birmingham (FTB), is a unique integrated care model in the UK that became operational in 2015, provides primary, secondary and tertiary mental health services to children and young people age 0-25 years, alongside their families/carers.(Birchwood et al., 2018) The FTB model took a 'whole system change' approach and moved away from a *tiered* mental health system. The initial objective for creating FTB was "to improve the transitions for young people when moving between Child and Adolescent Mental Health Services (CAMHS) and Adult Mental Health Services, ensuring that all young people with mental health issues have every opportunity to continue in education, training and employment, so they have a life that is not defined or limited unnecessarily by their condition" (Devlin & Forward, 2013).

Products and technology

Products and technology related to shared resources between services, including guidelines, training, infrastructure, and formal procedures. Some models have been able to enhance their integration by incorporating virtual tools and resources. Complimentary online tools and resources in some services were developed to improve access to care. Further, headspace have developed eheadspace: a national online and telephone support service for young people aged 12-25 years and their families or friends. eheadspace provides email, web chat and phone support staffed by qualified youth mental health professionals to improve access for young people who are known to be less likely to use traditional services such as young men, Lesbian, Gay, Bisexual, Transgender, and Intersex (LBGTI), Aboriginal and Torres Strait Islander, Culturally and Linguistically Diverse (CALD), homeless, rural and remote young Australians. An online youth mental health service satisfaction questionnaire found that young people using eheadspace and completing the feedback survey were highly satisfied (Rickwood, Wallace, et al., 2019). Greater engagement with the online service was shown to be associated with greater satisfaction. Foundry Virtual (foundrybc.ca) came online in April 2020, and offers young people and their caregivers drop-in counselling, peer support and primary care through online voice, video and chat functions, which can be accessed anywhere in the province of British Columbia. It also offers information and resources on mental health, sexual wellness, life skills, and other content suggested by youth and young adults.

Text Box 4: headspace

The headspace model is based on removing the barriers to service access and increasing the propensity for young people to seek help at this stage of life (Rickwood, Paraskakis, et al., 2019). headspace is a foundational integrated YMH model using the headspace centre as an easy-access, youth-friendly, integrated primary care service that partners with services in the local community to provide an early intervention approach to mental health problems for young people aged 12 to 25 years. Recently, centres have been strengthened in six regions by vertical integration with specialized services for more complex, low prevalence disorders, notably early presentations of psychosis. Further, the national headspace initiative provides other services and programs including an online youth mental health service "eheadspace", headspace mental health in education services, the headspace interactive website, and a digital work and study service, among others.

Health Financing

Integrated models require money, infrastructure, time and skills to be coordinated and balanced across different services. Joint planning and funding are crucial to adequate investment in shared infrastructure, including information and communication technology, developing workforce capacity, and investing in youth-friendly premises. For example, shared digital infrastructure can be used to further integrate mental health care. Exemplary models like Foundry and FTB have been specially funded by a combination of local government and philanthropic foundations, with funding for the model as a whole, rather than piecemeal funding coming from different disciplines governing bodies, as is the case with many USA models. In the Australian context, attempts to update existing funding models, particularly the additional access to psychology sessions through the 'Better Access' scheme on the Medicare Benefits Schedule (MBS) have failed to bridge socioeconomic and geographical disparities and led to greater service fragmentation (Meadows, Enticott, Inder, Russell, & Gurr, 2015). Additionally, low numbers of salaried staff in headspace centres have proved to be a barrier to integrated care.

Leadership, governance and policy

Leadership, governance and policy relates to commitment of managers, a clear, common agenda communicated across different services, and a clear focus on shared outcomes and deliverables. Successful integrated care, as described in the literature, required a common agenda among service partners at the management level, which needs to be clearly laid out in the planning stage and enshrined in mission statements and memorandums (Iyer et al., 2019; O'Reilly et al., 2021; Rickwood, Paraskakis, et al., 2019). Staff working within the integrated YMH services develop an understanding of a common agenda through training and education during the implementation phase. A common agenda might be aligned with the goals of mental health services as a whole, such as recovery orientated principles (Australian Health Minister's Advisory Council, 2013) or the values of person-centred care (Australian Commission on Safety Quality in Health Care, 2012). A common agenda will likely require adaptation for youth-specific settings and the local context. YMH services such as Foundry aim to improve access and engagement with care, as well as early intervention and prevention of transition to more severe forms of mental illness (Mathias et al., 2021). Other aspects of a common agenda in integrated YMH services included a focus on vocational support, prioritising youth-friendly design, and promoting family engagement. Community engagement was also a goal of many integrated YMH service models, with the aim of promoting awareness of mental health needs of young people, encouraging access of services, and destigmatising mental health care (Illback et al., 2010; Rickwood, Paraskakis, et al., 2019).

Joint planning and commissioning of mental health services for health funders was described as a crucial element of integrated YMH service models. This involved partnerships between different health payers and service providers, including different levels of government (Federal, State or regional), as well as non-governmental organisations, and private organisations including health insurers (particularly in the US). In Australia, McGorry et al (2019) describe the importance of strong national oversight of headspace services to assure integrative commissioning and sustainable financial models (McGorry, Trethowan, & Rickwood, 2019). Formal partnerships are also a vital part of integrated care. These may be preceded by informal alliances and networks, which may also include community groups, academia, and research partners, in addition to the stakeholders listed above. Alliances between different organisations can help establish a common vision and goals and can lead to working groups and steering committees essential to service development.

The Canadian integrated YMH model, Foundry, consists of partnerships with over 200 government and non-profit community-based organisations (Mathias et al., 2021; Zenone et al., 2021). Foundry was initially conceived as a "collective impact" initiative, with the Foundry Central Office acting as its "backbone" organization. Foundry has engaged over 140 partners across the province of BC. Centres are governed by lead agencies and guided and supported by Foundry Central Office and a provincial Governing Council (Salmon et al., 2020). While in the proof-of-concept phase, none of the centres achieved "target" results for any of the constructs measured, which related to partnership functioning (for example synergy, administrative and management effectiveness, sufficiency of resources), although several were categorised as making 'headway' (*Foundry Early Learnings: Proof of Concept Evaluation Report,* 2018). Despite this, 'distributive leadership', which is "an approach involving concerted action achieved by spontaneous collaboration through intuitive working relationships" (Salmon et al., 2020 p1), was found to be a facilitator of service and system-level integration. This type of leadership was also effective in coordinating efforts for achieving optimised access to care (Salmon et al., 2020).

Values

Different approaches in people-centred and integrated health service delivery "should be grounded in a common set of principles. These provide a unifying values framework" (World Health Organization, 2015 p11). Identification of the underlying values of integrated care enables better understanding of collaboration and behaviour in integrated care and could also help to define care quality. Shared values across professionals and organisations are important factors in informal coordination and collaboration processes, as noted in the Rainbow Model of Integrated Care (Valentijn et al., 2013). This model is a helpful framework for considering integration with regards to micro (clinical integration), meso (professional and organisational integration) and macro (system integration) levels of a system.

A recent review identified the principles or values that underpin integrated care; after searching the literature, a total of 23 values were identified. The nine values specific to integrated care are displayed in Table 2 (Zonneveld, Driessen, Stüssgen, & Minkman, 2018). The values are presented in descending order according to the number of times they appeared in the literature.

Table 2: Principles of integrated care (adapted from (Zonneveld et al., 2018))

Principle	Description
Collaborative	Professionals work together in teams, in collaboration with clients, their families and communities, establishing and maintaining good (working) relationships.
Coordinated	Connection and alignment between the involved actors and elements in the care chain, matching the needs of the unique person. Between professionals, clients and/or families, within teams and across teams.
Comprehensive	The availability of a wide range of services, tailored to the evolving needs and preferences of clients and their families.
Shared responsibility and accountability	The acknowledgment that multiple actors are responsible and accountable for the quality and outcomes of care, based on collective ownership of actions, goals and objectives, between clients, their families, professionals, and providers.
Continuous	Services that are consistent, coherent and connected, that address the needs and preferences of clients across their life course.
Holistic	Putting the clients and their needs in the centre of the service, whole person oriented, with an eye for physical, social, socio-economical, biomedical, psychological, spiritual and emotional dimensions.
Led by whole-systems thinking	Taking interrelatedness and interconnectedness into account, realising changes in one part of the system can affect other parts.
Flexible	Care that can change quickly and effectively, to respond to the unique, evolving needs of clients and their families, both in professional teams and organisations.
Reciprocal	Care based on equal, interdependent relationships between clients, their families, professionals and providers, and facilitate cooperative, mutual exchange of knowledge, information and other resources.

The other 14 values identified in the review were not considered exclusive to integrated care, but were equally important to generally good healthcare delivery. These were that care should be transparent, empowering, co-produced, goal-oriented, personal, evidence-informed, respectful, equitable, sustainable, preventative, innovative, trustful, proficient and safe (Zonneveld et al., 2018).

3.1.3 Mapping core components of integration onto levels of integration

To help categorise the levels of integration of the studies included in our review, we mapped the components of integration onto the levels of integration to create a complete picture of the scope and breadth of integration across a given intervention. Table 3 details how each core component of integration occurs along the continuum of integration.

Table 3: Levels and components of Integration (Adapted from Heath et al., 2013)

	Coordinated Care Key Element: Communication		Co-Located Care Key Element: Proximity		Integrated Care Key Element: Practice Change	
	LEVEL 1 Minimal collaboration	LEVEL 2 Basic collaboration at a distance	LEVEL 3 Basic collaboration onsite	LEVEL 4 Close collaboration onsite with some system integration	LEVEL 5 Close collaboration approaching an integrated practice	LEVEL 6 Full collaboration in a transformed/merged integrated practice
Service delivery	Screening based on separate practices; Separate treatment plans; Evidenced-based practices (EBP) implemented separately	Screening based on separate practices; Separate treatment plans (may be shared); Separate responsibility for care/EBPs	Agree on specific screening; Separate service plans informed by some shared information; Some knowledge of each other's EBPs, especially for high utilizers	Agree on specific screening; Collaborative treatment planning for specific patients; Some EBPs and some training shared, focused on interest or specific population needs	Consistent set of agreed upon screenings across disciplines; Collaborative treatment planning for all shared patients; EBPs shared across system with some joint monitoring of health conditions for some patients	Population-based screening is standard practice with results available to all; One treatment plan for all patients; EBPs are team selected, trained and implemented across disciplines as standard practice
Health Workforce	Multidisciplinary workforce; Little to no appreciation of each other's culture	Multidisciplinary workforce; Little understanding of each other's culture or sharing of influence	Multidisciplinary workforce; Some appreciation of each other's role and general sense of large picture Mental health usually has more influence	Multidisciplinary workforce; Basic appreciation of each other's role and cultures	Multidisciplinary workforce; In-depth appreciation of roles and culture	Multidisciplinary workforce; In-depth appreciation of roles and culture
Information Systems and Communication /Products and technology	Separate facilities; Separate systems; Communicate rarely (Only in emergency or uncommon circumstances)	View each other as outside resources Separate facilitates; Separate systems Periodic focused communication about shared patients; mostly written)	Same Facilities; Separate systems; Communicate regularly about shared patients, by phone or e-mail;	Same Facilities; Separate systems; Communicate in person as needed; joint consultation; coordinated treatment plans	Same Facilities; Shared systems; Face-to-Face consultation; Have regular team meetings to discuss overall patient care and specific patient issues	Same Facilities; Shared systems; Face-to-Face consultation; Have formal and informal meetings to support integrated model of care
Finance	Separate funding; No sharing of resources; Separate billing practices	Separate funding May share resources for single projects; Separate billing practices	Separate funding; May share facility Expenses; Separate billing practices	Separate funding, but may share grants; May share office expenses, staffing costs, or infrastructure; Separate billing due to system barriers	Blended funding based on contracts, grants or agreements; Variety of way to structure the sharing of all expenses; Billing function combined or agreed upon process	Integrated funding based on multiple sources of revenue; Resources shared and allocated; Billing maximised for integrated model and single billing structure
Leadership, governance, and policy/ Values	No shared vision; No coordination or management of collaborative efforts; Little provider buy-in to integration or even collaboration	No shared vision; Some practice leadership in more systematic information sharing Some provider buy-into collaboration	Some shared vision; Organization leaders supportive but often colocation is viewed as a project or program; Provider buy-in to making referrals work and appreciation of onsite availability	Some shared vision; Organisation leaders support integration through mutual problem-solving of some system barriers; More buy-in to concept of integration but not consistent across all providers.	Documented shared vision clearly communicated; Organisation leaders support integration if barriers minimal; Nearly all providers engaged in integration model	Documented shared vision clearly communicated; Organisation leaders strongly support integration as practice model with expected change in service delivery; Integrated care and all components embraced by providers

3.1.4 Barriers to successful integrated YMH

Our review indicates that there are several barriers to the delivery of integrated mental health care related to enacting all components of integration and the real-world trade-offs that commonly occur. A recent review of barriers and facilitators to integrated youth care identified seven themes and 24 subthemes, as displayed in Table 4. Each theme can function as both a barrier and facilitator. For example, time is a facilitator or enabler of integrated care when a health professional has a flexible schedule and enough time for interprofessional team development, reflection on collaboration and clinical discussions. Conversely, a lack of time during regular client visits to address a range of issues is a barrier, as is an inflexible schedule, insufficient time for communicating and leaving collaboration to chance (Nooteboom, Mulder, Kuiper, Colins, & Vermeiren, 2021). Future projects should capitalise on facilitators of integrated care and address the challenges of barriers to foster collaborative and integrated ways of working.

Table 4: Barriers and facilitators to integrated care for young people [Adapted from (Nooteboom et al., 2021)]

Domain	Barrier/facilitator	Description
Environment	Family-centre focus	A holistic approach on a family's welfare
	Fragmentation	Collaboration between education and health care systems
Preconditions	Time	Time to address a broad spectrum of problems and for interprofessional collaboration
	Financial	Financial support and funding streams
	Professionals and resources	Availability of professionals and services
Care process	Screening and assessment	Broad assessment of problems and the use of screening tools
	Shared care plan	Several perspectives and goals in a comprehensive care plan
	Referral	Transition between care providers
Expertise	Knowledge and training	Extending knowledge by means of training
	Guidelines	The use of evidence-based guide- lines to support professionals
	Self-efficacy	Confidence and comfort of professionals to provide integrated care
Interprofessional collaboration	General aspects of collaboration	The importance of interprofessional relationships
	Familiarity with other professionals	Knowing and understanding other professionals' expertise
	Co-location	Multiple services at one location
	Multidisciplinary meetings	Meetings where professionals share knowledge, highlight concerns and reflect on care processes
	Consultation	Consultation of other (specialist) professionals
	Care coordination	Professional with the specific task to coordinate a care process
Information exchange	Communication	A shared language and motivation to communicate
	Sharing information and confidentiality	Content and frequency of information exchange, shared medical records and legal guidelines for sharing information
Professional identity	Professional roles and responsibilities	Clarity and expectations about professional roles, sharing responsibility
	Attitudes	Attitudes and commitment towards integrated care and collaboration
	Shared thinking	A shared foundation in thoughts, aims, priorities, and values
	Trust, respect and equality	Mutual trust, respect for other professionals and perceived equality

3.2 Evaluating integrated care

Given the burgeoning field of integrated YMH models, it is important to consider whether they are effective in enhancing mental health outcomes. As such, we attempted to evaluate the effectiveness of integrated models of YMH care in enhancing mental health outcomes, quality of life, satisfaction with care, and improving health service delivery in young people aged 12-25 years. Of the included studies in our review, we found depression was the only outcome suitable for meta-analysis because there were no more than three studies focusing on other outcomes, whereas there were five studies evaluating depression (see Figure 1).

3.2.1 Study characteristics

The five papers included for meta-analysis, all were randomised controlled trials (RCT) with one intervention and one control arm, conducted in the US (Appendix 2). Across these five studies, there were a total of 903 participants at baseline (441 in control and 462 in intervention). Regarding key sociodemographic characteristics of the study samples, the mean age ranged from 11 to 17 years (SD ranges from 1.3 to 2.6), with female preponderance (72-79%) in four studies. Two studies focussed on ethnic minority populations (87% for ethnic minority groups mostly Hispanic/Latino in Asarnow, J. et al (2005); 96% for Latinos in Mufson et al (2018)).

Two studies assessed depression severity using the Center for Epidemiological Studies - Depression Scale (CES-D, Radloff, 1977) and three used the Children's Depression Rating Scale, Revised (CDRS-R, Poznanski & Mokros, 1996). All studies assessed the outcome at 16-week (or approximately 4-month) or 6-month follow-up after the intervention commenced, whereas only two studies further assessed the outcome at 1-year follow-up. As such, our meta-analysis examined the difference in depression severity between intervention and control groups at four- or six-month follow-up. There was a total of 743 participants at the follow-up, with 355 in control and 388 in intervention.

In addition to the core characteristics of the studies, we also mapped the integration components of each study based on our adapted version of Health and colleagues (2013) levels of integration (Table 3, section 4.2.3). For comparison, we also extracted the core components of the exemplary model of integrated YMH, Foundry. Our extraction found that none of the included studies could be considered a fully integrated model of care. Based on our extraction, three studies were integrated at the lowest level, considered a coordinated model based on Heath and colleagues (2013) framework. The other two study models were mid-level integration or co-located. This extraction was constrained due to the limited available of information regarding the study models' governance and funding structures.
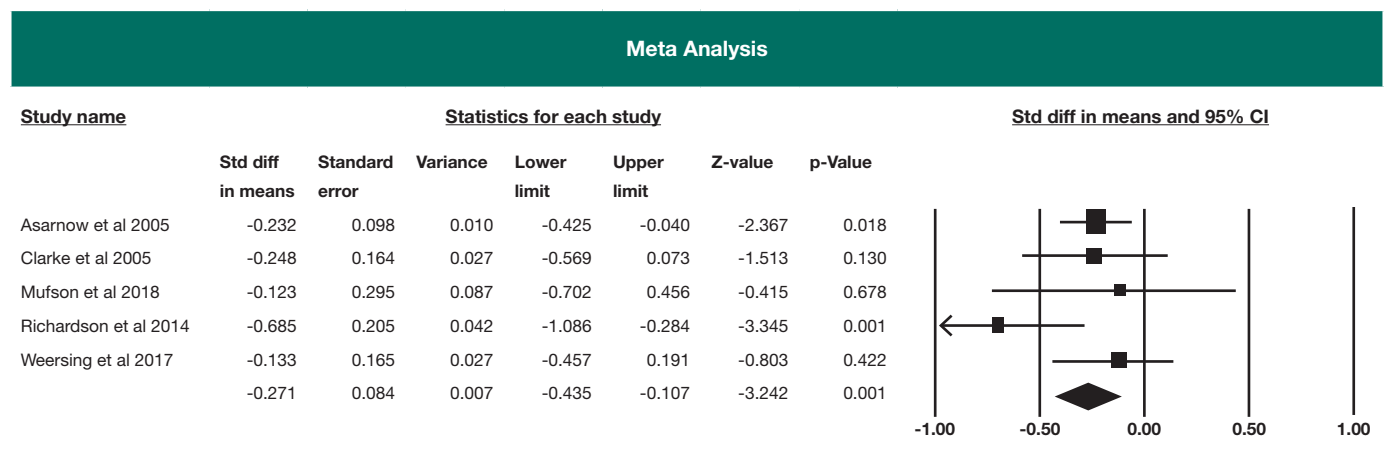
3.2.2 Study quality assessment

The risk of bias of the included studies was evaluated using the Cochrane Collaboration's tool for assessing risk of bias (Higgins et al., 2011), and the evaluation outcomes are presented in Appendix 4.

3.2.3 Effect of integrated intervention on depression severity

The pooled effect size of the integrated intervention relative to treatment as usual indicated integration was associated with a greater reduction in depressive symptoms relative to controls at 4-6 months, though the effect size was small to moderate (standardised mean difference = -0.271, 95% CI: -0.44 to -0.11, p = 0.001) (Figure 4). There was no significant between study heterogeneity (Q-statistics = 5.2, df (Q) = 4, p = 0.27 I2 = 23.1). An Egger's regression was non-significant (intercept -0.67, SE 1.65, t = 0.4, df = 3.0, p = 0.35).

Figure 4: Forest plot of effect size as difference in depression severity association with integrated intervention at 4- or 6-month follow-up.

Meta Analysis								
Study name	**Statistics for each study**							**Std diff in means and 95% CI**
	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-value	p-Value	
Asarnow et al 2005	-0.232	0.098	0.010	-0.425	-0.040	-2.367	0.018	
Clarke et al 2005	-0.248	0.164	0.027	-0.569	0.073	-1.513	0.130	
Mufson et al 2018	-0.123	0.295	0.087	-0.702	0.456	-0.415	0.678	
Richardson et al 2014	-0.685	0.205	0.042	-1.086	-0.284	-3.345	0.001	
Weersing et al 2017	-0.133	0.165	0.027	-0.457	0.191	-0.803	0.422	
	-0.271	0.084	0.007	-0.435	-0.107	-3.242	0.001	

4. Discussion

Our review of the literature on integrated YMH care outlined the current definitions of integrated YMH, including levels of integration, the core components of integration, and the barriers to integration of YMH. Our review consolidated the literature on the core components of integrated care, further defining service delivery; workforce; information systems and communication; products and technology; leadership governance and policy; finance; and values as key features of integrated care in the youth mental health space. Our case examples have highlighted the patient journeys and experience e.g. Foundry. Additionally, we reviewed the evidence of integrated YMH models for treating depression. Our meta-analysis highlighted the very limited evidence for integrated care for mental health in young people. None of the studies that were included in our meta-analysis could be considered as a fully integrated model of care. Three studies were integrated at the lowest level, with the other two study models co-located. Despite the limited number of studies that met criteria for the meta-analysis, there was evidence from the United States that integrated mental healthcare was associated with a significantly greater reduction in depressive symptoms than treatment as usual.

To date, there have been no well-defined principles for YMH service development (Hughes, Hebel, Badcock, & Parker, 2018). There has also been definitional and conceptual confusion around what integrated care involves (Nooteboom et al., 2021). Our description of the core components of integrated care aims to help address this gap in the literature. Our review differs from Yonek and colleagues' (2020) recent narrative review of the key components of effective paediatric integrated mental health care models. We noted that many of the components included in Yonek and colleagues' summary were not specifically system level features of integrated care, but rather reflected good clinical practice in YMH generally. For example, the inclusion of population-based care, brief psychological intervention, and medication therapy as key components in Yonek and colleagues' review do not helpfully relate to how services work together to provide care. Our findings differ due to our choice to focus on the features of models that relate specifically to integration from a systems level perspective. We also acknowledge the Rainbow Model of Integrated Care (Valentijn et al., 2013) as a helpful framework for considering integration. This model helped us particularly consider the specific shared values across integration contexts. However, we believe that the model poses difficulties for clinicians and academics implementing integrated models of care; specifically, the separation of factors of integration across micro, meso, and macro contexts. Distinctions across these planes of implementation in real world contexts are rarely distinct and discrete. Our framework implies these distinctions (for example, the components of policy, governance, and finance are more likely to sit within a macro context) without having to consider them in isolation.

Our meta-analysis focused on the effectiveness of integrated models of YMH care in enhancing mental health outcomes in young people aged 12-25 years. In summary, there is evidence of a small to moderate effect of integrated mental health care in reducing mental health symptoms relative to usual care. However, this evidence has been limited to studies conducted in the US and focused on depressive symptoms. Asarnow and colleagues' (2015) meta-analysis focused on a comparison between treatment as usual and integrated medical-behavioural care. They found evidence that integrating behavioural health care into primary care improved mental health treatment outcomes in young people (up to age 21 years old), however integration was not effective in trials focused on prevention rather than treatment. Other notable evidence includes a review of paediatric integrated care models focusing on access to behavioural health treatment by Burkhart and colleagues (2020), which indicated integrated/collaborative care models increased access to behavioural health treatment and improved mental health outcomes. Hetrick and colleagues (2017) review of existing integrated services, using a systematic review of peer and grey literature found promising outcomes for most young people in terms of symptomatic and functional recovery except for those with more severe presenting symptoms. These published reviews, however, are not meta-analyses.

While conceptually integrated care proves an appealing mechanism for service improvement, there remains a lack of comprehensive evidence supporting the ingredients of integrated care as well as the optimal way to implement this. While emerging evidence for integrated care models to meet the current needs of the YMH system appears promising (Hetrick et al., 2017; Settipani et al., 2019). more work is needed to determine whether comprehensive integrated, co-located services for mental and physical (including sexual) health, substance use, vocational and social support are a viable and effective way to deliver services. While there is emerging evidence for the effectiveness of integrated YMH, there is a paucity of information related to the impact, implementation, and cost effectiveness, of these kinds of models. There is also limited evidence to guide the maintenance and sustainability of these models, along with future funding structures (Callejo-Black et al., 2020; Henderson, Hess, Mehra, & Hawke, 2020).

5. Future directions

Integrated care has been mooted as a potential solution for the mental health crisis in children and young people. In Australia, we need to ensure all elements of the mental health system work together to respond promptly and effectively to the escalating needs of the youth population, as part of a more general focus on improved service coordination and integration of national and state mental health initiatives. New approaches to partnerships and funding arrangements, such as current negotiations towards a new National Mental Health and Suicide Prevention Agreement can help support greater integration and collaboration. However, real world experience of how youth mental health integration can be delivered at a service level, through structural and systemic redesign, is needed to support and inform local integration efforts, ensuring young people can access appropriate mental health care. Additionally, the changing nature of service delivery predicated on the role of technology in response to the COVID-19 pandemic may provide opportunities and challenges for integration that need to be considered. Technology can facilitate integration but cannot be considered a panacea ignoring other core components of integration.

As highlighted, the evidence base for integrated care for youth mental health is lacking. While there is a strong and logical conceptual argument for the value of integrated care, what this looks like and whether and how it works is not known. We need the development of well-articulated models of youth integrated mental health pathways, with the components of integration we have articulated in Figure 2 as a basis, implemented alongside robust evaluation of their impact, implementation, cost, and sustainability. As such, potential exemplar integrated mental health pathways for young people should be developed at a local level that can then be evaluated, adapted, and translated nationally. This will require the mapping of barriers and enablers to youth mental health and alcohol and other drug service integration, testing co-produced and evidence-based solutions to address service fragmentation, and providing recommendations to inform policy development with children, young people and front-line clinicians.

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Appendix 1

List of abbreviations:

ADHD	Attention Deficit Hyperactive Disorder
AOD	Alcohol and Other Drugs
ASD	Autism Spectrum Disorder
CAMHS	Child and Adolescent Mental Health Services
CALD	Culturally and Linguistically Diverse
CDRS-R	Children's Depression Rating Scale, Revised (Poznanski and Mokros 1996)
CES-D	Center for Epidemiological Studies - Depression Scale (Radloff, 1977)
EBP	Evidence Based Practice
EIP	Early intervention services for psychosis
FEP	First episode psychosis
GP	General Practitioner
HDRS	Hamilton Depression Rating Scale (Hamilton, 1960)
hEP	headspace Early Psychosis centres
LGBTQI	Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex
MBS	Medicare Benefits Schedule
NGO	Non-Government Organisation
RCT	Randomised Controlled Trial
UHR	Ultra-high risk of psychosis
WHO	World Health Organisation
YES	Youth Enhanced Service
YMH	Youth Mental Health

Appendix 2

Summary of papers included for meta-analysis

Study	Study design	Intervention vs control	Sample size at baseline (intervention vs control)	Key demographics	Depression measure assessed at follow-ups (continuous)	Follow-up time
Asarnow, J. et al 2005	Randomized effectiveness trial	Quality improvement intervention with usual care	211 vs 207	• 13-21 years (M 17, SD 2.1) • 78% females • Ethnic minorities (87%), spoke a language other than English at home (64%)	CES-D score	6-month
Clarke et al 2005	Randomized effectiveness trial	Collaborative care intervention (CBT + SSRI) vs treatment-as-usual (TAU) SSRI	77 vs 75	• 12-18 years (M 15, SD 1.6) • 78% females • 15% and 13% ethnic minority for control and intervention respectively	CES-D score HDRS score	6-, 12-, 26-, 52-week
Mufson et al 2018	Randomised controlled trial	Stepped Care Interpersonal Psychotherapy for Adolescents (SCIPT-A) vs Enhanced Treatment as Usual (E-TAU)	29 vs 19	• M 15.9 years (SD 2.2), age range unavailable • 79% female • 46 (96%) Latino; language spoken at home: 60.5% spoke Spanish mostly or alone at home	CDRS-R score	16-week
Richardson et al 2014	Randomised controlled trial	collaborative care intervention vs enhanced usual care	50 vs 51	• 13-17 years (M 15.3, SD 1.3) • 72% female • 31% were non white	CDRS-R score	6- and 12-month
Weersing et al 2017	Randomised controlled trial	brief behavioural therapy (BBT) vs assisted referral to outpatient mental health care (ARC)	95 vs 90	• 8-17 years (M 11.3, SD 2.6) • 57.8% females • 144 (77.8%) white, 38 (20.7%) Hispanic	CDRS-R score	16-week

MHI-5: Mental Health Inventory 5 (Ware & Sherbourne, 1992)

CES-D: Center for Epidemiological Studies - Depression Scale (Radloff, 1977)

HDRS: Hamilton Depression Rating Scale (Hamilton, 1960)

CDRS-R: Children's Depression Rating Scale, Revised (Poznanski and Mokros 1996

Appendix 3

Summary of core components of integration of included studies

Study	Service Delivery	Health Workforce	Health information systems and communication/ Products and technology	Leadership, governance, and policy/Values	Funding	Overall Level
Asarnow et al 2005	Combined screening, collaborative treatment planning between PCP and CMs for intervention participants, evidence-based practice (CBT) limited training. (Level 4)	Primary Care Providers (PCP) (trained in depression evaluation, management, and pharmacological and psychosocial treatment), Care Managers (psychotherapists: masters or PhD) trained in manualised CBT for depression, and expert team leaders. (Level 3/4)	Same facilities. No detail about systems. PCP and Care managers collaborated to finalise care plans for patients (Level 3/4)	Mental health focused intervention. Siloed delivery of service. Limited data on shared vision (level 3)	PCP existing funding. CMs funded by research grant (Agency for Health Care Research and Quality). (Level 1-4)	Level 3/4 Co-Located
Clarke et al 2005	Combined screening, collaborative treatment planning between PCP and CBT Therapist for intervention participants, Medication managed by PCP, psychosocial support and skills training provided by mental health specialist evidence-based practice (CBT) limited training. (Level 4)	CBT Therapist (psychologists with master's degrees - received initial 20 hours of training in the approach and received ongoing, weekly supervision from the first and second authors) and PCP. (Level 3/4)	Same facilities. No detail about systems. PCP and CBT Therapist had "frequent information exchanges" and "periodic consultations" about patients (Level 4)	Mental health focused intervention. Siloed delivery of service, although co-consultation involved. Limited data on shared vision (Level 4)	PCP existing funding. CBT therapist funded by research grant (the Agency for Health Care Research and Quality and the Garfield Memorial Fund). (Level 1-4)	Level 3/4 Co-Located
Mufson et al 2018	Combined screening stepped care model, EBP: SCIPT-A (phase I: 8 weeks of weekly IPT, phase II: 8 weeks of either weekly sessions, or 3 sessions in total) implemented by Social worker. Pharmacotherapy implemented by PCP. (Level 1/2)	Clinic social worker (master's level), PCP (7 paediatricians and 1 nurse practitioner). Trained separately. (Level 1/2)	Same Facilities, No detail about systems, Clinic social worker and PCP would collaborate after an assessment of patients response to treatment and synthesis. ".. medical providers reported the need for improved communication with social work clinicians and back-up support with a consulting psychiatrist to implement the model successfully" (Level1/2)	Mental health focused intervention. Siloed delivery of service. Limited data on shared vision (Level 3)	Funded by research grant (National Institute of Mental Health Grant) (Level 1-4)	Level 1/2 Coordinated

Study	Service Delivery	Health Workforce	Health information systems and communication/ Products and technology	Leadership, governance, and policy/Values	Funding	Overall Level
Richardson et al 2014	Combined screening, stepped care, individual treatment with case discussion, patient and family led treatment planning. (Level 1/2)	Depression Care Managers (DCM) (masters level clinicians employed by the study) supervised by study psychiatrist, psychologist, and paediatrician. (Level 1/2)	Same facilities, Clinical supervision occurred in weekly team meetings with the DCM, study psychiatrist, psychologist, and paediatrician. Treatment plan developed between patient, parent, and DCM (Level 1/2)	Mental health focused intervention. Siloed delivery of service. Limited data on shared vision (Level 3)	PCP existing funding. DCM and study psychiatrist funded by Research grant (National Institute of Mental Health) (Level 1-4)	Level 1/2 Coordinated
Weersing et al 2017	Children youths with full or probable diagnoses of anxiety, depression referred by PCP to study therapist or self-referred (level 1/2)	Study therapist (master's level - training consisted of a half-day workshop with the manual developer, review of recordings of 2 training cases, and completion of a session- by-session role play), PCP (NR). (Level 1/2)	Same facilities. No description of communication between therapist and PCP (Level 1/2)	Mental health focused intervention. Siloed delivery of service. Limited data on shared vision (level 3)	PCP existing funding. Study therapist funded by Research grant (National Institute of Mental Health) (Level 1-4)	Level 1/2 Coordinated
Mathias et al 2021 (Foundry phase 1)	Diverse services collocated and accessed individually or concurrently, and staff and organizations work collaboratively so that young people experience seamless care, in a single visit, many youths access one or more of Foundry's five distinct services (i.e., primary care, mental health care, substance use support, peer support, and/or social services). (Level 5/6)	Services at each centre include primary care (physical and sexual health), mental health, substance use, peer support and social services (e.g., employment, housing, and income assistance) (Level 5/6)	Same Facilities; Shared systems; Face-to-Face consultation; Have formal and informal meetings to support integrated model of care (Level 5/6)	Foundry's leadership structure, comprising a provincial Governing Council, Foundry Central Office, and Lead Agencies (LA) support the development of Foundry centres through integrating services and practices within a complex system. The Foundry central office leads the provincial initiative, and supports the development of local centres. Each Foundry centre is operated by a lead agency that brings together local partners, service providers, young people and caregivers. (Level 5/6)	Lead Agencies were selected in each community to have organizational accountability for the overall financial management and service delivery accountability for their centre. However, by agreement with all partners, Lead Agencies rely heavily on direct and indirect contributions from partnering agencies to deliver all onsite services, thus requiring a coordinated and collaborative approach. (level 5/6)	Level 5/6 Integrated

Appendix 4

Risk of bias assessment of included studies

Study	Design	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
Asarnow et al 2005	RCT	+	?	–	+	+	+
Clarke et al 2005	RCT	?	?	–	+	+	+
Mufson et al 2018	RCT	+	?	–	+	+	+
Richardson et al 2014	RCT	+	?	–	+	+	+
Weersing et al 2017	RCT	+	?	–	+	+	+

+ **Low risk of bias;** ? **Unclear risk of bias;** – **High risk of bias**

headspace centres and services operate across Australia, in metro, regional and rural areas, supporting young Australians and their families to be mentally healthy and engaged in their communities.

headspace would like to acknowledge Aboriginal and Torres Strait Islander peoples as Australia's First People and Traditional Custodians. We value their cultures, identities, and continuing connection to country, waters, kin and community. We pay our respects to Elders past and present and emerging and are committed to making a positive contribution to the wellbeing of Aboriginal and Torres Strait Islander young people, by providing services that are welcoming, safe, culturally appropriate and inclusive.

headspace is committed to embracing diversity and eliminating all forms of discrimination in the provision of health services. headspace welcomes all people irrespective of ethnicity, lifestyle choice, faith, sexual orientation and gender identity.